Thematic Transparency

How metaphoric Structures in Analogue Games can help us understand

Klemens Franz

Apocalyptic scenarios have a long tradition in analogue games and can be divided into three phases: the pre-apocalypse, the collapse itself, and post-apocalyptic (reconstruction). Zombie games, in particular, have bolstered the genre's popularity by becoming pop culture motifs. However, more constructive approaches also exist: *Atiwa* (Rosenberg) and *Forest Shuffle* (Kosh) convey ecological interdependencies through procedural mechanics that players must actively perform. These "metaphoric structures" transform systemic processes into gameplay actions, fostering a deeper understanding of the interconnected nature of (in-game) ecosystems.

By engaging with these procedures, players shift their focus from individual decision-making to systemic awareness, illustrating how even small actions can have far-reaching consequences. Unlike digital games, where complex mechanics often operate invisibly behind a screen, analog games reveal their systems fully on the table. This openness makes them a unique medium for exploring intricate themes such as survival, renewal, and sustainability. Through abstraction and transparency, routine calculations become immersive, thematic experiences that reinforce the underlying messages beyond mere narrative framing. Ultimately, this suggests that games might not only depict apocalyptic scenarios but also help cultivate the mindset needed to prevent them in reality.

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How ~~the Apocalypse~~ Zombies Invaded Analogue Games, Too

> In the midst of a great technological age the race of Homo Sapiens was thrown back into the Stone Age when, on Old Date Jan 7 2037 the planet Earth underwent an axial flip of 72°. Most of the low-lying areas sunk under the sea due to the melding of the ice caps that gad rotated near equatorial positions. Europe and the Americas were mostly submerged except for the tops of the mountains, while the continent of Africa had gained land area due to the raising of nearby ocean floor. (Jordisson)[1]

Nowadays the different states of the apocalypse[2]—the pre-apocalypse[3], the apocalypse itself and the post-apocalypse—are a common theme in analogue games. And even though the numbers are low before 2010 the apocalyptic genre does have a long tradition. Like in other media the borders between the apocalyptic sub-genres are fluid. As are the body liquids in early zombie-themed games like *Dawn of the Dead* (Butterfield) from 1978. Based on George A. Romero's influential film by the same name it is a game that already created a gameplay close to the original and therefore is an interesting object in discussing the possibilities of the medium

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[1] This quotation is from the rulebook of *Mind War: From the Warriors of the Green Planet*. The game by Richard R. Jordison was published 1976 and is the oldest listed post-apocalyptic analogue game on the internet database BoardGameGeek.

[2] The term *apocalypse* is the Greek word for revelation (Collins 2). It is commonly used in a more restricted way referring to the end of the world in a religious context (Lawrence 99). Berger splits the term apocalypse into three senses: The *eschaton*, as the ending process of the world, *The End*, that is more of a tuning point after which the third sense *after the end* follows (5).

[3] Piippo states that the dynamic of "what was before and what comes after" is extremely important for the tension of narratives and for the distinction of the different states of the apocalypse (15). For this paper I will use the distinction between *before* (pre), *during* and *after* (post) the apocalypse. And later on I will need the introduction of *longer before* (pre-pre).

