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Marc Ouellette, Steven Conway

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MARC OUELLETTE AND STEVEN CONWAY

I walk into the room and the smell of burning wood hits me immediately. The warmth from the fireplace grows as I step nearer to it. The fire needs to heat the little cottage through the night so I add a log to the fire. There are a few sparks and embers. I throw a bigger log onto the fire and it drops with a thud. Again, there are barely any sparks or embers. The heat and the smell stay the same. They don't change and I do not become habituated to it. Rather, they are just a steady stream, so I take off my VR headset and give my recommendations to the team programming the gamified world of the virtual museum of the future (one depicting an ancient Turkish settlement, being built now at the institution where one of us works). As much as this technological world seems almost too futuristic, it actually retrieves obsolete items from the past—a heater, a piece of wood, and a spray bottle doing double duty of mist and scent—in keeping with McLuhan's (1973) insights regarding media that provide strong participation goals and the rubric for achieving them. Moreover, the VR world extends the progression of game AI that occasioned the love-hate relationship with the "walking sim." The stronger the AI, the more clearly defined the rubric for participation. In the VR interactive museum the designers want people to be able to 'play' with haptic devices—like the smell, smoke, and heat generators—in order to heighten not only the immersion but also the perception of being there, or what Bolter and Grusin (2000) call "immediacy" (p. 5).

Indeed, Bolter and Grusin argue that the need for immediacy overwhelmingly takes over, regardless of the media's intrusion. However, in the example above, the system fell short because the designers had not figured for someone laying down the "log" on the virtual fire and having it send a representative—that is, a perceptual, based on experience, intuition, etc.—amount of sparks and heat. Someone else could throw the log as hard as they want. The machine simply acknowledges 1 or 0; log in or log out.

The computer's terse manner drives home a foundational concern with the ontological and epistemological parameters designed into computation; the fact is, the computer is not concerned at all. Machines and AI are based upon a model of intelligence which prioritises mental representation and symbolic manipulation: in a (or the) word, *logos*, logic. Conversely, we, following Heidegger's (2001) famous phrase, are *Da-Sein* (there-being), and we are fundamentally Concerned (or in 'Care' (*Sorge*)) (p. 36). It is this ontological feature of Concern/Care that allows us to find ourselves in a world (*Befindlichkeit*): recall that we are 'in' the mood, instead of it being 'in' us. This foundational ability lights up our worlds (the world of academia, the world of sport, the world of Ethiopian cuisine) with all kinds of significance depending upon our being-there, in a body, in a language, in a mood. We hope for, we doubt about, we worry regarding, we fear that, we are overjoyed because, we look forward to; we are always in a state of Concern/Care. This *feeling about*, i.e. being in a mood

(*Stimmung*) leads us to *thinking about* things in very particular ways. As Ratcliffe (2013) outlines:

Being in some mood or other is [. . .] a fundamental *existential* of Dasein [. . .] it is essential to the distinctively human way of having a world [. . .] In the absence of mood, we would not find ourselves in a world at all and would therefore cease to be Dasein. To find oneself in a world is not, first and foremost, to occupy the perspective of an impartial spectator, neutrally gazing upon things from a particular space-time location. Rather, the world that we belong to is a significant realm, where things can have a host of different practical meanings [. . .] Finding oneself in the world is thus a matter of being practically immersed in it rather than looking out upon it. (2013, pp. 157-158, emphasis in original)

Nevertheless the machine continues to converse with us in a gruff manner: if, then, else, repeat. It cares nothing for Care.

For van Lent and Laird (2001), in their field-defining presentation, the “killer app” of human-level AI was going to be computer games. Still their reasoning, like the AI, was rather unsophisticated in its orientation. Their basic premise is that creating games with “realistic human-level characters will lead to fun, challenging games with great game play” (p. 16). In fact, they seem to base the premise on the determinism that games are fun and that fun games will be successful. For us, this offers a reductive view of the complexities of play, of the emotions play generates, and of the motivations underlying play. While games have gotten more complex we are not certain the positionality of the AI has kept pace in terms of the affective dimension. Writing a decade later, Weber, Mateas, and Jhala (2011) are still responding to this original position, by way of AI in strategy games, with the goal of “reducing the decision[-making] complexity” so that it becomes non-trivial (p. 329). While they succeed in reducing things to paths based on isolating gameplay scenarios into smaller problems which can be solved and developing an abstraction to perform reasoning about goals, both of these remain problematic, the former because they are non-hierarchical and the latter—of greater significance for the current project—“because different types of abstractions are necessary” (p. 329). Even so, the idea that AI has been confined to problem solving and goal oriented behaviour signals an abnegation, as it were, of the affective dimension in favour of instrumental rationality. Writing for the most recent IEEE meeting, Petrović (2018) also makes the case for human-level AI in games as something with potential, but now he recognizes that early theorists may have been overly optimistic. To put it bluntly, he is more harsh than we would be in noting that “developing of human-level AI (or ‘strong AI,’ as it is often referred) is still a dream, like it was on the very beginnings” (p. 39981). While he notes the success of algorithmic adaptations of board games like *Go*, *Checkers*, *Chess*, and *Reversi (Othello)* or card games like *Poker*, Petrović (2018) points out that many of these have finite solutions or nearly finite mathematical approximations through series and sequences of numbers. Again, the AI does not so much think as provide a series of rapid go/no-go solutions. Moreover, these are the games used to calibrate the AI so that the games and their AI are part of a tautological circuit. Thus, of particular relevance for our project, Petrović emphasizes that unlike “finite, deterministic, constrained gaming spaces, humans (as well as other living beings) live and make decisions in a world of uncertainty, with limited information available, where infinite numbers of interactions occurs every day. Therefore, in order to get closer to human-level intelligence we need more than a

gaming board or a deck of cards” (p. 39981). What becomes clear, then, is that as much as we have wanted games to offer human behaviours, perception, especially with respect to emotions and affective intentionality, has taken a backseat in the extant models.

