The Language Game

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Abstract. With rise of the computer since the 1950's there has been a constant evolution for ways to further enable calculating capacities. It is ironic, that a machine derived with such thoughtful and sophisticated process mathematically, has found a key and increasingly dominant expression in games, which has a reputation for a lack of seriousness. Games continue to rise as a very popular form of interaction. The paper examines the notion of language as a game to partly explain the phenomenon. The paper reflects upon the philosophical writings of Wittgenstein who proposed that language is a game. In addition semiotic analysis, a linguistic meta-tool, will be applied to a game with the aim of shedding light on the usefulness of semiotics in user interaction design.

Keywords: Semiotics: Sign/symbol/icon design and DUXU, Games, Philosophy.

1   Language: A Definition

Just about everybody uses language. When we enter a foreign country and we are deprived of our language we become acutely aware of how important it is. For the purposes of this commentary, the comments made by Saussure [1], a key founder of semiotics, is useful in understanding what language is.

Language is a well-defined object in the heterogeneous mass of speech facts. It can be localized in the limited segment of the speaking-circuit where an auditory image becomes associated with a concept. It is the social side of speech, outside the individual who can never create nor modify it by himself; it exists only by virtue of a sort of contract signed by the members of a community. Moreover, the individual must always serve an apprenticeship in order to learn the functioning of language; a child assimilates it only gradually. It is such a distant thing that a man deprived of the use of speaking retains it provided that he understands the vocal signs that he hears. [1] (Saussure, [1916] 1966, p.14)

There are three facts that Saussure establishes here: firstly language is heterogeneous, meaning that it is complex because of its variety. Secondly he establishes the nature of the personal contract that all language users engage in. Thirdly, he establishes it as a trans-temporal phenomenon, that is, it endures over time, and that it is learnt and stands in this way outside of the individual biological human.

Saussure establishes first that language 'is'; which answers an ontological question of 'how do we know that we are seeing / experiencing anything at all?' The manifestation of the phenomenon of language is established as 'auditory image', referring to the conceptual attachment that occurs with the verbal utterance, an interior activity. What is seen, and what is heard is referenced in social contract which language secures, for without it there could be no meaning and no comprehension of the text written on this page. Therefore language is an enduring and shared phenomenon. The auditory image is what can be termed the linking of the sign to the signifier. For example the symbols d –o –g are symbols representing the sound that we understand are a rather common four legged fury animals that is often domesticated - and we may see the image of the animal in the minds' eye when we say the word. Thus, there is a fundamental connection between what we hear and what we see. This fact forms the foundations of semiotics.

The notion that semiotics could be useful in human computer interaction occurs because semiotics is the science of signs, symbols and their interpretation, the application to computational devices could be directly made considering that the computer is a symbol processing machine or as Winnograd states [2], 'a language machine'.

2   Language as a Game: Wittgenstein

The word 'game' has its origins in an Old English word 'gamen', meaning 'fun, amusement' [3]. The literature on general game theory is substantial, and the concept has been significantly developed in mathematics, for example, in the writings of Von Neumann [4]. Games here will be characterised by the merging of linear narrative with interactive processes [5].   As Schell [6] states, interactive games show a duality of story - that is narrative - and gameplay. Hence, a game has both linear and probability aspects to it.

The writings of Wittgenstein (1889-1951) are particularly pertinent to the notion of language as a game. Twenty four published works of his   remain [7] the most famous being *Tractatus Logico-Philosophicus* [8] published in 1913 for which he received a doctorate from Cambridge University. Originally a mechanical engineer, Wittgenstein studied under Bertrand Russell. However, his posthumously published *Philosophical Investigations* [9] was unique in its construction, consisting of aphorisms exercising the reader's mind through the problems of language. Wittgenstein posited that language was like a game where rules were followed.

In the practice of the use of language … one party calls out the words, the other acts on them. In instruction in the language the following process will occur: the learner names the objects; that is, he utters the word when the teacher points to the stone. – And there will be this still simpler exercise: the pupil repeats the words after the teacher - both of these being processes resembling language.

We can also think of the whole process of using words … as one of those games by means of which children learn their native language. I will call these games 'language-games' and will sometimes speak of a primitive language as a language-game.

And the processes of naming the stones and of repeating words after someone might also be called language-games like ring-a-ring-a-roses.

I shall also call the whole, consisting of language and the actions into which it is woven, the 'language-game.' [9](Wittgenstein, [1958] 1988 p. 5e).

From this we can see, which might not be readily apparent, that factors such as probability and agreement of meaning are part of language as a game.