as a form of adaption[4]. Games transform linear narratives into interactive environments, where rule sets guide players in shaping their own variations of the original story. These rules must balance constraint—ensuring thematic coherence—with flexibility, allowing each play-through to offer a unique retelling and fresh interpretations (Condis 89). This narration centered approach already is an example of what I will later identify as *metaphoric structures*.
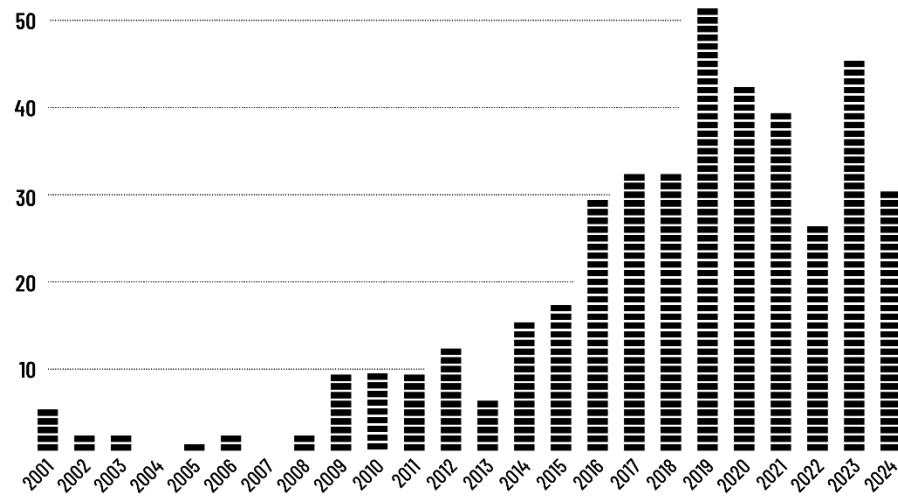

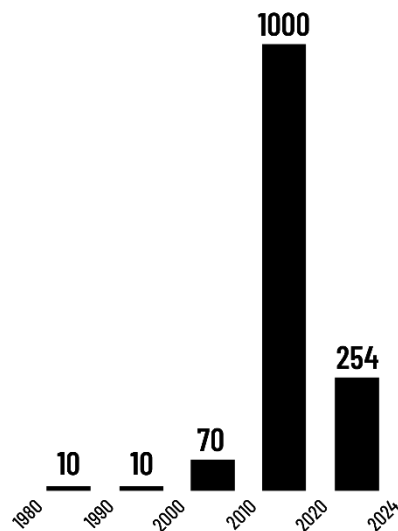Figure 1. Listed games with *Theme: Post-Apocalyptic* on BoardGameGeek sorted by years.

Figure 2. Listed games with *Category: Zombie* on BoardGameGeek sorted by decades.

An analysis of data from BoardGameGeek, a large database and community for analogue games (Thrower 87), reveals an constant increase in post-apocalyptic-themed board games between 2000 and 2020 (see figure 1), and an distinct increase of the zombie-themed sub-genre

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[4] Condis discusses the board game play space of *Dawn of the Dead* and the rules that govern moment through that space in her article. She observes that the spacial structure and design of game boards can go beyond pure decoration. They can provide an instrument for creating atmosphere based on the underlying mechanisms (84). This describes quite well what *metaphoric structures* are.

from 2010 to 2020 (see figure 2)[5]. This trend is partially driven by the mainstream success of *The Walking Dead* television series[6] that follows a group of survivors navigating a world overrun by Zombies after a global outbreak. Over the seasons, the narrative expands beyond mere survival and explores the formation of communities, power struggles, and moral dilemmas in a society after traditional structures have collapsed (Lickhardt 360). All of those aspects can be transferred into interesting, meaningful and thematic gameplay mechanisms[7]. Maybe this broad range of themes embedded in a seemingly simple formula—*don't let them eat your brain!*—is one of the reasons why Zombie games became so popular. And even though the apocalypse is much much more than walking corpses eating brains they are one of the driving forces behind the popularization of the post-apocalyptic motif and a good example of how contemporary analogue games adept pop-cultural themes in the same way that digital games do[8].

Back from the Post-Apocalypse to the Pre-Pre-Apocalypse

The theme of apocalypse in analogue games manifests in several distinct directions. A closer look at some examples highlights the variety in which the theme is realized within the medium. Many games explore post-apocalyptic survival, often drawing inspiration from the aesthetics of the *Mad Max* franchise by George Miller and Byron Kennedy.

Figure 3. The heroes in the titular settlement—accompanied by the obligatory radioactive tokens.

These games typically focus on competition for resources or cooperation against a hostile environment. For example, *Defenders of the Last Stand* (Launius and Maxwell) closely follows the gameplay mechanics of *Pandemic*[9] (Leacock), but instead of combating the spread of

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[5] These numbers are based on a manual count. They should be considered as approximate numbers since the categorization on BoardGameGeek is quite cluttered. There are subsets for *Family Creatures: Zombies*, *Category Zombies*, *Family Theme: Post-Apocalyptic*. But nevertheless a general trend can be clearly identified. Interestingly there is no category or family for the *Apocalypse* itself.