As phenomenology makes clear, the emphasis on behaviour over perception leaves out the crucial, indeed foundational mode of intelligence: affective intentionality. Simply put, how we feel about phenomena impacts how we perceive phenomena as significant, inconsequential, interesting, etc. Thus, we should be asking if machines can even comprehend significance: Can they feel any particular way about a game, a move, or the phenomenon of play? Indeed, put plainly, is the phenomenon of play even an ontological possibility for the Instruction Set Architectures (ISA) of computers?

The Play's the ... Thing?

When mental representation provides the model of intelligence, and vice versa, the definition of play becomes paramount. Within the biological sciences, play is articulated as an expenditure of excess energy, prominent only in groups meeting Maslow's basic needs (physiological needs such as food and water; safety needs such as security from predation) (Sharpe et al., 2002). Further, play has functional (i.e., evolutionary) advantages in terms of finding equilibrium within new situations. As Sutton-Smith (1997) outlines, “[b]iologically, its function is to reinforce the organism's variability in the face of rigidifications of successful adaptation” (p. 231).

More than that, these kinds of definitions are epiphenomenal, providing the purposes or advantages of play, and therefore do not give us a definition of play in-itself. Beyond tracing the commonalities, all of the literature we have surveyed implicitly agrees with Gregory Bateson's foundational discussion of play (1976), wherein he ponders the meta-communicative essence of the phenomenon. He somewhat mischievously offers “[t]hese actions, in which we now engage, do not denote what would be denoted by these actions which these actions denote. The playful nip denotes the bite, but it does not denote what would be denoted by the bite” (Bateson 1976, p. 121). He goes on to explain “(a) that the messages or signals exchanged in play are in a certain sense untrue or not meant; and (b) that that which is denoted by these signals is non-existent” (Bateson 1976, p. 123). To put this very simply, the issue of play pivots around the subjunctive mood, the primordial ‘as-if’: behave *as-if* this nip is in fact a bite; behave *as-if* this ball crossing a chalk line is winning and losing; behave *as-if* these pixels upon a screen are gods and monsters. The question then becomes one of determining how much immediacy is required to get to “as-if” in a game and whether the limitation is one of hardware, software, or of the people who create and their methods and rationale. Given the tautology above, we are fairly certain of the answer.

This act of meta-communication, substantial of course in all metaphor, analogy, simile and so on, comes very naturally to the human. It is innately an act of fantasy, or perhaps more strongly illusion, as Huizinga originally pointed out (1949) regarding the magic circle: one commits to the illusion of meaning, of an act and its attendant scenario, so absolutely that the illusion ceases to be, phenomenologically speaking,

and becomes its own truth; to do otherwise is to be a spoilsport that breaks the illusion. As Gadamer (2004) pithily acknowledged, “all play is a being-played” (p. 106), and the coming together of players, equipment, and rules generates an event that has its own ontology, its own truth, exceeding all of the individual components; a genuine *inter-pretation*. This can only occur in and through a given gameworld’s (or gamified world’s) ability to instill, simulate, or otherwise produce the affective intentionality coterminous with the commitment to the *as-if*: once I commit, I leave a state of apathy and begin to wish, to desire, to want to achieve, succeed, win, and so on.

Similarly, the example from the virtual museum highlights the ongoing omission. Human-level AI should not just reproduce a human’s response to inputs, but should produce responses that a human would perceive. In short, human-level AI needs to perceive play itself. Even so, we must ask, is this possible for the literal fundamentalism of the machine? Can a machine that only ever asserts, ponders, and rejects in the most prosaic manner comprehend the initial meta-communicative gesture, *as-if*?

Phenomenology gives us the means and methods to understand the response to affective intentionality and, more importantly, to develop the contingent hermeneutic (Merleau-Ponty 2013). Let us now consider the production of affective intentionality and the ways VR games and gamified systems, like the virtual museum and *Red Dead Redemption 2* (Rockstar Games 2018) facilitate, impede, and especially teach the perception of perception. As a corollary, then, as our article necessarily considers meta-communication essential to play, it also considers meta-cognitive processes—that is, the strategies for learning about learning—that occur in and through interaction with AI in games and devices (cf. Hacker 1998, 2016). Indeed, meta-cognition becomes a contingent component for instilling affective intentionality.

