This is an Author's Manuscript (version 1) of the article later published in *Games and Culture: A Journal of Interactive Media*. The full reference: Stamenković, Dušan and Milan Jaćević (2015). "Time, Space and Motion in Braid: A Cognitive Semantic Approach to a Video Game". *Games and Culture: A Journal of Interactive Media* 10 (2): 178–203. DOI 10.1177/1555412014557640, ISSN 1555-4120 [copyright Sage Journals], available online at: http://gac.sagepub.com/content/10/2/178

Time, space and motion in *Braid*: a cognitive semantic approach to a video game

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Abstract. The paper (1) analyses the computer game *Braid* with regard to the TIME IS SPACE/MOTION metaphor and the multimodal approach, (2) links the possibilities of such a study to the existing studies of temporality in video games, and (3) explores the link between the game's narrative and its gameplay mechanics based on the TIME IS SPACE/MOTION metaphor. The theoretical section briefly overviews Conceptual Metaphor Theory, the TIME IS SPACE/MOTION metaphor, multimodality, CMT in video games, time in video games, as well as several studies related to the game. The main section investigates Braid so as to evaluate the ways in which the TIME IS SPACE/MOTION metaphor operates within each of the game worlds and how this affects the narrative and the gameplay. The complex, unconventional relations existing among time,

space, motion and causality result in a unique coupling between the narrative and the use of the TIME IS SPACE/MOTION metaphor.

Key words: video gaming, cognition, time, space, narrative, gameplay, causality, motion,

1. Introductory Remarks: Aims and Methodology

The main aim of the paper is to investigate the ways in which the TIME IS SPACE/MOTION conceptual metaphor functions in *Braid*, a platform and puzzle video game with a peculiar narrative developed by Jonathan Blow and released in 2008 – the game which deconstructs the traditional gameplay concepts with a new approach to time, space, motion and causality. The paper will try to link the metaphor analysis to the existing studies in the domain of game temporality, as well as to explore the link between *Braid*'s narrative and its gameplay mechanics based on the mentioned metaphor. Being revolutionary in a number of aspects, it can be approached from the perspective of Lakoff's and Johnson's *Conceptual Metaphor Theory* (Lakoff and Johnson, 1980) and analysed with regard to the multimodal approach to metaphor, developed by Forceville (2005, 2006, 2011). The methodology will consist of analysing the links between time, space and causality in each of the game's sections (*Time and Forgiveness*, *Time and Mystery, Time and Place, Time and Decision, Hesitance* and *1*.) and an overall analysis of the gameplay and time mechanics in the game.

2. Theoretical Framework

2. 1. Conceptual Metaphor Theory

The basis of the study is *Conceptual Metaphor Theory* (CMT), one of the main vehicles of cognitive semantics. It was developed by George Lakoff and Mark Johnson in *Metaphors We Live By* (Lakoff and Johnson, 1980) – the book which gave rise to an embodied approach to metaphor, within which it was no longer seen as a decorative addition to ordinary language, but as a cognitive mechanism which has the central role in thought and language (Saeed, 2002, pp. 345–346). The key tenets of this theory were later incorporated in the philosophical approach called *experientialism* (e.g. Lakoff, 1987; Lakoff and Johnson, 1999). Lakoff and Johnson describe the essence of metaphor as "understanding and experiencing one kind of thing in terms of another" (Lakoff and Johnson, 1980, p. 5). Therefore, one of the fundamental notions of CMT is ontological *mapping*, where the features of *the source domain* are said to map onto the features of *the target domain*. Conceptual metaphors are systematic, asymmetrical (directional) and based on abstraction: they systematically transfer features of a more concrete source to a more abstract target in order to structure it and facilitate its understanding (Saeed, 2002, pp. 348–349). According to CMT, metaphors provide rich evidence about the ways in which some aspects of our lived experience are associated with others, for reasons that reflect basic aspects of perception, thought and neurological organization (Grady, 2007, pp. 188–189). Lakoff and Johnson (1980, pp. 14ff, 25ff, 117ff) analyse three types of conceptual metaphors: (1) orientational metaphors, which relate abstract concepts to spatial orientation based on the structure of our bodies and their interaction with the

environment; (2) ontological metaphors, which rely on ways of viewing insubstantial concepts, such as emotions, activities and ideas as entities (these metaphors attach spatial forms to those concepts which do not have being, so as to facilitate their cognitive manipulation); (3) structural metaphors, which require us to transfer a whole domain of experience to another domain, where the more abstract domain acquires the structure of the source domain. This means that abstract conceptual domains will frequently be structured through metaphorical mappings from domains grounded directly in experience (Boroditsky, 2000, p. 1).

2. 2. TIME IS SPACE/MOTION

When it comes to our study, the key metaphor seems to be TIME IS SPACE – one of the crucial metaphors for the human species (see Radden, 2011), as it involves the conceptualization of an abstract, yet very important notion of TIME, which represents the target domain. The source domain, SPACE, is equally important, as spatial representations have proved to be primary when it comes to conceptualization – it can be tracked both in historical language change (Sweetser, 1991) and language and concept acquisition by children (e.g., Bowerman, 1983; Mandler, 2004, 2008; Landau, Dessalegn and Goldberg, 2010; Stamenković, Bennett and Antović 2014). In accordance with this, Radden suggests that "the most important metaphorical source domain is that of SPACE, and the conceptual metaphor TIME AS SPACE is conceptually well-motivated", though we have to bear in mind that the topologies of space and time do differ in some respects: "in particular, space is three-dimensional, while time is thought of as one-dimensional"