3   Examples of Games and Electronic Games

3.1   Art as Game: Jean Arp

Jean Arp was a member of Cabaret Voltaire, the avante-garde group of artists who created prodigious and influential work at the beginning of the 20th Century on which Modernism was founded, used chance, that is the randomness of events, as an element in the composition of an artwork [10]. He tore sheets of scrap paper and allowed them to fall at random on a sheet of paper, accepting the compositional pattern as it was. This indicated that the actions by which artworks were made were as important as the artwork itself. It changed the focus from the object to the action of making, and was a precursor of human-computer gestural interaction where the process of the action may be continuously engaged. In this way, probability was considered to be a compositional element and the visual order typical of preceding art was now being displaced by the chaos of random probability (see Figure 1).

Fig. 1. Jean Arp Collage with Squares Arranged

According to the Laws of Chance, 1916-17 <http://arthistory.about.com/od/dada/ig/Dadaat MoMAZurich/dada_zurich_02.htm>

3.2   Virtusphere: Immersive Games

Virtusphere is an immersive Virtual Reality system with simulation platform allows lifelike movements in cyberspace. It was designed for Police or Military training scenarios. VirtuSphere is a commercial product offering six degrees of freedom – to move in any direction: to walk; to crawl; or to run over unlimited distances [11]. Virtusphere is compatible with all computer-based simulations. The tasks are controlled by software, but to change the terrain, new software is required. It uses an new omni-directional locomotion interface and a smart-turntable system to give users the ability to move freely in any direction within virtual environments without loosing sight of the displayed images despite their projection on a limited large screen that do not provide surrounding or 360 degrees of visual feedback. A head mounted display is also utilised; however, there are no wires attached. The user can make many full body rotations without losing sight of the environment (see Figure 2).

Fig. 2. Virtusphere <http://www.virtusphere.net/>

3.3   Console Games

Grand Theft Auto V, a console game, the latest version launched in September 2013, in three-and-a-half months to 32.5 million copies were sold. It uses Playstation 3 and X Box and grossed $1 billion in three days claiming the sales record in that timeframe for *any* form of entertainment, video game or otherwise. The next biggest seller, revenue-wise, is *Call of Duty: Black Ops 2*, which took over two weeks to achieve the same figure, (12) (see Figure 3).

Fig. 3. Grand Theft Auto 2013 [12]

3.4   Interactive Art Game to Be or Not to Be

There is a growing field where aesthetic human computer interactions known as Interactive art. The interactive artwork game *To be or not to be* was designed and developed at The Creativity and Cognition Studios (CCS), University of Technology, Sydney by Danylak and Weakley [13] and evaluated in Sydney's Powerhouse Museum for audience interaction at the CCS interactive art space beta_space. The game format was a key aspect designed in conjunction with the film narrative. The aim of the game was to interact with 23 gesture puzzles and in doing so to assemble the film narrative. The gesture rhythms were based on the syntactic patterns of the dialogue. Interactors were invited to solve a walking gesture/word puzzle using an on-screen interactive map. When solved, by being in the right place at the right time, triggering in sequence a 36 square floor pad system, sections of a film narrative based on Shakespeare's play Hamlet would appear. Usability studies showed high levels of gestural interaction and an above average predicted emotional response to the film content. An online video description is available (see Figures 4 (a) (b).
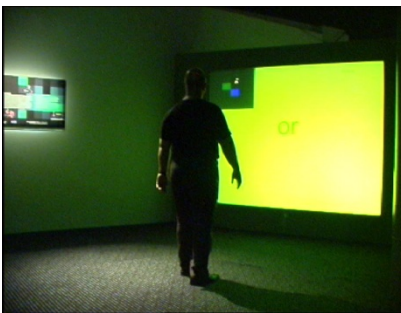

Fig. 4a. To be or not to be mode 1   **Fig. 4b.** To be or not to be mode 2

http://www.youtube.com/watch?v=jKNvSpXG0Z0/

http://www.betaspace.net.au/content/view/36/.

The system comprised of a 36 square pressure sensitive floor pad grid, approximately 3 m x 3 m in total, connected to an Apple Mac and a video projector, illuminating a semi- transparent perspex projection screen approximately 3 m x 4 m using back projection. The pads are commonly used in commercial house alarm systems. The system was programmed using Max/MSP, a multimedia programme with a high degree of design freedom and data recording capacity.

Figures shows the interactor engaging in the floorpad using walking gestures to solve the game puzzle using the interactive position map in the left hand corner of the screen; (b) shows the interactor observing one film segment being played back after successfully achieving the word / gesture puzzle, the interactor being in the right place at the right time. There are twenty-three such film sequences which playback as one film - the final game goal.