AI and Affective Intentionality

Developing a successful artificial intelligence engine remains somewhat elusive despite its origins in the post-World War II research that eventually produced what we now know as the Internet. In fact, this strain of Internet/AI research continues, and remains hung up, as it were, on the issue of emotion. For example, Luis-Ferreira and Jardim-Gonçalves (2013) explain that while “some information may contain sensorial or emotional contents, the search results come essentially from algorithmic execution over keywords by relevance” (p. 71). In other words, the affective is subordinate to the algorithmic; indeed, it may even be elided by it. Even so, DARPA affiliated researchers van Lent and Laird (2001) identified games as the “killer app” that would make AI indispensable to the form, and vice versa: “[I]nteractive computer games are the killer application for human-level AI. They are the application that will need human-level AI” (p. 15). However, as recently as last year, Vladimir Petrović (2018) notes that “research on advanced AI agents in the virtual worlds is the necessary ingredient of their further evolution; and on the other hand, the virtual worlds represent an excellent platform for research on numerous problems related to the challenging field of AI” (p. 39976).

In fact, Petrović finds a tendency to adopt simple algorithms because a “simple illusion of intelligence can have the same effect as a more complex AI” (p. 39978). Thus, the development of AI in games has not always been as advanced as it might otherwise be. While Petrović attributes this to “expectations and demands coming from the virtual reality concept [being] much higher than the technological capabilities at that time,” there are other factors at play (p. 39976). Indeed, in their initial description of the challenges of implementing AI into video games, van Lent and Laird (2001) note that the challenge of actually doing so presents “new research problems relating to knowledge representation, agent navigation and human-computer interaction” (p. 1). However, their work focussed on the responsiveness of the agent, the interface, and the enhancement of the pleasures of playing.

Here, it is worth recalling that the relationship between AI and its use in video games has a somewhat problematic history. Van Lent and Laird offer that the design principles and AI features from military simulations may have applicability in video games. Indeed, they developed combat simulators for the U.S. military prior to turning their attention to games. In fact, the first games produced using the fruits of their labour were *Quake II* (id Software 1997) and *Descent 3* (Outrage Games 1999). These two games, and in particular the AI engine involved, reflect over fifteen years of research “in the fields of artificial intelligence and cognitive psychology” (p. 1). As much as this is an incredible amount of work, it does not come without consequences and limitations deriving from its militaristic roots, not the least of which is an implicit basis in hegemonic masculinity.

This is significant because as Michael Kimmel (1995) explains, the “sturdy oak” version of American manhood depends upon and enforces a masculinity that “depends on emotional reserve” (p. 498). More specifically, Ramon Hinojosa’s (2010) ethnographic work with military personnel finds that such men “construct a hegemonically oriented masculinity” based on the assumption that they are “more morally oriented, self-disciplined, physically able, emotionally controlled, martially skilled, or intelligent than civilians” (p. 179). This becomes a further concern when one considers that part of the function of the AI is to interact with the player. Therefore, van Lent and Laird (1999) stress the capability of AI engines or agents “that include the ability to plan and learn new knowledge” (p. 1). We would highlight the fact that whatever the AI agent learns will also be oriented towards what we can only characterize as an in-built confirmation bias towards a kind of emotional reserve. In fact, we would go further and question whether the ontological and epistemological parameters of AI design even allow for a comprehension of affectivity in the first instance. Superficial emotional responses such as pleasure or pain, easily programmable as 1s or 0s, are markedly different to deeper moods such as anxiety, anger, boredom, euphoria, or hope. Indeed, the emotional valence (pleasure or pain) is often a metacognitive evaluation of the fundamental mood, i.e., “it is pleasurable to feel this kind of anger” versus “this form of anger is painful for me”. Once again, metacommunication and metacognition must go hand-in-hand.

In characterizing the components of the killer app, van Lent and Laird (2001) list several qualities of an AI engine for simulating human-level interaction: “real-time response, robustness, autonomous intelligent interaction with their environment, planning, communication with natural language, commonsense reasoning, creativity, and learning” (p. 15). Affect and affective intentionality do not appear. Moreover, our

reading of their absence is only furthered by the inclusion of “commonsense reasoning.” This is hardly the stuff of an objective or even dispassionate observer. There is absolutely no indication whatsoever regarding *whose* common sense will be adopted, on what basis, and with what effects. Simply put, the AI engine will bear the trace of its algorithmic origins as an “inference machine and general knowledge base” (van Lent and Laird 2001, p. 1). In fact, these are only two of the three parts of the AI engine, as van Lent and Laird define it. The other portion is the interface. However, they also acknowledge that the knowledge base is the part to which they and their programmers—at a ratio of three-to-one—devote most of their attention.

Thus, the inference machine and the interface, the two parts through which the perception occurs, are limited in scope and in attention. Moreover, the goal of the project from the outset has been “to make games more enjoyable by making the agents in games more intelligent and realistic” (van Lent and Laird 2001, p. 2). We would argue that this tautology reveals the need to look further. It speaks to a crucial determinism in games, game design, and game studies—both popular and academic: a belief that successful games are fun and games that are fun have a chance to be successful because fun is a requirement for success. It also equates success/fun with realism.

However, games like *Fortnite* (Epic Games 2017) and *Player Unknown’s Battlegrounds* (*PUBG*, *PUBG Corporation* 2017) call this determinism into question. We might argue instead that a generic fidelity or verisimilitude is equally important and requires a different set of learning tools. Moreover, pleasure or its counterpart, pain, are not particularly subtle or nuanced emotions. Rather they are rather base, primary, and easily established. In addition, the emphasis on cognition and cognitive, while important in terms of learning, still overlooks the bodily dimension of the emotions, their evaluative component, and therefore their intentionality. Here, the inference engine might better be described and defined as a metacognition engine since the goal should also be to learn about learning and about strategies for learning. As Hacker (1998) originally defines it, metacognition includes knowledge of the learning processes along with the contingent “ability to consciously and deliberately monitor and regulate one’s knowledge, processes, and cognitive and affective states” (p. 3).

