Playing It Cool: Considering McLuhan's Hot and Cool Taxonomy for Game Studies

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Plodding through what is assumed to be Quantico, the Federal Bureau of Investigation's (FBI) training headquarters, I have a lot of time. My sensorial involvement with the gamespace is, as with most First-Person Shooters (FPSs), oriented towards mechanoreception: my eyes scan the walls, picture frames, and doors rapidly; not for something to *see* but for something to *attack*. Literate in FPS convention, I expect a staccato of resistance: one enemy after another in discrete temporal sequence.

After seconds of searching, no enemies appear. The delicate rhythm of my avatar's walk has a decided effect upon my own bodily sense of pressure and movement: I notice - strangely for an FPS - that I am sitting back, relaxed in my chair as I play. I anxiously search for the approved pattern of interaction with this gameworld. Does this door open? No. Is this picture on the wall important? Perhaps, it allows selection and rotation. Ah! I can pick up my character's lipstick and apply it. '*But to what end?'* my being-in-the-gameworld ponders, habituated through the experience of innumerable First-Person Shooters (FPSs). This literacy has formed a set of expectations regarding game objectives, mechanics, narrative, cycles of interaction, enemies and so on.

Though locating its heritage in the FPS genre, *Virginia*, the digital game described in the opening paragraph, subverts many genre conventions. Indeed, this has resulted in *Virginia*, and games of its ilk (such as *Firewatch*, *Everybody's Gone To The Rapture*, and *Gone Home*), being referred to as First-Person *Walkers* (or alternatively 'Walking Simulators/Walking Sims'). Indeed, Dan Pinchbeck, Creative Director of acclaimed First-Person Walker *Dear Esther*, was writing his doctorate on First-Person Shooters at the time of *Dear Esther*'s development, and wanted to challenge FPS convention and its reliance on combat. As he describes in an interview, "with Dear Esther what we wanted to do is say, "Well, what if we just have that? What if we just have a space you can explore? It's all about the atmosphere. It's all about the mood. Is that going to work?" So we made this very simple little mod. Put it out on Mod DB as a Half Life 2 mod" (prankster101, 2016: online). As Muscat et al. further

describe:

> Walker games minimize interactions, using interactive conventions from established genres such as the First-Person Shooter; adjusting and re-implementing them for non-combative purposes. As the Walker is not bound by explicit rules, challenges, and tasks to direct interactions and player activity, the prominence of typical game elements is altered… the player's game experience as something not to be overcome, but of keen perception and close inquiry. Ambiguity is key to building interest and intrigue, playing upon the limitations of the first-person perspective. (2018: 13)

Virginia serves as a particularly vivid example of the Walking Simulator. In the game, the player takes the role of an FBI agent investigating the disappearance of a child. The user's capacity to investigate is contoured by two forms of interaction, both standard within the FPS genre. Firstly, the player controls movement through the environment in real-time, yet this control is constantly challenged by disjunctive transportation across locales. At one moment the player is searching the missing child's bedroom, before a dissolve fade suddenly occurs and the player is observing the view from the passenger seat of a car as a buffalo stumbles into the road. Secondly within *Virginia*, the player aims the cursor at the centre of the first-person view, pointing and clicking to interact with the world in real-time (in certain Walking Sims, this is further accentuated through the addition of time-pressure). Yet this clicking is not to *shoot*, as the FPS acronym suggests, but instead to *touch*, fumbling with mundane objects such as rubbish bins, cupboards and feathers, much more like a 'point and click' adventure.

1.0 Heating Up / Cooling Down

Traditionally, FPSs are a very 'Hot' design, to use Marshall McLuhan's terminology (1973). Which is to say, they are 'high fidelity' (1973: 31), providing strong definitions for what to do (kill),

how to do it (shoot), and why one should do so (bad things threaten the avatar's existence), woven in a tight temporal cycle. FPSs are also 'low participation' (1973: 31), with action limited to shoot, move, shoot, move. In addition, FPSs tend to be, in terms of level design and encounters, linear: the player is tasked to move from 'A' to fight enemies and conquer 'B', then from 'B' to fight enemies and conquer 'C', and so the process repeats. This explicit guidance is congruent with McLuhan's articulation of 'high definition', a Hot feature (1973: 31).

In terms of affect, we argue Hot media tend towards bursts of intense emotion, frissons, in response to the psychosomatic pressure instigated through high fidelity features such as explicit win/lose conditions, time-sensitive mechanics, and tight cycles of interaction. As Ash's phenomenological analysis of First-Person Shooter *Call of Duty*'s multiplayer mode ruminates, such design is "particularly intense because of the ways in which the spaces and the rules of the game are designed in order to maximize the potential for contingent and surprising encounters to occur between users… to produce an 'atmosphere' of intensity, which bodies become attuned to" (2013: 46). Opposingly, Cool media tend towards shifts in mood, subtler and longer lasting shifts in one's sense of attunement; anxiety, fascination, pensiveness, and boredom. Indeed the Walking Simulator genre's Cooling down of fidelity, e.g. absence of explicit instruction, evaluative feedback, concise narrative, characters serving as obvious heroes and villains, removes the possibility of Hot frisson, and in doing so the Coolness of boredom becomes derogatory within the masculine space of digital game culture, as Melissa Kagen points out, "the fundamental problem that gamers have with walking sims is that they're boring… Boredom has long been coded as generative, and gendered… boredom is feminine" (2017: 281).