(Radden, 2003, p. 13). The result of this is that we can encounter a considerable degree of variation in the mappings of particular structural elements. In a set of experimental procedures, Lera Boroditsky (2000) proved that space and time share enough relational structure to allow the source spatial schemas to be used as easily as the target temporal schemas to organize events in time. This allows us to use spatial events relations to describe temporal events without any conscious effort. Boroditsky claims that "recent cross-linguistic evidence shows that if spatiotemporal metaphors differ, so do people's conceptions of time", which suggests that "spatial relational structure [can] be imported (as by analogy) to the domain of time" (Boroditsky, 2000, p. 26). This has been proven by additional psycholinguistic evidence (e.g. Boroditsky and Ramscar, 2002; Nuñez and Sweetser, 2006; Torralbo, Santiago and Lupiañez, 2006). In 2008, Casasanto and Boroditsky used the empirical data from six psychophysical experiments testing "the separability of distance and duration in human judgments" (Casasanto and Boroditsky, 2008, p. 581) in order to check whether the asymmetrical relationship between space and time is limited to patterns in language or whether it extends to other domains, proving that people incorporated irrelevant spatial information into their temporal judgments even in those tasks that did not involve any linguistic stimuli or responses (Casasanto and Boroditsky, 2008, p. 591). The TIME IS SPACE metaphor is usually regarded as being structural, though we may see that there are ontological elements related to it as well (with a non-spatial concept becoming spatial). Along the lines of the invariance principle (Turner, 1990; Lakoff, 1993), according to which "metaphorical mappings preserve the cognitive topology (that is, the image schematic structure) of the source domain, in a way

consistent with the inherent structure of the target domain (Lakoff, 1993, p. 125), we may say that the highly schematic structure of the domain of SPACE can successfully map onto very many elements of the domain of TIME, which seems to be in need of structure, as structure can facilitate its understanding.

There is a set of structural metaphors closely related to TIME IS SPACE. In Kövecses's *Metaphor: A Practical Introduction* (2002) we first encounter TIME IS MOTION, which allows us to understand time in terms of physical objects, their locations and their motion. Kövecses mentions another two metaphors rooted in TIME IS MOTION, and calls them "two special cases" and relates them to examples from English. The first one is called TIME PASSING IS MOTION OF AN OBJECT and exemplified by expressions such as "The time will come when..."; "The time has long since gone when..." and "The time for action has arrived." The second one he names TIME PASSING IS AN OBSERVER'S MOTION OVER A LANDSCAPE and provides examples such as "There's going to be trouble along the road"; "He passed the time happily" and "We're coming up on Christmas." Kövecses clarifies that "the mappings not only explain why the particular expressions mean what they do, but they also provide a basic overall structure, hence understanding, for our notion of time" (Kövecses, 2002, pp. 33–34).

Spatio-temporal metaphors are based on two main schemas of motion in space, Object-Moving Metaphor (OM) and Ego-Moving Metaphor (EM), and correspondingly, two schemas of motion in time, Time-Moving Metaphor (TM) and Ego-Moving Metaphor (EM) (Lakoff and Johnson, 1999; McGlone and Harding, 1998; Alloway, Ramscar and Corley 2001, 2006; Mylov, 2002). In the Object/Time-Moving metaphor

schemas, the individual is seen as stationary – objects come toward him and the future is moving or flowing to the past – in such a configuration, the term *front* is assigned to whatever comes closest to the observer. In the Ego-Moving spatio-temporal metaphor schemas, the individual is moving, whereas objects are stationary and the individual is moving through time – here, the term front would be assigned to the object which is furthest away, while the future will be in front of the observer. Starting from the fact that the differences between the two spatio-temporal schemas seem to be psychologically real and experimentally confirmed (Gentner and Imai, 1992; McGlone and Harding, 1998), Alloway, Ramscar and Corley (2001) set out to explore the effect of a virtual spatial environment on the responses related to the ambiguous temporal question: *Next Wednesday's meeting has been moved forward two days – what day is the meeting now?* By employing two experimental procedures, the authors proved that explicitly thinking about space "could significantly reverse a task bias to assign FORWARD in an ego-moving manner" (Alloway, Ramscar and Corley 2001: 6). The methodological decision to test the two schemas using virtual space seems to be completely sound – Mylov (2002: 66) concludes that virtual space allows us to experience the surroundings in both the time-moving and the ego-moving perspective. Alloway's, Ramscar's and Corley's study showed that pure embodied priming did not have significant influence on embodied thought, which, in turn, means that one has to take into consideration one's cultural and linguistic background along with the information that comes from physical experience. Although we are able to build abstract concepts analogically from experience-based knowledge, "it is not sensorimotor spatial experience per se that influences people's

thinking about time, but rather people's representations of and thinking about their spatial experience" (Boroditsky and Ramscar, 2002, p. 185). In his comprehensive exploration of space, time and spatio-temporal expressions, Mylov (2002) notes that movement is what makes time emerge from our experience of space. No matter whether we take the approach based on metaphor or mere similarity between the domains of space and time, "space is a fundamental domain for time and the spatiotemporal expressions", space offering an accessible way to the perceptual system, and time being conceptually and linguistically dependent on space (Mylov, 2002, p. 66).

2. 3. Multimodal Metaphor

Casasanto's and Boroditsky's findings from the previous section go hand in hand with the multimodal approach to the study of metaphor, developed by Forceville and his associates (e.g. Forceville, 2005, 2006, 2011; Forceville and Urios-Aparisi, 2009; Bounegru and Forceville, 2011). Forceville and Urios-Aparisi (2009, p. 4) stress the importance of confirming the principles of CMT in other, non-linguistic domains, claiming that "if researching non-verbal and not-purely-verbal metaphor does not yield robust findings, this jeopardizes the Lakoff-and-Johnsonian presupposition that we think metaphorically." In another paper, Bounegru and Forceville (2011, pp. 209–210) state that "[...] further assessment [of CMT] requires that analyses are extended from mere verbal discourse [...] to pictorial and multimodal discourse" and that it is important "to focus such analyses on discourses in a specific genre since genre is a crucial framing device governing the interpretation of metaphors" (Bounegru and Forceville, 2011, pp.