4   Applying Semiotics: *Monopoly*

The sheer variety of games is presents a difficult analysis and can baffle the most capable designer. Applying semiotic analysis to games, in particular Jakobson's notion of metaphor and metonymy [14], reduces the complexity significantly allowing for the experience of the language aspect in the game to emerge. In linguistics this is known as aphasia, a linguistic disorder. If we say 'dog' this is a metaphor; if we say 'claw' which belongs to the dog, this a metonymy. In this way metaphors are higher order representations, whilst metonymy is the explication, or the exhaustion of the metaphor. This is also know as the two axes of association, the paradigmatic and the syntagmatic plains [15].

A further distinction which bears agreeable comparison is that 'a metaphor is a way in which one entity is viewed as another' whilst a metaphor is 'one entity standing for another' [16]. Metaphor, then, is the association made with the mental image, the higher order association that forms in the paradigmatic plain to which sound is attached through signification; whilst, metonymy is the sequence – the syntagmatic plain - or the chain-like process that is characterised by the linear structure of words which explicates the metaphor.

Even more simply put we can say that metaphors as figures of speech where ' this is that' or this represents that are usually unique and stand alone as representations; whilst metonymies refers to the association that is closer to understanding of the real world. For example if I was to denigrate someone by calling them ' a dog' and I have used the word pejoratively, that is negatively, this connotative use tends more to a metaphoric use because I refer to the specially attached meaning. On the hand, if I say ' the ' dog is over there drinking water' then tends more to the metonymic, because, the language I use is denotative, that is, what I say, is what you get; the equation in denotation is more straightforward.

Hence, in a simple board game, say in the ever popular *Monopoly,* invented by the Parker Brothers in 1903 (17) and is now owned by Hasbro Toys. The game overall is a metaphor of the process of commercial property trading (see Figures 5 (a) (b) (c).)
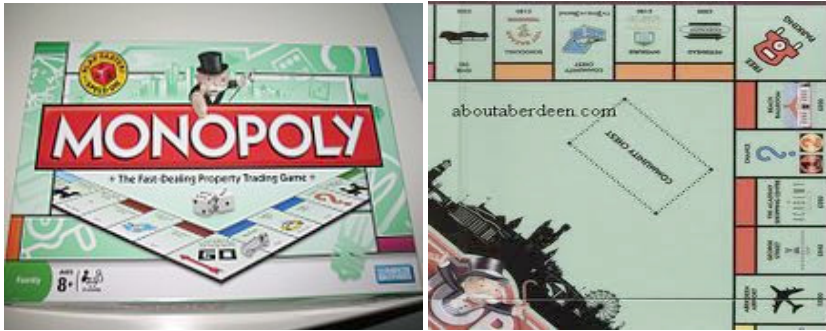
(a)

(b)

(c)

Fig. 5. (a) (b) (c)   (a) section and expanded view of the property square metaphors (b) (c). Monopoly: Parker Brothers (1903) source: Google images

The game consists of a square board with segmented smaller squares placed along the perimeter of the board. Players are individuals who are give a counter representing themselves, throwing a dice and moving along the squares according to chance. Each player then randomly may land on a perimeter square. The perimeter square mainly represent different properties and rang in low to high cost. Each player is given money and has the opportunity to buy properties, utilities, gets special chances offered or can be penalised by going to gaol for a short time. If a player lands on another persons property - square, then they must pay rent. The object of the game is to monopolise the market and to gain a s much rent from the other players as possible. In short, the game is a metaphor of real estate capitalism.

An objection may be made that we can see two levels of metaphors; there is the overall game as a metaphor of property trading yet there are the individual metaphor squares of properties – Pall Mall, The Strand and so on. This is correct, the semiotic analysis can present many levels of metaphor in operation so a hierarchy must be established. At the level of player experience it is the passage around the board landing on different property – metaphors that resembles a life experience. Again, each of these metaphors are unique. The metonymic element here the regulation of the movement around the board: players can only move between one and twelve spaces, based on the throw of the dice. Whilst the game is clearly made interesting by the random probabilities generated by the dice throw.

5   Conclusion

Thus, we can see that language has strong game elements and are easily verifiable by own daily experiences of language whilst also enjoying the attention of philosophy. In the realm of computing, which readily manipulates the symbols of language, the game aspect pervades as a form of interaction and is enjoyed unrivalled commercial success. Probabilty, that is chance – a usual feature of games - is easily adapted to computer representations and interactions. Whilst, semiotics, in particular Jakobson's notions of metaphor and metonymy, simplifies the complexity of language and the game experience into workable format for both designers and programmers. Semiotics then becomes a very valuable tool in human computer interaction.

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