Within FPSs and Walking Sims the movement procedure implicitly advocated through level design, game mechanics and control scheme fundamentally alters our experience time, particularly the interplay of acting and waiting. In a conventional FPS, one never waits, but instead is implored to act (shoot, run, shoot, run); in a Walking Sim this temporal cycle Cools down enormously (meander,

investigate, meander, investigate). As noted, the affective and cognitive response to such design is distinct. Nacke and Lindley (2009) highlight this in an experimental study of Player Experience within FPSs. They found, overall, that enhancing FPS convention (combat encounters, enemy numbers and difficulty, level design encouraging cycles of shooting and taking cover) garnered a positive emotional response from what they term 'hardcore players', encouraging entrance into the 'flow state' as identified within positive psychology (Nacke & Lindley, 2009). Which is to say, Heating up the FPS elements had a positive impact upon the 'hardcore' Player Experience, versus a lack of combat, guidance, and variety of enemies. They simplify this into 'challenging' versus 'boring' design when they conclude "[c]hallenging levels are experienced as being more arousing and deliver more positive emotions than boring levels. Joy in this case does not come from victory or success, but from challenging gameplay" (2009: 14).

To summarise, the design choices evident in Walking Simulators works to 'Cool down' various elements of the 'Hot' FPS genre, in McLuhan's terms (1973). Which is to say, contrary to the typical Hot features of an FPS, the First-Person Walker is 'low definition' (Why am I here? What are the rules? How do I win? Where are the enemies?) and 'high participation' (1973): one is encouraged to explore every nook and cranny of each space, attempting interaction with *everything* to work out the mystery of the game (mechanics, narrative, space). Though as sequential as a typical FPS, the Walking Sim does not explicitly delineate where 'A' or 'B' are, can shift between them without explanation, and provides no feedback on the win/lose conditions for this perambulation. In totality, the design provides a rather discordant pattern for the user: after completion, one may remain unsure whether the narration was reliable, whether they played the game 'correctly', whether the game is winnable at all.

To simplify, we might say the FPS genre offers a concordant pattern for the user: the design conveys, as explicitly as possible, what the player is to understand and do, and in the Hottest designs it is simply the user's part to obey and execute instructions. Concurrently, the more efficiently the player performs, the Hotter the experience. As the literate player heats up the game through their proficiency,

the affective response is one of pleasure in mastering the challenge. As hinted, of particular interest are the affective, motoric and cognitive impacts of *Virginia*, in relation to the standard FPS. Phenomenologically, FPSs tend to have a very Hot relation to the eye, fingers, and interoceptive system, due mainly to the time pressure imposed by the 'shooter' dynamic native to the genre: locate target, aim, fire, repeat. This 'one-thing-at-a-timeness' (McLuhan, 1973), characteristic of a Hot medium, is reassuring in its clarity and tempo. Yet as mentioned *Virginia*, and other Walking Simulators (hereafter WSs) Cool this experience considerably; the 'one-thing-at-a-time' heat of the FPS becomes an 'all-at-once' Coolness (McLuhan, 1973) experienced as a fumbled, slow foraging around the gameworld of *Virginia*.

As Väliaho articulates, the standard FPS is 'visuomotor: in them, eye merges with hand, vision with gesture . . . The contents of perception are something we enact when probing the world with our sensorimotor capacities and skills' (2014: 121). In an FPS, the eye *targets*; in a WS, the eye *searches*. In an FPS, the fingers *tense* on the trigger in anticipation of action; in a WS, the fingers *slide* lackadaisically across the face buttons in exploration. In an FPS, the body is rigid and poised; in a WS, it is relaxed and placid. Moreover, the WS becomes a waiting game. Where the standard FPS has a mechanical clock that adds or imposes order to the game, often through the intervallic appearance of enemies or the time-pressure imposed by an objective, the WS turns off time-pressure, almost entirely. This instantiates the difference between having things appear (at hand) versus a sense of urgency to find things: the terror caused by the abstract uniformity of the clock, whether in speed run or in time-sensitive mechanics, is dissimilar to the anxiety felt at not knowing how to interact at all. Depending upon its design, platform, and control scheme, a game can have markedly different impacts upon one's cognitive, affective and motoric intentionalities.

The goal of this article is to explore the utility of McLuhan's concepts of Hot and Cool when applied to the digital game, and whether it allows scholars to explore new avenues of thinking about the medium. This is appropriate as McLuhan is perhaps best viewed not as a media theorist (or ecologist),

but as a metaphysician of media. In other words, instead of focusing his work upon an individual medium, McLuhan articulated the ontological and epistemological qualities of mediation itself, before relating these to individual media.

If McLuhan's articulation of Hot and Cool is valid, then there are substantial ramifications: from this perspective, a medium's impact upon our emotion, cognition, and social engagement all vary based upon its relative Heat or Coolness.