209–210). On the whole, if we claim that metaphors are conceptual and not purely linguistic, we have to be able to find them in other domains. This was proved to be true in the domain of vision, in various studies of visual metaphors, pictograms and runes (e.g. Forceville, 1996; 2011; Kennedy, 1982; Shinohara and Matsunaka, 2009; Tasić and Stamenković, 2013) and the domain of music (e.g. Cox, 1999; Antović, 2009). The study of cognition across domains can be found in the conceptual school as well (i.e. Jackendoff, 2011; Cohn, 2012, 2013). When it comes to the visual domain and the field of comics in particular, Cohn (2012, 2013) aims at proving that the narrative structure which organizes sequential images is the same structure that organizes sequences of clauses and sentences into a narrative in verbal discourse and film. The analogy between the structure and processing of visual narratives and the structure and processing of sentences speaks of their similar link to the conceptual structure they both "evoke".

The purpose of our study is to further extend the study of multimodal metaphor to the analysis of video games along the lines of Kromhout's and Forceville's work (2013), which means that it will mostly deal with the domain of vision (and take into consideration the role of the game's sounds when needed). *Braid* seems to be more than suitable for this purpose due to the fact that it contains a set of peculiarities stemming from the way in which the game "plays with" the TIME IS SPACE/MOTION metaphor and a set of conventions related to it.

2. 4. Video Games and CMT

Conceptual Metaphor Theory combined with Image Schema Theory has previously been applied to the medium of video games by Kromhout and Forceville (2013), who analysed the SOURCE-PATH-GOAL image schema and the possibilities for the mapping of the metaphor PURPOSIVE ACTIVITY IS MOVING FORWARD TOWARD A DESTINATION (or LIFE IS A JOURNEY) in three video games: *Half-Life 2*, *Heavy Rain* and *Grim Fandango*. The authors' intention was to show the similarities and differences between video games involving movement and quests of the player's avatar, such as first-person shooters or adventure games, and stories which centre on the journey of one or more protagonists, such as those featured in animated and documentary journey films and road movies. To this end, Kromhout and Forceville analysed the potential for mappings between the domains of JOURNEY, QUEST and STORY in the three aforementioned games, comparing and contrasting them to previous research dealing with journey-stories on film. According to Kromhout and Forceville, both journey-stories and video games involving the avatar's movement are based on the SOURCE-PATH-GOAL (SPG) schema, which forms the basis for simple mappings from MOVEMENT FORWARD to PURPOSIVE ACTIVITY or QUEST. However, while journey-stories promote metaphorical mappings between the domains of JOURNEY and QUEST, video games conflate the two – in other words, in the stories the JOURNEY metaphorically comments on the QUEST, while in video games the two are roughly the same. Further differences arise when it comes to the domain of STORY. In video games, as Kromhout and Forceville argue, the quality of gameplay seems to be inversely proportional to the quality of the narrative, which is mainly conveyed

through non- or minimally interactive cutscenes. Finally, journey-stories on film by and large feature much richer metaphorical mappings between the domains of JOURNEY and STORY than video games. The authors ascribe the impoverished mappings in video games to the fact that the medium is not narrated like stories or films; the absence of narrative agency hinders the medium's ability to tell complex, engaging and meaningful stories with resonant motifs and well-developed characters and relationships.

While Kromhout and Forceville mention first-person shooters and adventure games as two representative genres of games involving an avatar's movement, we would like to note that side-scrolling platform games such as *Braid* also hold ample potential for the analysis of the SPG schema, since they feature movement along a path and navigation of various obstacles in pursuit of a particular objective.

2. 5. Temporality in Video Games

There have been studies connecting video games and interactive narratives to various aspects of human cognition and embodiment (e.g. Newman, 2004; Cogburn and Silcox, 2009; Chow and Harrell, 2010; Van Eck, 2010; Rush, 2011; Ciccoricco, 2012), at the same time many of them covered the notion of time and time perception and cognition in videogames (e.g. Aarseth, 1999; Eskelinen, 2001; Juul, 2004; Lindley, 2005; Hitchens, 2006; Atkins, 2007; Nitsche, 2007; Elverdam and Aarseth, 2007; Tychsen and Hitchens, 2007, 2009; Lainema, 2010; Zagal and Mateas, 2010). Video games belong to what Aarseth (1999, p. 32) dubs "ergodic discourse" – in them, the experienced sequence of signs building the game is usually not fixed, nor predetermined by the author – it rather

depends on the steps the player takes in the process of activating one of the potential routes, which makes them different from a vast majority of novels, comics or films. Within this type of discourse, the time of the audience is relevant, as it is "an intrinsic part of the realization of the work" – ergodic time largely depends on the user's actions, the event time being the basic level of ergodic time. Eskelinen's early contribution to game studies (Eskelinen, 2001) also involves an account of temporality in video games, where the player comes across phenomena or events with different durations, speeds, orders, and frequencies. According to him, the dominant temporal relation in video games is "the one between user time (the actions of the player) and event time (the happenings of the game), whereas in narratives it's situated between story time (the time of the events told) and discourse time (the time of the telling)." The author suggests that temporalities in video games can be manipulated and that the level of manipulation might vary from game to game.