[6] The series based on the comic book series of the same name by Robert Kirkman, Tony Moore, and Charlie Adlard, premiered in 2010 (Lickhard 359) and was running for eleven seasons.

[7] For example *Good Cop Bad Cop: Zombies* (Hank & Skancke) which is a social deduction game similar to Werewolf were players when eliminated are not out of the game but turn into Zombies, an additional faction besides honest and crooked cops. And even though the game itself is a persiflage the social interaction and tension is intense.

[8] In the case of Zombies the genealogy is extensive: There seem to be pop cultural spotlights that keep reviving the theme in different forms of media. The *Resident Evil* series seems to have brought back the motif to public awareness in the late 90s inspiring comics and probably even a revival of the Zombie film genre in the early 2000s (Twohy 34). Around the same time the first on a broader range successful analogue games like the *Zombies!!!* (Breitenstein and Breitenstein) were published.

[9] To be more precise *Defenders of the Last Stand* is a re-implementation of *Defenders of the Realm* (Launius*)* which itself is based on *Pandemic* but added typical elements of the American design style—that is indeed called *Ameritrash*— to the formula. The addition of dice rolls and a stronger focus on the narrative aspect. *Pandemic* itself is built around a disease mechanism—visualized by cubes—that spreads across the world. Each turn, a card is flipped that reveals where new infections (new cubes) are placed.

diseases, players must fend off marauding bands attempting to break through to humanity's last save haven[10].

Figure 4. A different overall tone in atmosphere but *Outlive* (left) and *Agricola* (right) share many aspects[11].

Other games emphasize reconstruction, portraying societies rebuilding after catastrophic events. The concept of a fresh start—*tabula rasa*—creates a game environment open to constructive gameplay. These games often follow the tradition of Eurogames[12], which focus on resource management and structured progression (Thurm 3).

Even the setting of the influential *Catan* (Teuber) can be interpreted as an island mysteriously devoid of inhabitants—the absence of native populations in its setting is a phenomenon of colonialism[13]. Similarly, *Agricola* (Rosenberg) places players in the role of farmers rebuilding after the devastation of the Plague in medieval Europe[14]. In this historical context, Agricola can be considered a post-apocalyptic game. The Eurogame tradition, in general, centers on establishing functional systems from the ground up, typically in a peaceful and constructive manner (Woods 79). A good example for the combination of the Eurogame tradition and the post-apocalyptic theme would be *Outlive* (Oliver)—a worker placement game where players have to gather resources and upgrade their bunkers to feed the survivors. In many aspects the game is reminiscent of *Agricola* (see figure 4).

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[10] Other examples are *Badlands: Outpost of Humanity* (Plastinin), *Armageddon* (Marling and Thompson) and yes there are various adaptions of the Fallout series, too—like *Fallout Shelter: The Board Game* (Fischer)

[11] Both games are so called worker-placement-games where players have to send their worker pieces to specific action fields to execute those actions. In both games players have to gather resources and expand the housing for their so-called family (Agricola) and survivors (Outlive) and feed their people. And in both games equipment can be obtained to gain extra options.

[12] So called Eurogames do not focus on direct conflict and they embrace game mechanisms over theme (Burgun 136). This school of design originated in Germany and is nowadays not restricted to any specific geographic region. Eurogames are created by designers all over the world.

[13] Game designer Bruno Faidutti remembers in his article on Postcolonial Catan how a fellow player's first remark on the game was: "where are the natives?" (5). Flanagan and Jakobsson observe the same problem that might be an intrinsical one to the abstraction within board games as "The toxic act of erasure through abstraction always sides with power and is as old as colonialist board games themselves." (137)

[14] The introduction text from the English manual of the first edition refers to its historical setting: "Central Europe, around 1670 AD. The Plague which has raged since 1348 has finally been overcome. The civilized world is revitalized. People are upgrading and renovating their huts. Fields must be plowed, tilled and harvested. The famine of the previous years has encouraged people to eat more meat (a habit that we continue to this day)."