1.1 Hot and Cool v1.0

McLuhan defines a Hot medium as 'one that extends one single sense in 'high definition.' High definition is the state of being well filled with data…Hot media do not leave so much to be filled in or completed by the audience. Hot media are, therefore, low in participation' (1973: 31). As mentioned McLuhan's diagnosis of Western civilisation is scopophilia, neurotically visual, which is to say he understands Western civilisation as fundamentally Hot before the advent of electricity. The eye is a very Hot sense, perhaps the archetypal 'high definition' technology: 120 degrees of high fidelity perception extended through glass, light and LCDs, requiring relatively little participation for comprehension, relative to other senses. The eye is also a very individual technology, i.e. what one sees, *one* sees: there is no possibility for someone else to see the exact same phenomenon from the exact same perspective without the deployment of further technologies such as cameras. Western fixation upon the eye has led to the linearity, rigidity, and emphasis on rationality, uniformity, exemplified in technologies such as the printing press, the clock, and calculator. In media, this is further extended to concepts such as the gaze (of the cinema), the glance (of the television), and now the glaze of the digital game (Chesher, 2007).

Cool media are 'low definition,' requiring multi-sensorial involvement as 'so little is given and so much has to be filled in' by a user, hence 'cool media are high in participation or completion by the audience' (1973: 31). If the eye is Hot, then the ear is Cool: 360 degrees of varying fidelity which at

times requires intense focus for unintelligible ‘noise’ to become intelligible ‘sounds’. Unlike the eye, when one hears, others may hear equally: versus the individuality of sight, the ear is a communal technology.

This is of course not a binary situation, i.e. utterly one sense or another, but rather a systemic change. When we speak of the eye or ear as dominant, we are indicating which sense is most prominent in that engagement, but it is always a systemic transformation. Within *Understanding Media* (1973), McLuhan provides a few examples: the telephone is Cool and the radio is Hot; a lecture is Hot and a seminar is Cool; jazz is Cool and the waltz is Hot; Richard Nixon was Hot and John F. Kennedy was Cool. We should now outline the phenomenological orientation of this article regarding its deployment of Hot and Cool.

1.2 The Sensorial Ratio

The human sensorium is defined by its dynamism (see for example Heidegger, 2008; Huron, 2006; Sheehan, 2015). It reconfigures, automatically across contexts, in pursuit of an optimal gestalt for comprehension and action. As one gains experience in a scenario, the more rapid and discerning the sensorial response becomes, the more possibilities identified, the quicker they are acted upon, the better the performance. Simply put, player skill and literacy is a Heating up of any engagement. As Dreyfus describes, ‘what the learner acquires through experience is not *represented* in the mind at all but is *presented* to the learner as a more and more finely discriminated situation, which then solicits a more refined response’ (2002: 373, emphasis added). Further:

> [A]cting is experienced as a steady flow of skilful activity in response to one’s sense of the situation. Part of that experience is a sense that when one’s situation deviates from some optimal body-environment relationship, one’s activity takes one closer to that optimum and thereby relieves the “tension” of the deviation. (2002: 378)

In this article's introduction, one's cutaneous mechanoreceptive system, which regulates (amongst other things) one's mechanical and tactile sensitivity (Johnson, 2001), is prominent in one's sense of being-in-the-gameworld. The more one plays FPSs, the more acute this sensitivity, the quicker this discernment of the situation and response. As mentioned earlier, the FPS and the WS afford different experiences of time. In McLuhan's words, we 'chafe under the uniformity of clock-time [. . .] we seek multiplicity, rather than repeatability, or rhythms' (1973: 138). Where the FPS speeds up play through the multiplied urgency of saturation, the WS is the absence of time pressure. It is no mistake then that Cool genres, such as simulators like *Farming Simulator 17*, have options to accelerate or compress time, wherein hours become seconds, days become minutes; games like *Skyrim*, which could be described as a Walking Simulator with boss fights, includes a fast travel option. Such Cool designs hand control of time over to the player, allowing high fidelity, time sensitive encounters, just in case the player desires a burst of Heat within a Cool gamespace.

Though Farrow and Iacovides (2014) are correct to highlight the many ontological and phenomenological limitations of digital embodiment, the crosshair *as* eye, the gentle bob of the character's movement, are in a limited and ambiguous manner connected to one's corporeality. In response other senses, such as the interoceptive system (sense of appetite, heartbeat, breathing, need for the toilet, and so on), fade into the background to maintain sensorial equilibrium. In other words, digital embodiment is not only *limitation*, it is also *extension*, as one's sensorial ratio adapts to the phenomenological *tension* of the situation. As one's literacy with the various symbolic orders and technologies evolves, new possibilities for being-in-the-world emerge (Gualeni, 2014). With this phenomenological approach outlined, we now turn the Hot and Cool spectrum to digital games.

2.0 Hot & Cool v2.0

We should first note that games are *ipso facto* a heating up of social reality, adding high

definition to any situation: ambiguous social relation becomes player or non-player, friend or enemy; ambiguous temporal-spatial relations become demarcated both materially and ideally, to paraphrase Huizinga; subjective, limited understanding of success and failure in everyday life becomes objectively signified through concrete win and lose scenarios.