In his *Introduction to Game Time*, Juul (2004) goes one step further and develops a model of time in games, involving notions such as *game state* (at a given time), *play time* (the time used by the player to play the game), *event time* (the time of the events in the game), *mapping* (a projection of the play time onto event time), *speed* (the relation between the play time and the event time), *fixation* (the historical time) and *cut scenes* (when the event time is used up by narration). Based on how temporality functions in a game, Juul differentiates between abstract games (such as *Tetris*) and real time games (such as *Unreal Tournament*). The relation between the play time and the event time is determined by the way one is mapped onto the other – whereas action games usually have

a 1:1 mapping of the play time to the event time, there are others (such as *SimCity* or *The Sims*) where the game speed can be selected, which specifies the mapping of the play time onto the event time (the notion of mapping has been thoroughly discussed in Nitsche, 2007). Juul's theory allows for some standard violations of game time – these include pausing the play time, saving the game, or setting the speed. For Lindley (2005), video game (ludic) systems are time-based, with temporal structure even being a major determinant of the player's experience of the game, no matter whether we take the structural or experiential account. Nitsche (2007) believes that the space-time relationship in this context can even help us facilitate the differences between the two accounts. Lindley elaborates that ludic systems involve four levels of temporal structure: *the discourse level* (the level at which a plot is revealed by means of discursive episodes), *the performance level* (the level at which the player is an active participant in the game world), *the simulation level* (the level at which the logic and parameters of a game and the choices of the player determine a represented world), and *the level of the generative substrate* (the level of functions, rules and constraints created by the designers). In an attempt to develop a more detailed view of time, Elverdam and Aarseth (2007) define two metacategories of time – *external time* and *internal time*. External time has two dimensions – *teleology* (which describes if the game is finite or infinite) and *representation* (which describes whether time is represented in a mimetic or an arbitrary manner). Internal time has three dimensions – *haste* (which describes whether the passage of external time alters the game state), *synchronicity* (defines if simultaneous player

action is allowed) and *interval control* (which determines whether a player has control of the game time).

Hitchens's (2006) model of video game time also involves four layers, though they are differently structured in comparison to Lindley's approach: *playing time* (the real-world time), *engine time* (the time in which a game engine executes), *progress time* (related to the game completion) and *world time* (abstract time within the game world). Based on these findings, in their study of time modelling in multi-player and massively multi-player role playing games, Tychsen and Hitchens (2007, 2009) propose seven layers, that model both the player–game interaction and interaction between players: *playing time* (a measure of game time from the player's viewpoint), *engine time* (the perspective of the game engine running the game), *server time* (the time which links playing time to engine time), *progress time* (an abstract view of game time, which models the progress of the player), *story time* (the logical time of the story in the game), *world time* (the time in the game world), and *perceived time* (as viewed from the perspective of the player). Perhaps the most comprehensive approach to time in video games is given in Zagal's and Mateas's *Time in video games: a survey and analysis* (2010). Their study belongs to the larger framework of *Game Ontology Project* (Zagal et al., 2005), and although the authors label the approach as "structural and descriptive" it is inevitably interwoven with the experiential view of time, which links time to motion and space. Whereas Tychsen and Hitchens (2007, 2009) talk about time *layers* in video games, Zagal and Mateas (2010) develop a system of *temporal frames* relevant to analysing video games. These frames include *real-world time* (established by the set of events

taking place in the physical world), *gameworld time* (established by the set of events taking place within the gameworld), *coordination time* (established by the set of events that coordinate the actions of multiple players), and *fictive time* (established through the application of sociocultural labels, such as calendars to a subset of events or associating the game with a historical narrative). The tool composed of these frames allows us to identify different flows of time in different frames, to examine interactions between frames, and to examine games that allow time manipulation leaving enough space for defining new temporal frames. Temporal frames may appear sequentially, overlap, coexist and be embedded in each other (like mini-games or puzzles). If there are inconsistent, dissonant, or contradictory relations between temporal frames, we encounter temporal anomalies – temporal bubbles, temporal warping, non-uniform temporality and hardware-related issues. Furthermore, Zagal and Mateas mention those games in which temporality can be used as an element of gameplay – in these cases, the player can pause, start and stop or even rewind gameworld time, manipulate coordination time, the fictive frame, and the relation between gameworld and real-world frames, as well as the relation between gameworld frames.

3. *Braid*: A New Approach to Platform and Puzzle Gaming, Narrative, and Game Temporality

In terms of gameplay mechanics, and especially when compared to its contemporaries, *Braid* is a rather simple platform video game. At first glance, it is similar to the popular *Super Mario Bros.* series – the player controls a character by the name of

Tim, who moves on a two-dimensional plane and has the ability to jump. The majority of the game takes place in a house, consisting of several rooms which constitute different "worlds". Each world entails a lobby area, containing several books on pedestals which the player can open and read or just pass by and which contain the game's textual narrative, as well as a series of rooms representing individual "levels" where the bulk of the game takes place. Tim traverses these rooms, jumps on enemies and tries to solve puzzles in order to collect different jigsaw pieces, which, when put together, form a watercolour painting, one of which is located at the entrance to each world. Judging by gameplay alone, the implied goal of the game is to collect all the puzzle pieces and form all the paintings, or, in other words, to complete each and every level, much like in many other platform games. What differentiates the mechanics of *Braid* from other games of the genre – which usually give the player a number of lives and force them to avoid making mistakes during play – is the ability to rewind time at the press of a key, to as far back as the beginning of a particular level. Besides being a key element of gameplay, control over time is the dominant theme in the game's narrative as well, which is presented primarily in the form of texts which appear in the lobby area of every world.

Braid has been studied from a number of perspectives, some of which are linked to its temporality. Zagal and Mateas (2010, p. 858) discuss *Braid* within the section of their paper dealing with relations between gameworld frames – namely, the authors note that there are game designers which add gameplay significance to the interaction between earlier and current gameplay – in *Braid*, *Cursor*10*, and *Timebot* one can interact with the ghost of their character. Sicart (2011) discusses Jonathan Blow and *Braid* as "the

most interesting case of appropriation of the proceduralist discourse in terms of game design," due to the fact that Blow stressed the importance of games for helping players grow personally. The author claims that Blow's position is still that of a proceduralist, as rules and meaning in the game are created by the puzzles themselves. Arnott (2012) compares the semiotic features of *Braid* to a set of similar elements in Perec's *Life A User's Manual* (1987); he analyses how unconventional, non-linear narrative fiction can help explain the ways in which video games signify, concluding that "a medium's prevalence toward one form of signification (narrative or ludic) does not exclude other forms working in concert, and that it would be a mistake to assume otherwise" (Arnott, 2012, p. 439). In exploring the new sensorium video games can open up, Jagoda (2013) analyses *Braid*, claiming that the game "adopts the affordances of game form to develop a formally experimental analytic of processing – one that is aesthetic, affective, and interactively experiential" and "interrogates the impulses that drive videogames and the historical subjects that they produce" (Jagoda, 2013, p. 745).