Figure 5. In Tribes of the Wind players have to overgrow the remains of old days.

There are more positive scenarios than the one in *Outlive*: Games like *Tribes of the Wind* (Thôme), *Boonlake* (Pfister) and *Revive* (Meissner, Østby, Svensson, and Wermlund) focus on rebuilding a civilization (see figure 5). The presented game world is not uninhabitable but instead reclaimed by nature waiting for a fresh start—and even though there are remains of an old civilization it is the island of *Catan* all over again.

The already discussed subset of zombie-themed[15] titles frequently—but not exclusively—incorporates cooperative mechanics. *Dead of Winter: A Crossroads Game* (Gilmour-Long and Vega), for example, is a semi-cooperative game in which players work together to achieve a common victory condition while also pursuing individual, secret objectives. *Escape: Zombie City* (Østby) re-themes its predecessor, *Escape: The Curse of the Temple* (Østby), into a frantic, real-time dice game where players must roll the required results as quickly as possible to survive. The competitive *Hit Z Road* (Wallace) another dice game that takes a more meta-approach, presenting itself as a game assembled by a child during an apocalypse. The components appear as a bricolage of salvaged materials, and even the back of the box displays an unrelated, fictional game (see figure 6). And obligatory, a wide variety of miniature-based zombie games emphasize combat-focused mechanics[16].

Figure 6. The components and cover of Hit Z Road are full of remains from better days. Bottle caps included.

Some games address the apocalypse itself, rather than its aftermath. The *Pandemic Legacy* series (Daviau and Leacock), for instance, released before the real-world COVID-19 pandemic,

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[15] There even is a sub-subset of zombie-themed games centering around kids. *Zombie Kidzs Evolution* (Lobet) and *Zombie Teens Evolution* (Lobet) are cooperative legacy games. F*lashback: Zombie Kidz* (Derrez and Doyon) is a puzzle game. All three evolve around the same Zombie invested city and are a good example for a board game adaption of the genre Suburban Fantastic Cinema as described by Angus McFadzean in his book of the same name.

[16] A couple of examples include the very successful *Zombicide* (Guiton, Lullien and Raoult) and its many expansions and variants, *Zombie 15'* (Lémery and Schlewitz) a real time game that lasts exactly 15 minutes and *Last Night on Earth: The Zombie Game* (Hill) that aesthetically builds on very trashy but fitting visuals based on photos.

explores the spread of global disease and societal collapse. As a legacy game, it evolves over multiple play sessions, requiring players to modify or even destroy components, apply stickers to the rulebook, and permanently alter the game state, reinforcing the sense of an unfolding crisis (Mosca 25).

Figure 7. Each card in Daybreak has a QR code in its corner for additional information.

There are also games that do not depict the apocalypse itself but rather focus on preventing it. Some titles, like *Daybreak* (Leacock and Menapace), tackle this theme directly, making the fight against climate catastrophe their central premise. Designed by Matt Leacock—one of the creators of the *Pandemic Legacy* series—this cooperative game challenges players to work together to curb global carbon emissions, manage renewable energy transitions, and mitigate climate disasters before it's too late. By simulating real-world environmental challenges, *Daybreak* presents a stark and urgent vision of what is at stake, making it one of the more explicit examples of games that engage with apocalyptic themes from a preventative perspective[17].

Finally there are games that take a more indirect approach, stepping away from a literal depiction of climate catastrophe and instead creating gameplay environments that enhance players' understanding of the systemic issues that could lead to such crises. These games do not explicitly frame their narratives around the idea of averting the apocalypse[18], yet through engaging with them, players gain insights into the fragility of ecosystems[19], the economic and logistical complexities of transitioning to renewable energy[20], and the necessity of international cooperation[21]. Rather than positioning players as heroes saving the world from imminent disaster, these games emphasize the interconnectedness of global systems, showing how small

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[17] Since the game was initiated as a kickstarter campaign and later won the *Kennerspiel des Jahres* award there are numerous interviews online all highlighting the amount of research that went into the game (Meehan). The *Kennerspiel des Jahres* award is widely regarded as the most prestigious prize for more complex analogue games and is selected by a jury of game journalists (Woods 50).