Using Caillois' terminology (2001), if the structured *ludus* mode of play described above is a Heating up, then its opposite, the open, improvisational *paidia*, is a Cooling down of any game situation. Paidia—pure play, utterly improvisational, without set limits and win/lose conditions—takes away the definition and explicit pattern of engagement that ludus otherwise provides, offering greater participation across ontological levels. In paidia, one is not only player but often at the same time also occurrent designer. This is most obvious in a game like *Minecraft*, but also part of the underlying basis of the *Grand Theft Auto* series. Therefore, a foundational complementarity for Hot and Cool is found in ludus and paidia, respectively. Tied to this, as mentioned, is the understanding that player literacy is always a Heating up, as proficiency adds fidelity and pattern to the engagement.

The concept of procedurality, introduced by Ian Bogost (2006), is also of note here for digital games. As Skolnik articulates:

> [P]rocedurality refers to the computer's 'defining ability to execute a series of rules' (Murray 1997: 71) with the procedural viewpoint asserting the primacy of the game's rules over the player's active and performative construction in determining the game's meaning. In this framework, the player's experience is constructed and mediated by the interactions of rules forming a simulation that is at the core of a video game; therefore, rules come before the player experience in determining the video game's meaning. Ian Bogost's highly influential books… elaborate on this argument using the idea of 'procedural rhetoric', that is… games mount rhetorical arguments and claims through their rules, which the players then encounter through play. (2013: 148)

Miguel Sicart (2011) responded to Bogost's position by asserting the player's primacy in the generation of meaning through play:

> To write against procedurality is to sing the body, the presence, the player. Against procedurality an army of players stand and *play*, breaking the rules, misunderstanding the processes, appropriating the spaces of play and taking them somewhere else, where not even the designer can reach. Against proceduralism is a player who wants to *play*. (online, emphasis in original)

Skolnik (2013) offers a synthesis of these perspectives through his concept of 'Strong' and 'Weak' procedurality:

> A strongly procedural game has the following characteristics:
>
> • A fixed set of rules that limits the number of potential gameplay actions, gameplay styles and meanings that the player can enact and interpret.
>
> • A fixed, determinate, authorially intended meaning that is primarily derived from a process of unpacking the game's procedural rhetoric.
>
> • Procedural rhetorics that are more prescriptive because they guide the player to the intended meaning.
>
> By contrast, a weakly procedural game has the following characteristics:
>
> • An open set of rules that allows for a wide range of play styles and interpretations of the meaning of the game play experience.
>
> • An open meaning or a specific meaning that is derived from the player's associations with the game's semiotic content rather than the game's rules.
>
> • Procedural rhetorics, if they are present at all, are secondary interpretive methods and cannot be prescriptive because the meaning is interpreted from the game's semiotic content. (2013: 151)

Skolnik goes on to discuss Gonzalo Frasca's *September 12th* as an example of 'Strong' procedurality, since it allows two player interactions (point and click), strictly limits narrative and ludic agency, and conveys a clear message regarding America's militaristic response to terrorism (it only creates more terrorism). In contrast, one might look at games such as *Minecraft*, or indeed a number of Walking Simulators as residing on the 'Weak' side of the procedurality spectrum, i.e. maintaining a more open, less punitive ruleset, allowing a broader interpretation in terms of the gameworld.

We can see a fruitful correspondence here between 'Strong' procedurality and McLuhan's concept of 'Hot', as in some ways heightening fidelity and lowering participation, whilst conversely 'Weak' procedurality is lowering fidelity and heightening participation, and therefore analogous to Cool. Yet, whilst procedurality focuses upon the way a digital game enacts a ruleset to convey meaning, we must remember that McLuhan's spectrum does not pertain to any particular medium or artefact, but instead sketches a relation between fidelity and participation in any communication, and how this can impact affect, cognition, social relations, and eventual response.

Followingly, though the social context, medium, genre, platform and interface set the initial boundaries for one's sensorial engagement, a player's literacies and embodied skills are always available to mount a response; for example pushing something Hot towards Coolness, or Coolness towards Heat. When too much Coolness presides, highly literate users may develop Hot responses like speed runs or enabling cheats such as 'god mode'. Further, designers may respond by introducing meta-game rewards such as scoreboards and medal systems for such activities; even a car racing game like *Forza Horizon 4* incorporates mini-games, tasks, and achievable achievements to mask the work of driving from point-to-point around the map. This 'law of reversal' (McLuhan, 1973) will be further discussed in section 3.2.

As noted, in translating McLuhan's explicit criteria for Hot and Cool into gamic terms, a conceptual metaphor of 'pattern' emerges, which better ties into the bodily and affective dimensions of

Hot and Cool. ‘High definition,’ the extension and filling out of one or few senses by a medium, is explicit in digital games. Video games tend to emphasise the eye and the hands, adroitly subsuming other senses in its service: in FPSs, the eye directs the hand; in racing and music games the eye composes the mechanoreceptive response, as one leans in, jumps back, hops up and so on.