When viewed against the mentioned studies of temporality in video games, a CMT analysis of *Braid* might elaborate on a number of discussed issues. Within Aarseth's discussion of ergodic discourse, our analysis might shed more light onto how the user's actions affect ergodic time; as far as Eskelinen's (2001) discussion is concerned, our study might contribute to exploring the dominant temporal relation between user time and event time; it can add to Juul's (2004) exploration of standard violations of game time or affect the balance which might be present in the simulation level of various games (as seen by Lindley, 2005). Elverdam's and Aarseth's (2007) discussion of *external* and

internal time might get a new level of exemplification, as *Braid* seems more than interesting when it comes to discussing *teleology*, *haste* and especially *interval control*, which determines if the player can control the game time. The complex game time mechanism in *Braid* might test the links existing between playing, progress, story, world and perceived time in Tychsen's and Hitchens's (2007, 2009) seven-layer game time configuration. Finally, although *Braid* is briefly mentioned in Zagal and Mateas (2010), an analysis of the game based on CMT might elaborate on very many aspects of time manipulation and using temporality as an element of gameplay. The fact that the time mechanism in *Braid* seems complicated, but can easily be understood and endorsed speaks in favour of the fact that the TIME IS SPACE/MOTION metaphor is deeply rooted in our cognition.

4. Time, Space and Motion in *Braid*

As much as a game can, *Braid* begins *in medias res*; once the player starts the game for the first time, he is presented with a silhouette of Tim standing on a bridge set against the blurry Impressionistic backdrop of a burning city. The theme of progress is evoked even here, at the very beginning of the game. The player is free to move both left and right, but, the path to the left being blocked by darkness, his only choice is to go right – a direction conventionally associated with progress (since almost all two-dimensional platform games involve the player moving to the right until they reach their goal) and the SOURCE-PATH-GOAL image schema, which, in turn, is linked to the common representation of time flow in the Western world. After crossing the bridge, the player

arrives to a house, inside of which most of the game will take place (Picture 1). The very first world that the player can enter is, from the outside, conspicuously labelled "World 2" and its lobby contains its full title, *Time and Forgiveness*. Here, the narrative premise of the game is first presented, in three short sentences located in the first book that the player opens:

> "Tim is off on a search to rescue the Princess. She has been snatched by a horrible and evil monster.
>
> This happened because Tim made a mistake."

Picture 1. *Tim's house as the hub to each of the game's worlds.*

© Blow, J. (2008). *Braid*. (art. Hellman, D.). Number None Inc.

The first two lines set up the roles of the characters in the game quite clearly – much like Mario, Tim is on a quest to rescue a distressed damsel, held captive by a monster, described both as "horrible" and "evil." However, the third line is interesting, because it clearly tells the player that Tim is the one responsible for the Princess being "snatched" because he had made "a mistake" which led to him losing her.

Other books in the lobby of World 2 give further insight into the events that transpired prior to the start of Tim's search. They explain his dissatisfaction with not having been able to alter his actions and undo the mistakes in his relationship with the Princess during their time together:

> "[…] Our world, with its rules of causality, has trained us to be miserly with forgiveness. By forgiving them too readily, we can be badly hurt. But if we've learned from a mistake and became better for it, shouldn't we be rewarded for the learning, rather than punished for the mistake? […] What if our world worked differently? Suppose we could tell her: 'I didn't mean what I just said,' and she would say: 'It's okay, I understand,' and she would not turn away, and life would really proceed as though we had never said that thing? We could remove the damage but still be wiser for the experience. […] Tim and the Princess lounge in the castle garden, laughing together, giving names to the colorful birds. Their mistakes are hidden from each other, tucked away between the folds of time, safe."

Control over time seems to be the central theme of the game – it allows Tim to circumvent the principle of causality, very frequently linked to events stemming from the TIME IS SPACE/MOTION metaphor and its conventional features. The narrative theme ties in with the general mechanic of the gameplay – by pressing the Shift key, the player can rewind time, correct the mistake and therefore escape death or any bad gameplay decision. In terms of Elverdam's and Aarseth's (2007) discussion regarding the dimensions of internal game time, this means that the player is able to exercise interval control (i.e. manipulate game time) in order to suspend haste. Although there are other games in which game time can be manipulated (e.g. *bullet time* in *Max Payne* or *the Vault-Tec Assisted Targeting System* in *Fallout 3* and *Fallout: New Vegas*) and even

rewound just like in *Braid* (e.g. *Prince of Persia: Sands of Time*, see Atkins, 2007 for discussion), *Braid* seems to be more focused on the issue of temporality and the relation between space, time and causality, and the names of each of the worlds confirm it. The ability to rewind time in *Braid* clearly violates the conventional rules and principles of causality. In this way, *Braid* makes use of what McGlone and Harding (1998, p. 1211) called "an intimate linguistic relationship between time and space", though in this case the relation is rather conceptual. Time rewinding consists of Tim moving backwards, which is a clear example of the TIME IS SPACE/MOTION metaphor. Time manipulation is accompanied by the game sounds being rewound, which adds another dimension to the whole procedure – the semiotic effect is here intensified in the process of blending. Unlike in other platform games, the player has no extra lives in *Braid*, because he does not need them – the ability to rewind and repeat actions makes death an impossibility. The transgression against "the natural order" of time mentioned in the narrative is constantly performed during gameplay with the basis in the manipulation of the conventions we associate with the TIME IS SPACE/MOTION metaphor and the principles of causality; the player can make as many mistakes as he likes without worrying about their consequences, because he can simply undo his actions by going backwards (rewinding time). However, the later worlds show that Tim's simple reversal of time and the ability to avoid the consequences of making mistakes in his relationship with the Princess was not enough, and that the control over time had to be expanded. Indeed, each subsequent world introduces an additional degree of time manipulation, both through the textual narrative and through the gameplay, and so the player must understand how the rules of

time in each world work so that he could use them to his advantage and progress further through the game.

