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Ulrich Götz

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Philipps Universität Marburg

Rules Shape Spaces – Spaces Shape Rules

Ulrich Götz

THE CONTROL ROOM

The set of rules in video games provides an opportunity to study the effects of rules on their environment. The clearly defined framework of a game world constitutes some sort of laboratory situation in which regulative dependencies have been set and the consequences and ramifications of their laws can be observed.

The narrative motifs of these regulated, synthetic cycles are often derived from real world circumstances, though without reproducing their original complex dynamics. In the course of a game, however, sets of rules can be gradually extended until their fabrics reach the level of simulations of real-world systems – and these constructions may then be deconstructed again, with their fragments becoming material for further experiments.

For the practical implementation in the development of a game, but also for the playful toying with sets of rules, it is of central importance that controllable situations are created in order to allow for the free creation of individual routines or approaches. This requirement is important both for the developers and for the users of a game. Developers have to tackle the challenge of creating systems, which can be mastered by building up skills over time, and they also have to provide a reservoir of diversified, and sometimes surprising options for action. If the developers succeed, players will be encouraged to slowly master these systems, but they must also be able to develop their own strategies and methods, and to gain individual possession of the virtual space. *As they say, every good game needs an element of play*.

THE PLAYING FIELD AS A SPATIAL SET OF RULES

Studies on game mechanics describe rules and their effects on gameplay. However, such analyses often do not focus on the layout of the playing field[1], which is a prerequisite for experiencing the set of rules during gameplay. Without a detailed description of the nature of the virtual spaces in which rules unfold their effects, a thorough reflection on game mechanics cannot be achieved.

Even though the spatial design of video games often makes references to real environments, the development of such game spaces is set up quite differently compared to the process of creating spatial designs in the real world. In games, the design of rules is neither a reaction to already existing spatial conditions of the environment, nor would it directly depend on any already existing behavioral patterns. Instead, the two complementary areas of game rules and game spaces are synchronized and form a necessary condition for each other: to achieve optimal balance, game rules are developed simultaneously to the development of (test) environments, i.e. in direct dependence to the virtual world for which they are intended, and in accordance with its design paradigms.

In the successful development of a video game, the mechanics of rules are closely intertwined with the design of the game space. Despite this mutual dependency, it is clear that the design of rules is usually superordinate to the design of space. Accordingly, new "levels" or "maps" can easily be added to a game, but essential changes to the basic rules cannot be made during the course of a game. This leads to the view that the prevailing rules in games govern the nature of virtual environments – and not the other way round.

DESIGNED ENVIRONMENTS – REGULATED ENVIRONMENTS

In order to further illustrate the mutual dependence between rules and spaces and their iteratively achieved balance in virtual reality, it is worth comparing them to analogies of the real world, thus revealing new perspectives.

From this angle, our artificially designed environment appears as a set of rules, reflected in the spatial design. We live in a fabric of agreements and de-

1 The term "playing field" is used comprehensively here, including all possible types of playing fields, two-dimensional as well as three-dimensional ones, figurative as well as non-figurative ones, etc. To denote this expanded meaning, the term "game space" is applied further on in this article.

pendencies on functional, physical, cultural, economic and social rules. The interaction of these rules manifests itself in our environment, which is shaped by its use, conventions, adaptations and traditions. The designed environment can be compared with the design of a playing field for cultural, social, economic and other rules that exist simultaneously or in parallel, in harmony or in conflict with each other.

In the real world, the emergence of regulations and the design of the environment also mutually affect each other, even though this happens with considerable delay: for example, social change only gradually shapes the artificial construction of the environment, and vice versa social action finds its optimal response to local conditions only over long periods of time. However, due to this connection, cultural practices, social orders, geographical features, etc. can be clearly detected in the designed environment.

Very similar dependencies exist in the relationship between the design of game rules and the design of game spaces in virtual environments, but with one important difference. The immediate connection between these two does not arise as a consequence but as a simultaneous correspondence – game spaces represent a spatial expression of the set of rules. The various options for action in games can only be performed if the design of the game space supports their application as well as possible: a hide-and-seek game needs hiding places, and an adventure game needs an environment worth discovering.

WHERE COULD WE PLAY HIDE-AND-SEEK?

The matching of game rules and game spaces is direct and immediate. It is one of the prerequisites for the much cited game flow, and it contributes significantly to an immersive gaming experience. But which typologies of game spaces can be traced back to their connection with game rules? Do not games impress with entirely unique worlds, which seemingly only follow imaginative and detail-obsessed creative ideas? How could these worlds be traced back to a restrictive catalogue of shapes that depend on game rules?

Even very limited options for action allow for a wide variety of design solutions of the game space. The impression may occur that the different levels of a game each follow a free creative approach, and yet they are all shaped by the set of rules in the same way. This results in a general self-similarity and modular uniformity of spatial design.

Just remember *Tomb Raider I* (1996), in which Lara Croft explored overwhelmingly highly embellished environments (compared to other games at that

time). But the structural uniformity of the game space was evident: a limited complexity of renderable textures, along with Lara Croft's limited range of motion, resulted in a clear-cut block structure of the environmental design. Here, Lara Croft climbed from ledge to ledge, leapt over gaps, or jumped down without being injured – the shapes of walkable paths could be clearly detected in the design of the environment.

Today it is common for games, and especially those with an exploratory character, to put a lot of effort into disguising the limitations of their game spaces, since it obviously contradicts the idea of playfully free choices when predetermined plot options are already apparent in the way the environment is laid out. At the same time, it should not be forgotten that playable areas are not limited to 3D-modelings of game levels, but also extend to all kinds of peripheral in-game interaction options such as menus, chat and communication functions, the enabling of trading and exchange etc., which open up individual game patterns for the player.