The higher the definition, the more emphatically one sense is targeted. Pattern recognition games such as the ‘Match 3’ genre are very Hot in targeting the eye-finger relation, especially when played on mobile platforms in public areas where sound is diminished. It should be noted here that a common strategy to extend the difficulty curve of many games is to introduce Cooler features, and the Match 3 genre is an excellent example: as one becomes more competent in the game and risks ‘overheating’, the design Cools the player by adding hidden bonuses, combinations and extra elements, demanding the user switch from pattern recognition to heuristics.

Cooler designs, as low fidelity, demand the user spread attention using not one or two senses but a sensorial system. Strategy games, such as the 4X sub-genre, do indeed demand the user’s eye and hand, but these are subsumed under complex cognitive tasks such as information organisation, activity monitoring, abstract assessment, and scheduling (Paas and Van Merriënboer, 1994). Point-and-click adventure games (e.g., *Thimbleweed Park*), puzzle games (e.g., *The Witness*), and role-playing games (e.g., *Undertale*) similarly require the deployment of complex cognitive tasks. ‘Tower Defense’ games recall the classic *Pipe Dreams*, but add time compression, strategy, resource management, and other elements that Cool down the genre, allaying the Heat contributed by a skilled player.

As McLuhan articulates, the higher fidelity, the lower the participation (and vice versa). Therefore, in high fidelity games the participation is simple, occurring across one or two dimensions such as moving and firing a weapon in an FPS, jumping between levels and collecting items in a platformer game, or selecting matching patterns in the Match 3 genre. What makes such tasks difficult is generally time pressure, which is often manifest as a points system (lap time, score, experience points, achievements) and/or the presence of threats in the environment (enemies, traps, obstacles).

Where the scheduling of a 4X game *anticipates* time, the need to plan ahead in a Match 3 *times* anticipation; that is, in Hot designs, success is often an index of *anticipatory* rather than *participatory* perception. Low fidelity games are high participation as they require the user to move across various dimensions of interaction and domains of understanding to *fill in* the game, as McLuhan might say, and therefore are less aggressive in terms of time pressure. More simply, Hot design employs time pressure to target motoric intentionality, whilst Cool design employs multiplicity (of systems, information, and attention) to target cognitive intentionality, and each of these have markedly different effects upon one's bodily and affective response, and further, interactions between players and communities.

2.1 Pattern

As suggested, the concept of *pattern* is helpful for comprehending the differences listed: as temporal, spatial, audio-visual, narratological and ludic phenomenon. Intimately tied to pattern are 'play loops' (Kietzmann, 2011), temporally-delineated cycles of engagement a user repeats across the game event. Games, as McLuhan anticipated, demand repeatability both in design and in play. Loops emerge through 'skill atoms' (Deterding, 2015), understood as bundles of separate particles, which are identified as 'goals, actions and objects, rules, feedback, emergent challenge, and motivation' (313). As Deterding outlines, an atom 'consists of smaller reoccurring particles yet cannot be broken into these without losing its systemic 'gaminess.' A skill atom describes a feedback loop between user and system that is organized around a central challenge or skill' (2015: 313). In a Hot design such as *Halo 3*, for example, the most fundamental loop occurs approximately every three seconds (Kietzmann, 2011) as a player moves, shoots, throws a grenade, or engages in melee. On a thirty second loop, the player is completing a larger strategic goal, such as clearing a space of enemies, capturing an area, moving towards an objective, and so forth. Within a three minute loop, the player is completing a game objective: capturing the flag, defeating the boss, escaping the horde.

Hot designs tend to offer succinct play loops which are essentially *concordant*: the musical and

etymological facets of this word are appropriate, as harmonious (musical), and as of the heart (etymological), i.e. focused upon bodily rhythms. Cool designs are likely to provide protracted play loops (for example 30 seconds/3 minutes/30 minutes) which are altogether *discordant*: as lacking harmonic integration (musical), and as apart from bodily rhythm (etymological). Rather than explicitly targeting motor skills and bodily rhythm, in Cool designs the user is tasked with forging a sense of concordance through the cognitive skills described earlier.

3.0 Key Features – Heating Up

High fidelity is the essence of Hot design, targeting short-lived emotional responses such as excitement and fear; promoting rapid execution of motor skills; and enforcing a strict temporal pattern of engagement. This can manifest in hardware and software design as clarity, concision, and spectacle, oftentimes all three. Classic arcade games typically evidence these features in abundance. Consider classic arcade racing game *Out Run* for example. The narrative and ludic systems emphasise clarity: drive the Ferrari Tesstarossa Spider as quickly as possible; avoid obstacles; beat the timer. This trickles down to concise play loops: the player is avoiding obstacles every few seconds, and every few minutes completes a track. Such a pattern forms the essence of *Missile Command*'s infamous dilemma. Once the player decides (or discovers) that the key is to save missile bases instead of cities, the game proceeds as a concise play loop. The dilemma effectively disappears as the pattern emerges through player literacy. This is all interwoven with audiovisual, haptic, and mimetic spectacle that reinforces clarity. For example, the 1980's arcade version of *Out Run* is Heated up by spectacular skeuomorphic hardware: the player would literally sit within a cabinet stylised as the Ferrari Tesstarossa Spider controlled within the game, the skeuomorphic interface composed of a steering wheel, gear stick, acceleration, and brake pedals.