The monitoring and regulating functions both map onto affective intentionality in and through the evaluative function of emotion. Even if we assume the extent of the emotions produced by games is the binary of pleasure and pain, the affect motivates or demotivates the player accordingly. In Bennett Helm’s (2009) terms, the felt differences between opposing emotions are “a direct result of the specific way these emotions evaluate their objects: [e.g.,] to feel fear is to be pained by danger, whereas to feel anger is to be pained by an offense and to feel disappointment is to be pained by failure. In short, emotions are pleasant or painful precisely in that they are feelings of these evaluations impressing themselves on us” (p. 249). There is an awareness, then, of the self as well as the measure of things outside the self. In Hacker’s (2016) further elaboration of meta-cognition, he establishes “an awareness of oneself as a learner” as an important component as well as an important contributor to the process of learning strategies for learning (p. 22).

Surprisingly, for van Lent and Laird (1999), the successful AI engine has little to no evaluative function. Rather, it is a simple, straightforward decision-making process. For them, “stimulus-response agents just react to the current situation at each time step with no memory of past actions or situations. This type of agent is generally very responsive because, without contextual information, the proper reaction to the current situation can be calculated very quickly” (p. 3). Even so, they allow that these agents cannot easily handle higher-level strategies. Again, the AI engine bears the perceptual basis of its militaristic origins. The emphasis is on expediency and on instrumental rationality, so that ends are being favoured over means. In the end, it is precisely the measure of how we get there, as it were, that forms the basis of our investigation.

‘I really mean it, man’: Affective intentionality

Concurrent with scholars’ turn to video games as the killer app for AI has been a turn in the relative standing of emotion as a subject of study. Whereas it had been a commonplace to study emotions in terms of the bodily experience that conditions and/or accompanies them, it is only recently that scholars have recognized emotions as providing measures of cognitive *and* affective responses to the experiences that elicit them in the first instance. As the apostrophe with which this section opens, the sentiment includes a pair of qualifiers of its sincerity. The “real” in “really” insists on a measure of veracity, whereas the “man” with association with a political stance, affirms a measure of humanity along with sincerity.

The capacity of the affective to become evaluative proves particularly salient when studying video games which are inherently systems of measurement and of surveillance. As Bennett Helm (2009) observes, “When we turn to the emotions, we discover that they have both cognitive, and conative elements insofar as, like cognitions, they tell us something about how the world is and, like conations, they motivate us to act in various ways to change the world” (p. 248). Nonetheless, the correspondence between games and affective intentionality remains until now almost entirely outside the realm of game studies scholarship. When we add the perceptual bundles through which AI operates, the necessity of studying affective intentionality, what Slaby (2008) calls “the mind’s capacity to be directed at something beyond itself,” becomes even more pressing (p. 429). As van Ryn, Apperly, and Clemens (2019) note, “Individual games cultivate a sense of care in the avatar, both on an aesthetic and narrative level through characteristics like cute-ness” (p. 1).

However, it well worth noting that their main focus is the affective dimension *outside* the game; that is, with regard to the interface and the economy. Still, these represent an attachment and an investment beyond just money. The growth of VR environments adds still another dimension to any discussion of affective intentionality and AI’s role in producing and responding to it. Here it is important to note a particularly salient duality in Helm’s enumeration of the evaluative function of emotions. He focuses almost exclusively on pleasure and pain, which are, as it happens, the two most commonly cited cognitive and affective responses to video games. Indeed, this is the very contingency of Jesper Juul’s (2013) famous formulation regarding the attraction of video games: “we do not always seek pleasure” (p. 41). Indeed, Juul argues that (a) part of the pleasure, as it were, of

playing video games comes from the almost certainty of failure. In this way, the game becomes a measure of our tolerance for pain, but the pain also becomes a measure in and of itself. Put another way, Slaby (2008) argues that it “is in the most central cases not a cold, detached, purely cognitive affair, but rather constitutively feelings-involving. It is affective intentionality” (p. 429). Where Juul posits that the interplay and juxtapositions of pleasure and pain constitute the ruling paradox of video games, we would argue with Helm and Slaby that these are not paradoxical at all. Rather, they index the evaluative constituents of affective intentionality. Thus, affective intentionality is not just a product of video game play, or a component of game play, it is also something for which the game AI itself must index and evaluate.

Slaby (2008) lists five dimensions through which affective intentionality operates. Of these, one is particularly important to the present project. In emotional experience, “we are not consciously focusing on our body, but rather have a bodily feeling towards something outside our body – towards a particular threat, an offence, a loss, or whatever else there may be that is or might be significant for our wellbeing” (p. 437). Here, it is well worth mentioning that Ratcliffe (2005) argues for the ways the sense of touch provides an exemplar through which the experience of the “felt body” can be understood as a fundamental component of cognitive *and* affective responses to external stimuli (p. 47).