[18] The name *pre-pre-apocalyptic* could fit into the timeline used in this paper of apocalyptic states.

[19] *Earth* (Tardif) is a so called *engine-builder* where players have to create combinations that create a chain of effects within their own ecosystem. *Meadow* (Kalicki) is the embodiment of a cozy game; players are on hikers looking around to spot plants and animals that have to be played in an order that reflects their natural dependencies (see figure 8), *Cascadia* (Flynn) is about Pattern building on two levels: The underlying landscape and the animals living in it. Both levels follow individual but sometimes divergent rules.

[20] *Funkenschlag* (Friese)—or *Power Grid* how it is called in English editions—is about the brutal business of energy economy and includes green energy in its newer iterations. *Future Energy* (Ornella) is a network building game and a re-theming of a Wild West game about stagecoach routes.

[21] In *CO$_2$* (Lacerda) a rather complex game players represent CEOs of every companies that try to gain the most prestige without too much pollution. *Catan: New Energies* (Teuber and Teuber) is a variant of the classic game where pollution is a new threat and the game can end early if there is too much of it.

changes can have cascading effects—both positive and negative. At the end of this paper I will discuss two of those games: *Atiwa* (Rosenberg) and *Forest Shuffle* (Kosch).

Figure 8. The icons on the cards in Meadow indicate what other species or environments the depend on.

The Idea of Something Boring Becoming Thematic: And Useful

Unlike linear media, such as films or books, analogue and digital games require players to actively participate, make decisions, and experience the consequences of their actions firsthand. By leveraging mechanics that model real-world dynamics, games potentially foster deeper understanding and reflection, making them an effective tool not just for entertainment, but for education and critical thinking (Schrier 71).

But unlike digital games, where complex computations and underlying mechanics can be hidden behind an interface, analogue games operate with complete transparency regarding those procedures[22]. Every component is visible to the players, every action is manually executed, and the overall game state is collectively managed. Or how game designer Amabell Holland puts it in an interview for the magazine Senet (Thrower 52):

> In a board game we understand the machine, the rules, in order to make it work. Video games do a lot of that under the hood. It obscures the system, stops us understanding how it works, strategically.

This transparency imposes a fundamental design constraint: an analogue game cannot replicate a system in its full complexity. The handling of the physical components and calculations that need to be executed by players would go beyond the scope of what they are willing to do. Instead, it must be distilled into an accessible and playable form. The need for abstraction is therefore inherent, requiring game designers to find ways to represent intricate themes and mechanics within the limitations of physical components and manual play[23].

To sum up: analogue games—through the aforementioned abstraction and transparency—offer a compelling medium for exploring complex themes. They can be a quite powerful tool due to their own limitations—again: abstraction and transparency—in forcing players to understand

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[22] Järvinen defines procedures as actions taken by the game system to assign value to different game states and for managing the interrelations of game elements. In general procedures handle the flow and manipulation of information within the game system (Järvinen 71). In analogue games this could mean that when a player encounters a specific situation an event card is drawn, triggering a particular chain of events and potentially altering the game state. This chain of events is managed by a procedure outlined within the rule set of the game.

[23] Game Designer Alf Seegert refers to this as stripping away needless mechanics and interfaces. In an interview he urges "designers to play the cleanest games possible to help cultivate strong habits in streamlining their designs" (Barrett 147). He even suggests the term *simplexity* for having "the most complex and interesting interactions and outcomes which result from the simplest ruleset". (148)

systems and procedures (Sousa 72). This understanding can and should be supported by a thematic integration that is true to the theme of the game.