Pictures 2 and 3. *World 2 (Time and Forgiveness) and World 3 (Time and Mystery)*.

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World 2, *Time and Forgiveness* (Picture 2), only allows the player to rewind time and thus prevent death; this mechanic is not enforced during play, and the puzzles can be solved without resorting to it. However, World 3, titled *Time and Mystery* (Picture 3), introduces the concept of keys, doors and monsters unaffected by the reversal of time, which at the same time breaks "the natural order" usually associated with the TIME IS SPACE/MOTION metaphors. The player is forced to carefully calculate his route through each level and the way in which he will use the ability to rewind time in order to solve the puzzles and collect all the jigsaw pieces. The following worlds require the player to continuously correct his mistakes and rewind and manipulate gameworld time, and to do so more and more often. World 4, entitled *Time and Place* (Picture 4), as the title suggests, goes even further by merging the concepts of time and space – when the player is moving to the right, time moves forward, when he moves to the left, time moves in

reverse, and when he stops, time stops as well (which might be seen as a result of 'ontological blending'). This seems to be another variation of the TIME IS SPACE metaphor, where the agent is allowed to control time by means of motion – here the game continues to 'fight' causality in a completely new way. Notably, later levels in World 4 include enemies and objects unaffected by the player's movement, which results in added gameplay difficulty. Their introduction partly subverts the metaphor TIME IS SPACE/MOTION and impacts its consistency within World 4. The next world (World 5), labelled *Time and Decision* (Picture 5), introduces the concept of a shadowy doppelgänger, a figure that duplicates the player's previous movement and actions after time is rewound, thus enabling him to perform two sets of actions and effectively be in two places at the same time. This world, along with being another manifestation of the TIME IS SPACE metaphor, can also be viewed from the perspective of theory of *conceptual blending*, being reminiscent of the famous example of the Riddle of the Buddhist monk, used to illustrate the elements of a blend (Fauconnier and Turner 2002: 39–58). Namely, the two Tims can be seen as belonging to two different mental spaces which get blended before our eyes (instead of in our minds).

Pictures 4 and 5. *World 4 (Time and Place) and World 5 (Time and Decision).*

The final world in the lower part of the house, World 6, is simply titled *Hesitance* (Picture 6). In it, the player receives a ring which he can drop at will to create a small field around which the movement of time slows down. At the end of the final level in each world, the player approaches a castle and encounters a dinosaur who tells him that the Princess is – again, much like in the *Super Mario Bros.* series – in another castle, and so both Tim and the player are forced to perpetually move forward in their quests, without ever receiving any answers or encountering the Princess. Moving from one world to the next, the player realizes that Tim's insistence on controlling time and correcting his mistakes slowly turned into an obsession, one which interfered with his relationships with other people. The Princess mentioned in the textual narrative is soon reconceptualised; by World 6, she is no longer depicted only as a person, but as more of an impersonal goal, an overarching metaphor for Tim's aspirations and yearnings which slowly begin to consume his life; it also becomes unclear whether she and Tim were ever together. Yet, neither Tim nor the player stop, but move even further in their search for the Princess, which involves increasingly greater manipulation of time as the player progresses from one world to the next. After the completion of World 6, and providing that all the jigsaw pieces have been found and joined into paintings hanging next to the entrance of each world, the way to the attic and the final world, simply titled *1.* (Picture 7), is opened to the player. In this world (which is simplified in comparison to others as it does not involve the collection of jigsaw pieces, but simply requires the player to figure out the way to progress from one level to the next), the flow of time is inverted. While the player is free to move and perform actions as usual, all other elements of the world move in

reverse (monsters appear out of nowhere and walk backwards, the pulsating scenery depicts volcanoes that devour columns of smoke, background music is played in reverse, etc.). It is only during the times when the player is rewinding his own actions by pressing the Shift key that these elements are normalized. Therefore, the flow of time in this world seems to represent an inversion of the basic principles of the TIME IS SPACE/MOTION metaphor, to which the game has adhered up to that point. From the narrative standpoint, this inversion, combined with the fact that the world the player is exploring is titled *1.*, could be interpreted as a sign that the events witnessed actually took place prior to the start of Tim's quest. However, due to the fact that the core gameplay is still unchanged (meaning that it still involves jumping on monsters and moving forwards from one level of the world to the next), a less observant player might miss the narrative significance of the inversion of the flow of time. It is only in the final level of the world, which manages to effectively use gameplay mechanics for narrative purposes, that this significance becomes obvious.