As the formulation implicitly states, there is a simultaneity of experiences—cognitive and affective; that is, thinking and feeling—so that we become aware both of something outside the body and of the body’s feeling(s) of it. For Slaby (2008), the role of “the body schema in emotional experience can be thought of as an extension or (metaphorical) ‘generalization’ of the sense of touch” (p. 437). This becomes important when we consider the technological from the perspective of Marshall McLuhan (1973), whose famous “the medium is the message” most definitely applies in this instance and in others (p. 23). This widely quoted and equally misunderstood axiom provides a further basis for understanding the role and function of affective intentionality, particularly as it applies to (the adaptation of) AI in games. For McLuhan, a medium is not simply a means of conveying information; rather, it is any extension of the self. Perhaps the easiest to imagine is the pencil. The pencil is an extension of the self which offers a connection to the paper. The message, for McLuhan, is not the content but rather the change of scale, pace, or pattern, especially with regard to the ability to do work, afforded by the extension (Federman 2004). In the example of the pencil, the message is the speed with which words can be written and transmitted. The pattern changes by virtue of syntax and grammar, not to mention lines on a page. Ultimately, though, the content of the written note is speech or thought.

Thus, McLuhan concludes that the content of any medium is always another medium. The video game controller, for instance, is the most obvious example of such an extension. It extends the self in myriad ways, in particular by affording the body a sensory connection with a world that is external to the self but which is also entirely internalized by it both in and through the connection. If the message of the technology is the change of scale, pace, or pattern, then we can see that the controller—the interface, more properly—changes the experience of all three.

However, one of the consequences of the extension of the self is what McLuhan calls the “auto-amputation” effects of any technology that becomes prosthetic (1973, p. 52). The effect of any prosthetic is to replace or to supplement the body but with the result that it cannot function otherwise. Those who wear glasses or contacts will note the immediate change wrought by the prosthetic but with the cost of peripheral vision, close vision, or simply the inability to navigate from the bed to the light switch once awoken by a crying child or a ringing telephone. Moreover, the additional stimuli—the child or the phone—are not only external to the self (and the body), they also provide an illustration of the numbing or the narcosis brought on by media saturation to which McLuhan refers. Still, in every case, and in particular the game controller or the game interface, the contact remains mediated. As we have argued elsewhere (Conway and Ouellette 2019), it is incredibly important in the contemporary video chat world to remember that when we hold a Google Hangout, a Webex, Zoom, FaceTime or Skype conversation, we are not talking to another person. We are talking to a device. This is not just an egocentric error of the sort which Lacan describes in the “mirror stage.” Instead, it is an example of the illusory experience produced by the transparency and the immersion of the medium. Not noticing the mediation is another of the auto-amputation effects and it is a significant one in terms of the affective intentionality of the AI game (and the game AI) and its perception of perception.

Here, Rob Gallagher (2017) adds an important insight about the “bathetic” effects of the current AI engines, particularly in adventure-horror games which succeed by “making a virtue of videogame AI’s limitations, they draw players into close relationships with NPCs only to expose them to moments of breakdown which generate feelings of horror, shock and bathetic absurdity, reminding the player of their tendency to slip into states of abstraction more characteristic of an automaton than a deep, rational human subject” (p. 120). Further, this seeming success occurs precisely because of a system that favours cognitive—that is, linguistic and discursive—means over affective ones. In such circumstances, the player will never be responding precisely to the game itself; rather one will be responding to the mediation of the interface. Gallagher (2017) cites the sudden appearance of seeming intuition and its even more sudden disappearance as hallmarks not just of games like *Silent Hill* (Team Silent 1999), but of the AI engines, in general. The bodily component of the affective intentionality then becomes more important because its precision increases exponentially as the immersion, the reality, but also the responses become more developed, involved, and broadly based. Games now animate skin blemishes, animal fur, mist or fog, and dust in sunlight without any problem at all. They more than adequately offer point-of-view, field of vision, and response time. Anyone who has had to calibrate a game screen, whether for *Rock Band*’s (Harmonix 2007) notorious drumkit or the clutch mechanism in the *Forza* games, will immediately recognize that there is still an intuitive feel for these, one that is both sense of space and of timing. The question remains as to the AI’s capabilities or intentionality to capture or to transmit the affective intentions of the player or reasonably represent them in and through the avatar.

If we were to offer an analogy from the world of art it would be the very necessary bodily experience—whether acknowledged as such or not—of attempting to find the moment, by moving forward and back, by focussing and refocussing, when a painting like Monet’s *Bassin d’Argenteuil* stops looking like a bunch of smudges and dots and

begins to look like sailboats on the Seine. Not only is the body implicated in the process, it is part of the process. The “a-ha” moment—to quote Lara Croft’s famous interjection from the moment of discovery of a treasure in the original *Tomb Raider* (Core Design 1996), a puzzle solution, a clue, etc.—provides both a cognitive and an affective response, one which has both mental map and corporeal kernel. While Lara’s reaction might be visceral, to the player, seemingly to the avatar, or to both, the reaction remains largely univocal and univalent; hence its status as an internet meme and the subject of innumerable gifs, both still and moving.

At the same time, there needs to be a discernible difference between the response of the player and that of the avatar. On the screen, Lara’s moment of “a-ha” represents a cognitive response, one of awareness, of discovery, etc. In contrast, the reaction of a player may well be one of absolute relief, complete with fallen shoulders and perhaps even a drop of the controller and a different interjection: “Finally!” In fact, the reaction might well be one of abject indifference to the game at that point. This invokes another of Slaby’s (2009) contentions regarding affective intentionality, namely the relationship of emotional pleasure and pain to a bodily experience of those emotions. This follows from Bennett Helm’s (2009) argument that emotions represent and reflect an “evaluative intentionality” (p. 248). The overwhelming tendency of the AI, however, is to insist on celebratory moments that might be completely and utterly out of place given the actual moment for the player. Thus, the AI needs to perceive perception itself and the response cannot be a cognitive one alone.