This thematic integration in analogue games can occur on multiple levels, shaping how players engage with the narrative and mechanics. These levels can be categorized as follows (Shipp 13):

- **Core Gameplay:** The fundamental rules and systems that define player interactions. While these may be independent of theme, they provide the structural foundation upon which thematic elements are layered.

- **Baked-in Thematic Elements:** These are integrated directly into the game's components, such as artwork, iconography, terminology, and custom game pieces, reinforcing the intended setting and narrative. They cannot be avoided when playing the game.

- **Opt-in Thematic Elements:** Optional details that enhance immersion without affecting gameplay, such as flavor text, background stories, or visual flourishes on game components. They can be ignored during gameplay.

Additionally, in-game actions[24] can be categorized as well (Shipp 17-18):

- **Mechanical Actions:** These are purely procedural, functioning independently of theme. Examples include rolling dice to determine an outcome or moving a piece along a track without any narrative justification.

- **Associative Actions:** These are labelled thematically but do not relate mechanically or experientially to the game. Examples include movie a cube to mark a changed (thematic) state. The cube itself does not connect to the theme in any way but it marks a label.

- **Metaphoric[25] Actions:** Here, mechanics are more deeply intertwined with the theme, embodying narrative principles through gameplay. A resource scarcity mechanic, for example, can simulate the struggle for survival in a post-apocalyptic setting.

- **Simulative Actions:** These mimic real-world events in an almost literal way, They somehow manage to simulate theme in a very physical way. An example would be flicking a disk to simulate kicking a ball.

- **Literal Actions:** These closely mimic real-world counterparts. A game that requires players to physically stack pieces to construct a structure, or tear up cards to reflect irreversible decisions, creates a tangible connection between mechanics and theme.

The agency of action is a last important aspect we have to cover before looking closer at the two examples. Nearly all actions in analogue games have to be executed by the players[26]. The

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[24] Adams identifies actions as specified by the ruleset (11). Players have to undertake those actions "to overcome the challenges and achieve the goal of the game". What he implies is that actions are always in the agency of the player. An aspect that has to be discussed when talking about analogue games and procedures.

[25] For example, the worker-placement metaphor of placing a player piece in a specific spot on the game board helps players understand the structure of the underlying game system (Engelstein and Shalev 409). So a metaphor can connect a theme and its implications with an action or structure. As Ohkura states "metaphorical expressions are polysemous expressions." (7) so players know that it is not about the literal meaning. Metaphors help players to understand figuratively even though they navigate with in a system of abstraction.

[26] There are of course hybrid games that delegate aspects of the gameplay to a digital device. There are also games that have a specific *gimmick* that is part of the core gameplay: e.g. a tower that distributes game pieces randomly. But still all those actions have to be triggered by the player and one can argue that a complex tower construction distributing game pieces is nothing more than a fancy die. So the theoretical question here might be when a component becomes a device.

agents of the mechanics are the players. The agent of procedures[27] is the game system. But the execution may be delegated to the players. Thus we will define procedures as actions that the game system takes.

Of Forests, Fruit-Bats, and Mental Arithmetics

> And this is exactly what I can and want to reflect on at the end of the game. I want to push aside the thicket one last time to catch a clear glimpse of the connections I may have overlooked or misjudged in the heat of play. […] I still want to walk through the forest on foot—not staring at my smartphone, but looking closely and attentively, taking it all in with patience. (Franz 11)[28]

Two exemplary pre-pre-apocalyptic games illustrate these principles of transparency, abstraction, within an underlying thematic structure. Two games that use thematically metaphoric procedures to steer players away from the ego centered nature of decisions toward a more systemic point of view[29].

Atiwa by Uwe Rosenberg offers a sophisticated portrayal of ecological sustainability in Ghana, specifically highlighting the crucial role fruit bats play in reforestation. Players take on the role of mayors and strive to develop their village as effectively and sustainably as possible over a fixed number of rounds. They deploy their workers to various action spaces to expand the village, plant trees, accommodate animals, and much more. The interconnected ecosystem revolving around the fruit bats plays a special role, serving as a lucrative source of victory points. Players decide when to react to the unique situation of the fruit bats as part of the ecosystem. At the beginning of the game, fruit bats merely serve as a food source, but through the development of their village population, the role of the fruit bats within the game system can change. For example, fruit bats that yield points can later be housed in the village's buildings.