These expanded areas of game interaction ensure that, for example, the multiplayer universe *E.V.E. Online* (2003) allows for calling on the 'Space Pope' – a player who gained a certain fame in the game by behaving very differently to the vast majority of other players. While many of *E.V.E. Online*'s game plots are focused on the planning and execution of interstellar campaigns and battles, the Space Pope stands ready when players seek help, mediation, or advice. The rules of *E.V.E. Online* enable such user behavior and open up the game space in which a mediating space pastor can exist.

The complexity of the design of game spaces is growing steadily. The biggest challenges so far are Open World Games, in which huge continuous areas can be traversed, with goals individually set and with seemingly free decisions. The virtual topographies of a variety of landscapes blend into each other seamlessly, referencing the most precise nature studies. Where could the formal principles of game rules be spotted in such overwhelming spatial designs?

The answer is provided by the narrative of this genre which features the tension between curious exploration and surprising conflict: in support of this concept, such virtual landscapes are precisely scaled to bridge the narrative distance between one event location and the next, while the radii in between provide the necessary relaxation and respectively serve to build up the suspense for the next event. When the arrangements of such game spaces are examined from a bird's eye view, the homogenous distribution of narrative focus points (settlements, landmarks, cave entrances, etc.) immediately stands out.

Such design principles are particularly evident in so-called 'Battle Royal Games', a sub-genre of Open World Games that intensifies the dependencies be-

tween game rules and game spaces (Fortnite 2017; Playerunknown's Battlegrounds 2017). Here, dozens of opponents compete in an open world terrain, with the goal of the game being the "Last Man Standing" – only the player or the team wins that survives all in-game conflicts until the end of the gaming session. A dramatic escalation of the gameplay is achieved by two conflicting conditions: the equipment necessary to win the conflicts must first be found, and it is scattered over a large playing area at the beginning of the game. There is a circular playing area, which, after a while, continuously becomes smaller and slowly shrinks to a random point. Consequently, the conflict becomes more and more inevitable until, at the end of the game, the remaining best players confront each other at close range.

How could this dramatic game genre be set up if the design of the game space was not exactly matched with the design of the game rules? The finely balanced set of offensive and defensive options would be completely useless if the design of the environment did not provide a unique typology of surprising covers or mercilessly defenseless areas.

THE PLAYER'S EXPERIENCE, COURTESY OF THE DIRECTOR OF PHOTOGRAPHY

The experience of game spaces does not only depend on the spatial layout of game levels. A further, particularly determining effect results from the way in which the (spatial) model of a game world is converted into a visual experience.

To create this experience, does the game use pre-produced images with exactly arranged graphical layouts? Does the experience depend on a continuous, individually determinable stream of images, which is rendered by the computer at the moment of action? Do the images obey the geometric laws of an axonometric or perspective projection – or do they follow another visual logic? Does the camera have a sort of life of its own, automatically reacting to player actions with pans, zooms and other optical effects – or can it be controlled as precisely as the game avatar itself? What stylistic means did the virtual lens inherit from photography or film – or why else would you experience the 'Vertigo Effect' as soon as you step on the gas pedal during a racing game? Which hybrid aesthetics emerge from the combination of two-dimensional with three-dimensional visualizations, and to what extent do they follow on from technology used in animated cartoons?

The experience of the close relationship between game rules and game spaces is defined by yet another factor. It is subject to the form of visual presentation, which ultimately determines the quality of the interactive experience.

It is easy to get an idea of how much game genres depend on their visual representation, if you swap or combine typical visual representations of different game genres in your mind. Who would ever have played a racing game in the form of a point'n'click game? A strategy game without a general overview? A horror game from a bird's eye perspective?

In the social simulation game *Sims 4* (2014), the game space functions as the carrier of a complex set of rules for creative, narrative, social and economic gameplay. Which methods of visualization typical of the genre did the virtual camera of *Sims 4* borrow from the strategy game or from the film drama, and how does it unite these different aspects?

FROM EXPERIMENT THROUGH PERFECTION TO BOREDOM – AND BACK?

It is tempting to conclude that topics, plots and visualizations of games are getting ever closer connected to each other and, eventually, will lead to a clearly defined range of game experiences: game rules depend on the plots and are closely related to the design of game spaces, which in turn must be presented in a certain way to guarantee their playability. The present technologies provide visually stunning, almost hermetically perfect examples for this assumption. These compelling imageries seem to be the result of optimized combinations of game genre, game rules and game spaces.

However, this conclusion contradicts the fact that the still rather young medium of video games has developed rapidly in a very short time, today offering possibilities that would have been unthinkable just a few years ago. But relying on the sheer power of visual persuasion of the seemingly perfect imagery also seems to harbor a certain danger for the development of games, because it diminishes the vital feed of curiosity and experimentation. Could that be the reason behind the formal similarities of many of today's games, even though their productions are getting more and more elaborate?

How can future game design open up once again the tight connection between game rules and game spaces, to make way for unknown combinations instead of simply refining well-known clichés? Indeed, a puzzle adventure doesn't always need to take place in a quiet, contemplative setting, it could also be hectic and stressful. A shooter doesn't always need to be set up in a three-dimensional

space with direct lines of sight between the opponents. A setting such as 'speed competition' doesn't naturally need to result in a high-speed racetrack, with players training their drifting skills.

The question is whether breaking up such conventions is in fact an impossible task or whether it only appears to make no sense at first sight. If the latter is the case it might simply be the typical start of a new design task in which creative solutions must be sought until new purposes and user cases arise. To return once more to comparing the design of virtual worlds with real environments: here too, the aim is to shape behavioral standards through innovative design, which then leads to a new code of conduct.

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