Returning to the example of the “a-ha” moment in *Tomb Raider* (1996) or to the feeling of warmth from the VR wood stove, either of these can be understood as what Helm calls “the direct result of the specific way these emotions evaluate their objects” (p. 249). These are not just automatic or intrinsically good or bad sensations and experiences. Rather, they are constitutive of an evaluation—more specifically an indexing—of those sensations and experiences. It is possible to be too warm or not warm enough. Thus, there is also an anticipatory component embedded within that moment but this too precedes and conditions another set of evaluative emotions, for disappointment and fulfilment follow from that moment just as surely as another puzzle to solve or another task to complete. Taken together, these cognitive and affective responses produce a fourth and potentially most significant result: “Emotions in many cases motivate us to act, albeit in various ways” (p. 249). In fact, video games rely on this very process in and through the interplay of recreation, rules and rewards and the algorithmic kernel through which this occurs.

As Ruggill and McAllister (2011) explain, games are an insistent technology. This is another way of saying games motivate players. However, they do so through three related basic elemental functions: discovery, collection, and construction. No game better exemplifies these fundamentals more clearly than *Minecraft* (Mojang 2009). Still, there are also meta-game experiences which become part of the overall experience of the gameworld. As Hamari and Eranti (2011) explain, metagaming aspects and routines occur in and through two primary means. First, players may develop rituals, activities, games, and rewards of their own devise. Second, players may seek rewards—usually in the form of achievements or game points—that are external to the game itself. In fact, they find that the latter features “have been one of the most commonly implemented game design patterns in gamification” (p. 2).

Ultimately, they argue that these should be counted as games in their own right. Indeed, as Cole (2010) and Jensen (2013) agree, players find in-built achievements are less rewarding than metagames of their own invention. Even so, within their ethnographic research, Hamari and Eranti find that “not all players engage in the achievement-hunting meta-game and thus might not regard the progression in the achievement system itself as a reward, however, unlocking an achievement takes the player closer to the (usually implicit) winning condition of an achievement system—unlocking the maximum amount of badges” (p. 11). At this moment, the game features what Rolf Nohr (2015) argues is one of the hallmarks of a “meta-game” insofar as it provides its own means of evaluation (p. 201). Simply put, players’ reactions to the rewards, both in-game and out-of-game, index the level of their motivation but also their relative embrace or aversion to grief, frustration, desire, satisfaction, worry, and anticipation, among other evaluative emotions.

For example, *Forza Horizon 4* (Playground Games 2018) suggests a change in the skill level of the AI opponents, or “drivetars,” depending on the relative success of the player at the current level. The game will recommend a step down in opponent quality if the player loses too frequently or too easily, but will also offer the enticement of the greater rewards that come with more challenging AI opponents if the player wins too handily. The significance lies in that the game AI is starting to offer the indexicality of affective intentionality. The suggestion of more difficult opponents does not appear if the player barely wins or places in the top three every time. Frequent losses become frustrating but also become a disincentive to playing. The games become work. However, winning too easily also becomes a disincentive to play because it can produce tedium or boredom with the game. Not only is the game producing affective intentionality, it is beginning to perceive and measure the cognitive and affective responses of the players and rewarding them for skill and achievement. In short, the AI is starting to perceive players’ perceptions of the game and their evaluative functions. Moreover, the AI itself is measuring, or attempting to measure, all of these perceptions and to learn from them.

I Feel for You: Conclusions

Affective intentionality always already entails an indexicality that should lend itself not only to AI and to games (design) but to computing, as well. Computers are nothing if not machines for measuring things. Thus, one of the things that strikes us in reading through our paper and considering the importance of developing an AI engine for affective intentionality is that there should not, then, be a conflict with regimes based on instrumental rationality or efficiency. Simply put, we are not asking a computer to do anything it cannot already accomplish. The computational labour is already accounted for within the language of computing. The impetus must come elsewhere for it should not necessarily be the case that the killer app for AI is tech support and robo calls. Nevertheless, as recently as one month before the drafting of these conclusions, Kshirsagar et al. (2019), write that *Checkers*, *Chess*, *Go*, and *Backgammon* all serve as benchmarks for AI algorithms, that “the structure of these games was used to illustrate the learning, reasoning, and planning capacities of the algorithm, and was not focused on the human’s effort and attitudes in these competitions” (p. 1). The significance lies in the focus of their study and especially in

their findings, for theirs was the first experiment to measure people's reactions to competing with robots for a monetary reward. The most significant finding of their games-based approach was that they could not explain the failure of their hypothesis that people would exert more effort for greater monetary rewards. Kshirsagar et al. (2019), theorize that "people would have to be willing to exert effort competing with the robot mostly for non-monetary reasons. Ex-ante, we did not expect such behavior" (p. 8). What they find instead is the value people place on attachments. However, these can actually be measured. Again, the heart of affective intentionality is its indexicality.