Therefore to Heat an artefact up, a designer has many strategies available. Clarity can be increased not only through expensive hardware interfaces, but also through the implementation of

explicit goals, time constraints, and guidelines. A popular example is the twin design of 'breadcrumbing' and 'funnelling'. The former provides a trail for the player to follow, in the shape of a literal line, highlighted landmarks, or dialogue delivered by NPCs ('take a left!'/'go here!'). Meanwhile 'funnelling' puts the player back on track, sometimes literally, if they deviate from the breadcrumb. In a racing game this is evidenced in a track's route and boundaries; the sudden relocation of the player's vehicle to the track when they veer too far away from the course is a very Hot application of funnelling.

Concision can be increased through the compression of time, such as accelerating the 'play loops' (Kietzmann, 2011) described in section 2.1, so that a 1 minute/5 minute/10minute play loop becomes 30 seconds/1 minute/5 minutes. One can also reduce the amount of skill atoms (Deterding, 2015) within the game or automate certain atoms identified as Cooling the experience down. For example the Fighting Game *Divekick* Heats up the genre by restricting the user to the two eponymous interactions, 'diving' and 'kicking'. We should also note this design is simultaneously a parody of the common tactic within Fighting Games to resort to repetitive diving and kicking; parody is always a Hot strategy as it emphasises clarity through amplification.

Many games Heat up through automating processes such as resource collection, inventory management and avatar movement, central skill atoms left to player operation in Cooler genres. For example, following convention in action-adventure game design, *Spider-Man* allows the user to activate 'parkour' mode through the compression of a gamepad trigger, allowing the titular character to automatically jump over, slide under, and run across environmental obstacles without additional input. This also heightens spectacle, another key component of Hot design. Running across Manhattan's rooftops, swinging over traffic, and leaping across buildings at enormous speed by holding the PlayStation R2 trigger, provides a visual and kinaesthetic extravaganza only deliverable through semi-automated fluidity.

3.1 Key Features – Cooling Down

Low fidelity is the essence of Cool design. In opposition to Hot design, this targets more prolonged emotional responses, perhaps better articulated as mood, such as fascination and anxiety, rather than emotions such as excitement and fear; it promotes cognitive skills around strategizing and task management; and finally it loosens the pattern of engagement, requiring the users develop their own rhythm of interaction. Overall in Cool designs, features are much more likely to be abstract in their representation, opaque in their processes, and unpredictable in their patterning.

To Cool a design down, the producer can lower fidelity. This reduction can firstly pertain to the audio or visual system, making sound and sight a more involved, interpretive process. Scott McCloud's germinal *Understanding Comics: The Invisible Art* (1993) is illustrative here, where he outlines a spectrum between the Hot 'reception' of a photographed face, versus the Cool 'perception' of words describing a face (see Fig. 1). McCloud explicitly acknowledges McLuhan's definition of Cool relating to comics (1993: 59), articulating how 'Icons demand our participation to make them work' (1993: 59). In many instances, as McCloud notes (1993), this Cool design also allows the user to project themselves into the character, rather than seeing the character as separate due to its Hot, high definition as an Other.

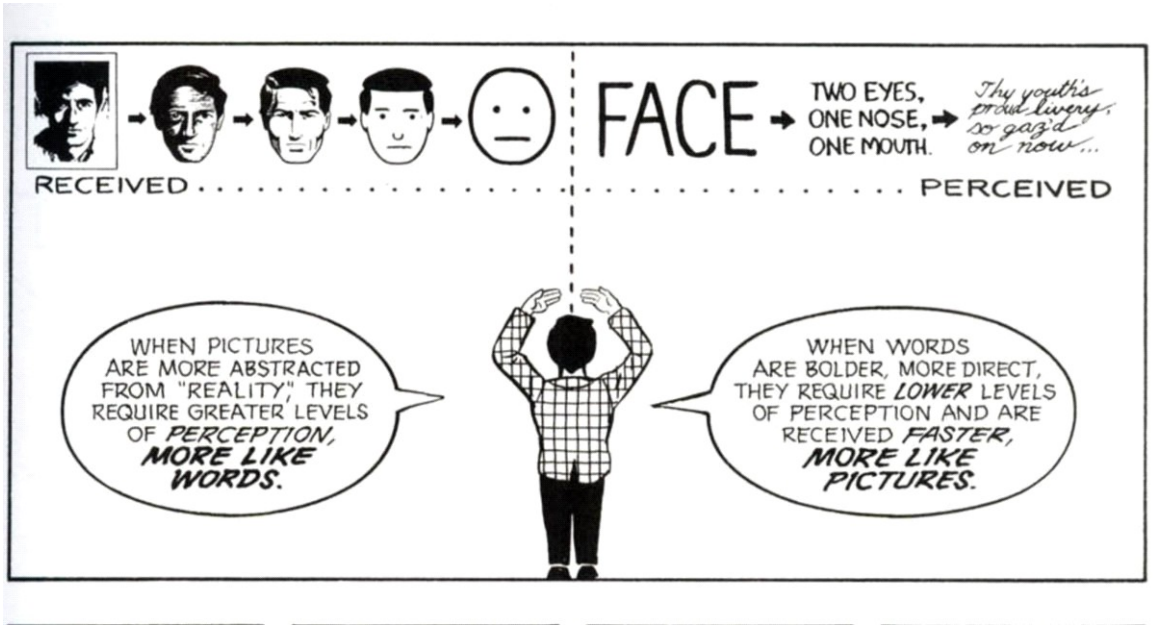

Figure 1 - McCloud (1993: 49)