A key aspect of the game is its bookkeeping phase at the end of each round. While this might seem like a routine mechanical process, it becomes a central thematic device that reinforces the ecological interdependence of trees, fruits, and animals. Players systematically track how their choices affect the ecosystem, with each step in the process mirroring real-world ecological relationships. This structured and repetitive interaction encourages players to internalize the game's environmental message, as they witness the tangible consequences of their decisions unfold over time.

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[27] In Shipps model it seems that procedures are only located in the mechanical actions and therefore in their definition not thematic. But this is only to the misleading example of drawing a card. Which is a good example for a procedure as well. But when drawing a card makes thematically sense it still is a procedure but might be classified as an metaphoric, simulative or even literal action (if you play poker players drawing cards).

[28] This is a quote from a commentary regarding the digital scoring app for the game Forest Shuffle. In the magazine two sides were presented. One in favor of the new app and one that tries to highlight the quality of manual calculation within the context of the game. The quote is from the latter one.

[29] For transparency: I have worked on both games as graphic designer. Knowing the prototypes of the games and the designers was an important inspiration for this paper.
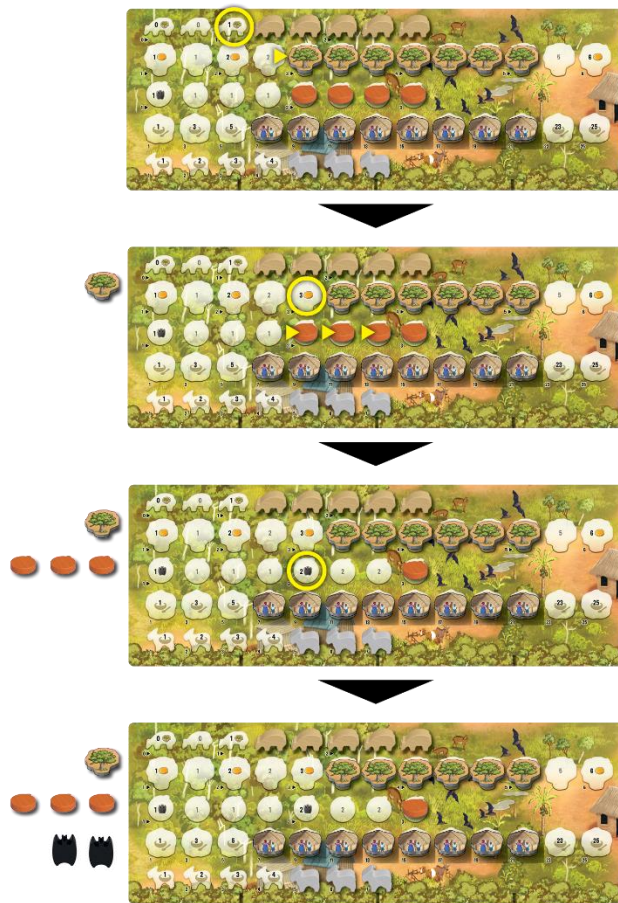
Figure 9. Some exemplary steps of the bookkeeping phase in Atiwa[30].

Of course, the game's depiction of ecological systems in *Atiwa* is necessarily an abstraction—real-world complexities are distilled into a format that remains manageable within the constraints of gameplay. However, this abstraction serves a critical purpose: by simplifying intricate ecological relationships into a digestible framework, *Atiwa* allows players to engage meaningfully with the core idea of interconnectivity in nature. Throughout the game, the fundamental lesson persists—nature operates as an interwoven system where seemingly small actions can have far-reaching cascading effects.