Here, we feel it is important to end with an anecdote about the adaptation of gamified means to the very affective arena of parenting. For example, given an eleven-year-old who had missed several deadlines for school assignments because she was focussed instead on extra-curricular activities, the parental response might be to punish via grounding, ending the extra-curriculars, etc. In a resource management game, the contra-ludic effect might be to take away resources or add an obstacle or put a time limit on something. Again, these are rather straightforward punishments or contra-ludic effects. However, anger and frustration are also indexical. They are measurable and so was the solution, which was based on the mood of the situation and the intended outcome. If learning, resource management, and strategies for learning are the goal of the game—indeed, one of the goals of any game is to teach players to play so that they want to play—it should also include the option to make the child choose which activity would be removed if something needs to be removed at all. In other words, as in the scenario that opened our paper, the importance lies in producing and measuring the attachment and the participation goals as well as the outcomes. In the scenario just given, the parent chooses the option that would have the most suitable emotional impact upon the child, rather than a rational or instrumentalist deduction following the recommended ruleset. For example, a child disobeys a rule. Regardless of how and why the child disobeyed, the computer responds the exact same way each time: 1 or 0. In fact, the choice is made by working backward from the goal instead of being goal-oriented. Meanwhile, using a human understanding of care, concern, and mood, the response is almost infinitely adjustable. The child has broken a rule, but an ontological disposition, being attuned to the situation (Heidegger (2001) calls this mood attunement "*Stimmung*," a term which has the same musical connotation as attune), lets a parent respond very differently to rule-breaking (p. 172).

In other words, computers have no sense of attunement; indeed, they cannot "find the tune" at all. It is simply not part of their existing ontology. Here, we say existing, because we know that computers can and are capable of measuring and mapping tunes. Here again, we point to the source and not the substance of the relevant AI: Auto-Tune was created to help Exxon Mobile find oil and gas deposits, not to help singers and song-writers. Computers can measure, but as we mentioned earlier, the content of a medium is always another medium. Thus, the content of the extant AI routines will always already be corporate, militaristic, and instrumental. Asking a computer "what is closest to you?" would evince a response of either A) the closest material space/object or, if programmed a bit cunningly, B) a person the computer was programmed to acknowledge. Regardless, the computer could never dynamically shift its sense of significance as we can, picking up on the "mood of the

room” to, say, “my partner’s voice,” or “my friend’s face,” or “that painting,” or “my cup of coffee,” etc.

Simply put, the computer has no capacity for ‘world,’ in the phenomenological sense. The human finds itself always already as being-in-the-world, whether that is the world of scuba diving, the world of finance, or the gameworld. These worlds are founded upon affect, as Crowell (2005) discusses:

[I]t is through moods that things matter to us [. . .] Heidegger links affectivity to the pre-intentional disclosure of being-in- the-world as a whole. Less formally, it is through mood that the world as a whole – the context of significance co-structured by my projects – is opened up as mattering in a certain way. When I am bored it is the world as a whole that is boring, hence individual things in it can strike me as tedious; when I am joyous I am warmly attuned to things as a whole, hence I can find particular things enchanting. At the same time, moods tell me something about myself. [. . .] Moods thus attest that I am not a pure egological spontaneity but am passively exposed to the world. (p. 58)

Whilst our ontology provides an innate exposure to worlds (through moods, feelings, emotions), the computer has no such capacity, it is intrinsically worldless: whilst we are ontological, the computer is ontic. It follows then, that whilst the computer can be a part of many worlds, much like a desk, a chair, or a monitor, it remains numb to any specific world’s significance. It cannot play, since play depends firstly upon recognition of the significance of a world.

For its part, the machine can do things quickly and is very good at that, but of course none of those can be stretched, they can only be compressed. This is why games like *Resident Evil 7* (Capcom 2017) or *Grand Theft Auto IV* (Rockstar North 2008) or *Skyrim* (Bethesda 2011) insist the player make the (very simple) “moral choice” (save your spouse, help a homeless girl, sacrifice an associate, respectively) while games like *Call of Duty: Modern Warfare 2* (Infinity Ward 2009) or *Black Ops II* (Treyarch 2012) give you no choice other than to not play. Instead of having to make a choice based on an index of affective intentionality, the game leaves it to the player, leaves the player hanging (the infamous dilemma of *Missile Command* (Atari 1980), whether to save missile bases or cities) or makes you choose not to play. In contrast, a human plays and feels the beauty of a move, the angst of a missed opportunity, the anxiety of the clock ticking down. The computer game simply says: 1 / 0. Here, we also think of the rise of football manager and other sports simulators and especially their influence and impact on the real sports (Ouellette and Conway 2018). It is very easy to be a football manager when all you have are players reduced to stats. It should be recognized immediately that reducing people to stats has a limited utility and leads to the fan thinking he or she really could be a football manager. In contrast the coach/manager has all manner of information on which to draw and which might actually be quantified—fatigue, aches, etc.—but not easily. The most obvious example is a hockey fight, something that requires a game engine from a combat game to be ported to what was otherwise a sports simulation in order to produce the immersion, the immediacy of being there for the player.