Secondly, the designer can Cool the hardware and software interfaces. A game such as *Johann Sebastian Joust* Cools down the multiplayer 'death match' mode where all players compete to be the last one standing. Whilst the model of interaction is clear in First-Person Shooters, where you simply shoot other players to win (much like laser tag), *Johann Sebastian Joust*'s (*JSJ*) knockout mechanic instead pivots upon Johann Sebastian Bach's *Brandenburg Concertos*. Avoiding graphics entirely, in *JSJ* each player holds a motion-sensitive controller and is 'knocked out' if they exceed the controller's tolerance for movement as set by the game. This tolerance is however not made clear, instead vaguely implied by the speed at which the concerto plays. This design strategy enforces sociality upon the players; instead of looking towards screens, or controllers for feedback, they instead look to one another, attempting to scry intentions and game rules from player movement, eye contact and facial expressions. As one would expect, this can lead to players anxiously circling one another as slowly as possible, fearing the slightest jarring movement will disqualify them from the game, all the while attempting to eliminate their opponents. As the music accelerates, the design targets the heightening of player anxiety, as each stands at the mercy of an opaque interface and feedback loop.

Finally, the designer can focus upon the game mechanics, including implementation of artificial intelligence, and how the user is evaluated and provided with feedback on their performance. Management games such as the *Football Manager* series are an obvious example of Cool design where the underlying mechanics, their relative importance and consequences, are hidden from the user, who can only make guesses based on inference. Within the series the user is tasked with manipulating various parameters regarding a soccer team, from training regime to wages, recruitment strategies, fan relations, tactics and team talks. At some point the player enacts *and* witnesses all three parts—author, reader, and subject—of the rhetorical triangle. Yet the importance of each parameter, and its impact upon the team's success, is never rendered explicit.

This sometimes leads to users questioning, critiquing and debating such design, so much so that the developers often respond in acknowledgment. For example Sports Interactive employee Neil Brock

responded in one forum thread questioning whether the series' core mechanics were broken, 'They're not broken, but some might say it's ambiguous as to whether changes you've instigated have made the difference', then describing the indirect control the user-as-manager has over the virtual footballers, 'If they do something they want to do (like hit a shot from 30-yards when you've asked them to shoot less) and it works, is that because of you or in spite of you?' (Brock, 2016: online).

Here, it is intriguing to note the hatred of the Walking Simulator (WS) in light of responses to other notably Cool designs. For example, Bethesda Softwork's *Elder Scrolls,* Bioware's *Mass Effect* games, and Hideo Kojima's *Metal Gear* universe, represent series requiring significant expenditures of time and effort between moments of action, demanding the user manually collect resources, manage inventory and navigate space. However, they include noteworthy Hot elements displacing the Cooling effects, such as cinematic cutscenes, parodic characters, and tightly-patterned minigames. Perhaps no other series displaces an otherwise Cool design more successfully than the *Grand Theft Auto* games. For example *GTA: San Andreas* is loaded with elements—bicycle riding, dating, the gyms—that might seem Cool at first glance. The difference is that the *GTA* series adds high fidelity to such phenomena, and therefore lowers the capacity for participation. The games explicitly limit and evaluate the expenditures so tasks become routinized play loops: One must get food, slow down, or stop exercising in a predictable, temporally concise pattern to achieve particular outcomes.

3.2. Overheating and Freezing

Following McLuhan's law of reversal (1973), we should finally note how too much Heat or Coolness generates, phenomenologically, a systemic inversion of the experience, wherein Hot becomes Cool, or Cool becomes Hot. As we have noted, the Heat or Coolness of being-in-the-gameworld is a confluence of the game's hardware and software features, context, and player skills and literacies. Whilst a game design can be very Cool, extreme player proficiency can Heat this up through imposing a concise pattern of engagement and a clear understanding of diffuse goals and mechanics; a very Hot

game can appear quite Cool if the player is extremely inexperienced, so that the otherwise clear dynamics and simple interfaces seem opaque.

If a game event has too much fidelity, and therefore affords too little participation, too little autonomy to the user, too strict a patterning, this can push Hot excitement into anger, before Cool apathy settles in. We need only look at the inclusion of features such as 'In-App Purchases' (IAP), allowing players to purchase hyper-ludic features (Conway, 2010), i.e. phenomena providing extreme agency within the gamespace: 'power-ups' such as overpowered characters, weapons or armour, a bounty of rare resources for avatar empowerment or building construction, or even the ability to automatically complete a level otherwise requiring user skill to overcome.