Pictures 6 and 7. *World 6 (Hesitance) and 1.*

The final level of *1.* is structured similarly to the final levels of worlds in the *Super Mario Bros.* series; the player moves to the right and navigates a long corridor, avoiding traps, fiery pits and monsters. However, in *Braid*, the corridor is divided into two levels, the lower traversed by the player, and the upper by the Princess, who appears to be running from the "horrible and evil" monster mentioned at the beginning of the game (and here rather strangely depicted as a prototypical "knight in shining armour"). The Princess aids the player by pulling levers and lowering drawbridges, which enable him to move forwards. The player is also tasked with pulling levers found along his path in order to remove the obstacles the Princess is facing. In a marked distinction from the rest of the levels in the game, the final level of *Braid* does not focus on the careful and leisurely manipulation of time and objects. Instead, it is presented as a relatively straightforward and highly dynamic run from left to right (the direction traditionally linked to the TIME IS SPACE/MOTION metaphor), complete with a wall of fire chasing the player, in a deliberate effort to take away the player's focus from the fact that the level is still a part of a world in which time flows in reverse. The corridor run ends with the Princess arriving at a small room on the upper level, with a balcony onto which the player can climb. However, upon doing so, the screen flashes and the window into the Princess's room is replaced by a wall, leaving the player unable to physically reach her or move anywhere off-screen. At this point, the player is left with no choice but to use the now-familiar mechanic of rewinding time. Doing so initiates a sequence which shows the entire corridor run in reverse, with the Princess moving to the left, pursued by Tim, both of them trying to hinder one another's progress along the way. In accordance with the reversion, the

sequence ends with the Princess being rescued by the "monstrous" knight. After a brief epilogue consisting of a series of rooms and several books containing more of the game's textual narrative, the player once again arrives at the bridge where the game started, emerging from the side previously covered in darkness, and is free to explore any and all of the worlds once again.

The narrative twist in the final level of *Braid* is wholly dependent on the manipulation of the TIME IS SPACE/MOTION metaphor – as previously noted, the dynamic nature of the final level of the game serves to focus the player's attention on his own actions and movements, thereby lowering the chances of the inverted variant of the metaphor being triggered through the pictorial and the musical mode. The direction of the player's movement (from left to right) still adheres to the standard principles of the TIME IS SPACE/MOTION metaphor, and is not in line with the other modes, which signal the inverted variant of the metaphor. Therefore, because of this dissonance, the metaphor can be considered only partially inverted (that is to say, not all modes trigger the inverted variant). The same is true of the reverse corridor run – the pictorial and the mode of music now signal the standard variant of the metaphor, while the movements of characters, from right to left, signal the inverted variant. Once again, the final world can be seen from the perspective of conceptual blending, where Tim's movement and the passage of time belong to two different mental spaces or inputs and get merged into the blended space in which the components of space and time appear to be dissonant.

Coupled with the facts that *Braid*'s textual narrative is, at best, chronologically ambiguous, and that the game ends in the same place it began, the partial inversion of the

conventional metaphor facilitates (at least) two possible narrative interpretations. In one of them, the inverted time flow in world *1.* is inconsequential to the flow of the story – to use the terminology of Tychsen and Hitchens (2007, 2009), the reversal in the flow of World Time does not impact the flow of Story Time. Tim's quest is therefore ultimately left unresolved due to the fact that the player can't reach the Princess at the end of the final level. At this point, the conventional linear structure usually associated with platform games becomes fairly circular. The cyclic nature of the game implies that Tim is, in fact, forever doomed to be chasing after the Princess, only to never actually reach her. The second interpretation assumes that the flow of World Time in world *1.* corresponds to the flow of Story Time. According to this view, in moving forwards from one level of *1.* to the next, the player is actually moving *backwards* story-wise. Therefore, the reverse corridor run represents the normal narrative chain of events (as supported by the fact that the elements of the world which previously moved in reverse – monsters, background images and music – become normalized during the sequence). Chronologically speaking, in this context, the events of world *1.* precede that of the other worlds, which is also supported by the fact that the game ends where it began, on the bridge leading to the house and other worlds, numbered "2" through "6". The reverse corridor run reveals that the Princess escaped from Tim and that the monster mentioned at the beginning of the game was, in fact, him all along. According to this interpretation, one may say that Tim's quest for the Princess is symptomatic of his obsession over her, the same obsession which caused her to run away from him in the first place. While it is ultimately up to the player to interpret the events of the game as he sees fit (with there

being no singular and absolute way to do so) it is important to note that the very possibility of multiple "readings" of the game stems from the close link between the narrative structure and gameplay mechanics (the content and the form of the game), which is a feature rarely present in video games, regardless of their genre. The manipulation of the various modes and principles of the TIME IS SPACE/MOTION metaphor throughout the game, and especially in its final level, is not only used to facilitate a variety of puzzles and ways to solve them, but is also crucial for the establishment, presentation and interpretation of the game's narrative.

It should also be noted that *Braid* features several optional objectives in the form of hidden stars for the player to collect. Five of the seven stars obtainable in Worlds 2 through 6 require the player to master the temporal rules and use them to his advantage, so that he could, through a laborious process of trial and error, precisely time his jumps in order to reach certain hidden platforms. However, in order to collect the sixth star, in World 2, the player has to perform an action that is entirely paradoxical within the context of the game and its main narrative themes – the player has to wait for several hours so that a small cloud, onto which he needs to jump in order to access the hidden zone, would move from the far right area of the level to the far left. Viewed against Tychsen's and Hitchens's (2007, 2009) temporality configuration, this segment of the game sets a rather strange relation among *playing time* (the real-world time), *progress time* (related to the game completion), and *world time* (abstract time within the game world). The same would apply to Zagal's and Mateas's (2010) notions of *real-world time* (established by the set of events taking place in the physical world) and *gameworld time*

(established by the set of events taking place within the gameworld). Both the fact that the player needs to idly spend his time in the level while the cloud moves and the very direction of its movement – from right to left, contrary to the standard Western representation of the SOURCE-PATH-GOAL image schema to which the game otherwise adheres – undermine the game's overall theme of continual progress and invert the usual direction of the TIME IS MOTION metaphor within World 2. Finally, the seventh star, located not in any of the worlds but in the house itself, is inaccessible to the player if he previously arranged the jigsaw pieces found in World 3 and formed the painting found outside of it, because two of the pieces have to be flipped around on the canvas and combined with an area of the frame in order for the star to appear. If the player wishes to obtain this star and has already formed the painting outside of World 3, he will need to restart the game, thus erasing all previous progress, and start again from the very beginning. After the player acquires the seven stars in Worlds 2 through 6, he can manipulate certain switches in the final level by using his ability to rewind time and actually reach the Princess before she enters her room. The instant the player touches her, there is again a bright flash, accompanied by the sound of an explosion. Once the flash subsides, the Princess is again nowhere to be found; all that is left for the player is to collect the final star, located above her bed, and exit to the epilogue area through the door on the far-left end of the upper level.