Similarly, *Forest Shuffle* by designer Kosch presents an intricate simulation of ecological interdependence through its card placement mechanics. Players gradually build a tableau representing a diverse forest, strategically arranging trees, animals, and plants to form a balanced ecosystem. The core mechanic revolves around tree cards, each of which serves as a foundation for supporting various species. Birds and other airborne creatures can be placed on the upper edges of tree cards, while plants and ground-dwelling animals are positioned below. Larger mammals—such as deer, wolves, foxes, and boars—can occupy either side of the tree cards, emphasizing their role in a broader ecological network.

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[30] As described in the *Atiwa* rulebook "Wild animals eat fruit an excrete seeds, causing new trees to grow. Trees grow fruit, which attract new fruit bats." (9) In this example 3 wild animals are already in play—they are no longer on the player board—the player may take one tree. Underneath that tree 3 fruits are pictured indicating that the trees in play produce 3 fruits. And finally all the fruits in play attract 2 new fruit-bats. The last two rows deal with the population of your village, their need to feed and how many goats you have that produce milk to feed your people.

Figure 10. Cards can be placed under trees and create unique ecosystems[31].

As the game progresses, players work toward creating a unique yet highly interconnected ecosystem, where different species interact in meaningful ways[32]. The game ends when the third winter card is drawn, signaling the final evaluation phase. At this point, players must carefully assess their forest's biodiversity, calculating how well their species coexist and benefit from one another. The scoring process, though potentially complex and demanding for some players, reinforces the core message of ecological intricacy. *Forest Shuffle* requires players to actively engage with their ecosystem, tracing connections and dependencies firsthand. While a companion app exists to simplify the process, its use diminishes an important pedagogical dimension—one that encourages players to fully absorb the depth and complexity of ecological systems through direct interaction.

Metaphoric Structures to Train to Save the World: Sort of, Maybe

To sum it up, the basic idea is quite simple: In analogue games, there are actions that are directly controlled by players, allowing them to make meaningful decisions and actively engage with the game. On the other hand, there are procedures that are necessary for maintaining the game

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[31] In this example the cards already work together quite well: The *Red Fox* scores 2 points for the *European Hare* on the opposite side of the tree. It scores 1 point at the moment; more *European Hares* would mean exponentially more points. The *Bullfinch* feeds on insects and scores 2 points for the *Stag Beetle*. The *Stag Beetle* scores 1 point for each pawn-animal; 2 in total. The *Silver Fir* scores 8 points in total; 2 for each card attached to it. But since the effect of most cards are not exclusively to one tree those calculations can become quite extensive.

[32] In this context *meaningful* means points at the end of the game. Again: analogue games have to abstract and a common way to measure the success of players is the use of victory points. In *Forest Shuffle* they are visualized as acorns—something you like to pick up and collect.

system but do not involve meaningful choices. In analogue games, these procedures must be executed manually by the players—simply because *someone has to do the job*.

While player actions revolve around individual agency within the system, procedures are system-immanent, operating independently of player intent. However, when these procedures are embedded within metaphorical structures, they gain thematic significance. This design choice compels players to engage with and understand the underlying system from a broader perspective. One that is not solely centered on their own role within it: the desire to win.

Metaphorical structures not only make procedures more intuitive and easier to remember, but they also function as a training space where players can repeatedly execute and internalize them without requiring active decision-making. More importantly, they help players comprehend the system as a whole and, crucially, illustrate its consequences. So that there might be a chance to prevent the apocalypse after all[33].

About the Author

Klemens Franz studied *Information Management* in Graz, Austria and *Digital Games Research and Design* in Tampere, Finland. He worked as an assistant for new media technologies at the FH Joanneum. In 2006 he founded the atelier198 where he has worked on over 300 analogue games as an illustrator, graphic designer and editor. In the last couple of years he started to talk about analogue games and his experience with their visuals. He worked on the interactive aspects of exhibitions, held game-design workshops and wrote about gaming culture. He teaches *Digital Imaging* and *Media Theory* at the FH Joanneum.

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[33] How and if this approach can be reproduced in other form of interactive media is another topic. Of course it would be possible to delegate procedures in digital games to players but the acceptance might be a problem. Why do something yourself that the computer can do much faster and better? So this might be more a question of how to motivate players to execute those *boring* procedures.

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