For example the extremely popular mobile game *Angry Birds* is a puzzle game revolving around the physics-based destruction of structures controlled by groups of pigs, via the firing of a slingshot. As levels progress, the physics-based puzzles can become extremely complex. To obviate such difficulty, the 'Mighty Eagle' can be purchased for 99 cents. This IAP allows the user to tap an icon at the top of the screen, initiating a sequence where an eagle swoops down, automatically obliterating the pigs and their structures. The user can in this manner bypass the entire level. Indeed this is in itself a good example of the law of reversal involved in ludicity: the hyper-ludic element is so powerful it effectively automates the playing of the game, removing user agency outside the single tap of a button. The feature is therefore better described as *hypo*-ludic (Conway, 2012), i.e. removing play, rather than enhancing it. The 'Mighty Eagle' feature Heats up the game's definition and pattern so completely it removes participation entirely, and this is the moment where Overheating might invert into an affective Freezing; apathy is suddenly felt as challenge is removed and the game plays itself.

Yet we should point out that the medium here, the modern smartphone, is Cool: an entirely touch-sensitive surface, wholly accessible for the software developer's configuration. Indeed with later iterations, such as the *iPhone 8* onwards, the measuring of touch pressure became possible too, a further Cool development. Added to this, mobile games are often played on trains, in cafes, waiting for

a bus. In such Cool environments the mobile game becomes a source of much desired Heat, a burst of clear agency and empowerment. Features such as the Mighty Eagle are much more acceptable in such contexts. If introduced within Hot environments, such as the console or Personal Computer (PC), often situated in a living room or bedroom where a player can spend hours focused upon a game without distraction, IAPs are frequently too Hot, shortcircuiting the player's expectations regarding time expenditure and work. For example the introduction of IAPs into *Starwars: Battlefront 2*, a multiplayer action game for consoles and PCs, was disastrous for the publisher, Electronic Arts (EA). The ability to 'pay to win' (Lawler, 2017: online), whilst accepted in the mobile game environment, infuriated console and PC players, leading the company to remove IAPs entirely from the product. As outlined, this Overheating had a predictable affective trajectory: firstly the playerbase reacted in anger (Lawler, 2017), before the burst of Heat reversed to a Freezing over; players adopted an apathetic response to the game. Indeed the company's Chief Financial Officer directly blamed the IAP feature for a lack in sales in a report to the Wall Street Journal (Sarkar, 2018).

If we consider how too much Coolness can generate into extreme Heat, the phenomenon of 'cult' media present interesting examples. *Deadly Premonition* is a game with a famously impenetrable, scattered narrative, allied to a set of diffuse game dynamics (such as fishing, shooting, driving, investigating, dressing, eating and drinking); it draws upon various influences, such as cult television show *Twin Peaks*, whilst juxtaposing and interrogating the player-avatar relationship (Novitz, 2018). On top of this, *Deadly Premonition*'s interface is notoriously poor: the player controls, camera system, and game mechanics were frequently cited as poorly articulated or indeed unfinished at the time of release (Novitz, 2018). As expected, this Coolness resulted in frequent reports of puzzlement, a lack of interest, and sometimes derision from critics. Yet such extreme Coolness can generate fascination, as players attempt to provide the Heat of fidelity through intense participation, meticulously deciphering the narrative, comprehending and describing mechanics. In other words, the Coolness of the game demanded the player apply their own Heat, in the form of extensive work

towards a comprehensive literacy. Such Heat sometimes transformed into cult worship, as certain players invested hundreds of hours into writing in-depth guides, publishing videos bringing together the narrative into a cohesive whole.

4.0. Conclusion

In this article we have considered whether Marshall McLuhan's spectrum of Hot and Cool is of utility to the study of digital games. We have found that, given a foundation in phenomenology, the concepts of Hot and Cool have much to offer in describing and understanding the experience of a game's design. In utilising the Hot/Cool framework, a designer is better able to conceive how particular features can result in a number of affective, cognitive and social impacts, depending upon their relative Heat or Coolness.

The design of macro features such as user interface (hardware and software), narrative and character systems, camera perspective and game dynamics, single and multiplayer (cooperative or competitive) options, scoring systems, and so on, all contour the game experience towards a Hotter or Cooler engagement, in negotiation with a player's literacies. As outlined, Heating up a game's design can can encourage affective responses such as excitement, anger, and shock. Implementation of Cool design features encourages fascination, apathy, anxiety, and indeed boredom.

The digital game medium's impact upon players' emotion, cognition, and social engagement, then, is an interaction between the Hot and Cool features of a game's hardware, software, and social environment, and the literacies, expectations, and prejudices embedded within the playerbase. Hot features in the wrong environment, targeting the wrong playerbase can irritate, frustrate, or even reverse into a Cool apathy; Cool features in the wrong context, for the wrong player, may generate anxiety, befuddlement, or reverse into Hot anger. By applying McLuhan's taxonomy, both designers and scholars can think through how fidelity and participation functions through specific game features and dynamics, from hardware and audio-visual systems to narrative, play mechanics, and interface

design. In doing so, McLuhan's principles can be used to articulate and understand the embodied play experience.

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