It is here that we should restate the findings of Kromhout and Forceville (2013) regarding the viability of video games as a storytelling medium – namely, the notions that gameplay and narrative seem to be inversely proportional in complexity, and that the lack

of narrative agency means that video games can only convey relatively simple stories (at least in comparison to the more traditionally narrative-focused media, such as literature or film). While it is true that most video games, including those chosen by Kromhout and Forceville for their analysis, convey their narratives through either non- or minimally interactive cutscenes, or through the use of scripted dialogue between the characters in the game, *Braid* seems to stand out because of the way the ideas from the game's narrative are incorporated into the experience of playing the game. The dominant themes and motifs of *Braid*'s narrative – frustration, desperation, the need for continual progress, the desire to avoid mistakes or correct them, and ultimately, obsession – also resonate rather strongly through gameplay mechanics, different forms of time manipulation, and the structuring of each world and its puzzles. In other words, the fundamental ideas of *Braid*'s narrative are conveyed to the player metaphorically through the very act of playing the game: Tim's obsessive desire to control the flow of time and make up for his mistakes is mimicked in the player's failed attempts at solving the game's puzzles and his instances of discovering and playing with the rules of time in pursuit of a perfect run through each of the game's levels. Furthermore, consider the actions required of the player in order to collect the hidden stars and actually reach the Princess in the final level of the game. To an even greater extent, they too mimic Tim's obsession with correcting his mistakes through the reversal of time. Precise timing required to reach most of the stars means that the first-time player will probably resort to the time-reversal mechanic many times before successfully collecting them. What is more, if the player finds out about the stars after completing World 3 and still wishes to collect them, he will, in a very

dramatic instance of mistake-correction, need to annul his entire progress and restart the game completely, otherwise one of the stars will forever be out of his reach. Finally, Tim's endlessly futile pursuit of the Princess on the narrative level is mimicked by the player's inability to reach any form of endgame. The circular design of *Braid* enables the player to roam the game's worlds and levels even after he completes them all – as Elverdam and Aarseth (2007) would put it, the game is characterized by infinite teleology (i.e. it does not terminate at a fixed time and cannot be "won"). These rather unique symbolic resonances between gameplay and narrative, both built around the variations on the TIME IS SPACE/MOTION metaphor, somewhat undermine the notion that the two are always inversely complex – in *Braid*, the gameplay mechanics and the game's structuring work to *enrich*, not *diminish*, the player's understanding of its traditional textual narrative.

5. Conclusions

The analysis started from the notion that control over time seems to be the central theme of the game and that each subsequent world introduces an additional degree of time manipulation, the manipulation being rooted in playing with conventions related to the TIME IS SPACE/MOTION metaphor. In the first world, the manipulation consists of the possibility which allows the player to rewind time, while the second world introduces the concept of keys, doors and monsters which are unaffected by the reversal of time. In the next world, the player's movement to the right is associated with time moving forward, the movement to the left is linked to time moving in reverse, whereas the lack of motion

stops time. The introduction of a shadowy doppelgänger in the next world duplicates the player's previous movement and actions after time is rewound. The following world contains a small field around which the movement of time slows down. The final world completely inverts the flow of time: while the player is free to move and perform actions ordinarily, all other elements of the world move in reverse. All this makes the gameplay feel utterly unnatural at moments, possibly due to the fact that TIME IS SPACE/MOTION, one of the crucial metaphors when it comes to understanding conceptual system, is being constantly distorted in a number of ways, employing pictorial, auditory and textual means. As the game narrative is mostly driven by the elements which emerge from the structure of the TIME IS SPACE/MOTION metaphor, we may say that in this case the "distance" between the linked narrative and conceptual structure which Cohn talks about seems to be minimal. An important finding seems to be the fact that in *Braid* we have the possibility of multiple readings which derives from the bond between narrative structure and the gameplay mechanics based on the manipulation of the TIME IS SPACE/MOTION, which distinguishes *Braid* from other games that feature time manipulation as a gameplay element. The embodied nature of the TIME IS SPACE/MOTION metaphor and the strong conceptual tie between the two domains seem to strengthen the link between narrative structure and the gameplay mechanics, even in those parts where the consistency of the metaphor seems to be questioned. Time manipulation within the gameplay mechanics enhances the experience of the traditional textual narrative by making it feel more interactive. The analysis has also proved that various elements of *Braid* might serve as good examples when it comes to studying relations existing among Tychsen's and

Hitchens's (2007, 2009) *game time layers*, Zagal's and Mateas's (2010) system of *temporal frames*, and Elverdam's and Aarseth's (2007) *infinite teleology*. Finally, we may also claim that this rather simple qualitative analysis seems to have proved that video games could serve as good corpus sources in the study of multimodal metaphor. This, in turn, means that we have only managed to scratch the surface following the path recently set by Kromhout and Forceville (2013); we hope to see more studies moving in this direction in the future.

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Acknowledgements: The study was supported by the Ministry of Education and Science of the Republic of Serbia and implemented at the University of Niš (the project number 179013). We would like to express our sincere gratitude to Đorđe Vidanović, Mihailo Antović and Miloš Tasić – without their help, this paper would not have been possible. We would also like to thank the anonymous reviewers for their valuable comments and suggestions – they have significantly improved this paper.