Yet actual hockey fights are not often spur of the moment things and even if they are, there’s a negotiation that games do not take into account. It is not some erotic or orgasmic building of tension (male egoism *qua* jouissance writ large and gameified,

again). It is a tease, one that hockey players literally call “dancing.” Indeed, in Feb. 2019, the sports website *Barstool Sports* (Jordie, 19 Feb.) posted a video of players squaring off as if ready to fight but then breaking into a dance routine, just in time for Valentine’s Day. The video is six years old and the event was actually from a charity game. However, this was not initially known to fans or to the bots on social media sites like FaceBook, Twitter, etc. What ensued was the sort of kneejerk homophobic reactions one might expect as the video became instantly viral—that is, until the gaps in understanding have been filled. Then, the reactions change. This is the very contingency of McLuhan’s distinction between hot and cool media, one that we think is not only the key to any future AI engine, it is also the key to any future game design heuristic, for such a heuristic will recognize the ways that games are hot media that become cool and vice versa. Instead of the military-industrial model on which the current game system, the AI system, and the games used to calibrate the AI are based, we would call, as we elaborate in detail elsewhere (Conway and Ouellette 2019), for a design heuristic that can account for affective intentionality. This is especially important at the moments when the reception of the media reverses—for example, from low participation to high and back again—for these are the instances when emotions are most likely to shift to more aroused states: happiness, frustration, anger, etc., or satisfaction, anticipation, boredom, etc. The computing power certainly exists, but until now it has only ever been focussed on measuring absolute rather than scalable outcomes. Moreover, the tautology that successful games being fun games because fun games are successful belies the maturity of the medium and the complexity of players’ responses, each of which can and should be measured or at least anticipated. The AI needs its own AI.

Games Cited

Atari (1980) *Missile Command*. Atari (Arcade and Atari 2600).

Bethesda Game Studios (2011) *The Elder Scrolls V: Skyrim*. Bethesda Softworks (Xbox 360).

Capcom (2017) *Resident Evil 7: Biohazard*. Capcom (PlayStation4).

Checkers.

Chess.

Core Design (1996) *Tomb Raider*. Eidos Interactive (PlayStation).

Epic Games (2017) *Fortnite*. Epic Games (Xbox One).

Go.

Harmonix (2007) *Rock Band*. MTV Games (Xbox 360).

id Games (1996) *Quake II*. Activision (MS-Dos).

Infinity Ward (2009) *Call of Duty: Modern Warfare 2*. Activision (Xbox 360).

- Mojang (2009) *Minecraft*. Microsoft Studios (Xbox 360).
- Outrage Games (1999) *Descent 3*. Interplay Entertainment (Microsoft Windows).
- Playground Games (2018) *Forza Horizon 4*. Microsoft Studios (Xbox One).
- PUBG Corporation (2017) *PlayerUnknown's Battlegrounds*. Microsoft Studios (Xbox One).
- Reversi*.
- Rockstar North (2008) *Grand Theft Auto IV*. Rockstar Games (Xbox 360).
- Rockstar Games (2018) *Red Dead Redemption 2*. Rockstar Studios (Xbox One).
- Team Silent (1999) *Silent Hill*. Konami (PlayStation).
- Treyarch (2012) *Call of Duty: Black Ops II*. Activision (Xbox 360).

References

- Bateson, G., (1976) A theory of play and fantasy. In: Bruner, J. S., Jolly, A., and Sylva, K. (eds.) *Play: Its Role in Development and Evolution*. Harmondsworth: Penguin, pp. 119-129.
- Bolter, J. D. and Grusin, R. A., (2000) *Remediation: Understanding New Media*. Cambridge: MIT Press.
- Cole, D., (2010) Metagames and containers. Sleepover, San Francisco [Online]. Available from: <http://www.sleepoversf.com/metagames-and-containers/> [Accessed: 22 Nov. 2015].
- Conway, S. and Ouellette, M. A., (2019) Playing it cool: Considering McLuhan's hot and cool taxonomy for Game Studies. *Convergence: The International Journal of Research into New Media Technologies* [Online], DOI: 1354856519880789.
- Crowell, S. G., (2005) Heidegger and Husserl: The matter and method of philosophy. In: Dreyfus, H. L., and Wrathall, M. A., (eds.) *A Companion to Heidegger*. London: Blackwell Publishing, pp. 49-64.
- Luis-Ferreira, F., and Jardim-Gonçalves, R., (2013) Modelling of things on the internet for the search by the human brain. *Doctoral Conference on Computing, Electrical and Industrial Systems*. Berlin: Springer, pp. 71-79.
- Federman, M., (2004) What is the meaning of the medium is the message?. University of Toronto [Online]. Available from: <http://individual.utoronto.ca/markfederman/MeaningTheMediumistheMessage.pdf> [Accessed: 22 Nov. 2018].

- Gadamer, H.-G., (2004) *Truth and Method*. 2nd ed. Revised translation by Joel Weinsheimer and Donald G. Marshall (eds.). London: Sheed & Ward.
- Gallagher, R., (2017) *Videogames, Identity and Digital Subjectivity*. New York: Routledge.
- Hacker, D. J. (1998) Definitions and empirical foundations. In: Hacker, D. J., Dunlosky, J., and Graesser, A. C., (eds.) *Metacognition in Educational Theory and Practice*. New York: Routledge, pp. 1-24.
- Hacker, D. J. (2016) The role of metacognition in learning via serious games. In: Zheng, R., and Gardner, M. K., (eds.) *Handbook of Research on Serious Games for Educational Applications*. IGI Global, pp. 19-40.
- Hamari, J., and Eranti, V. (2011) Framework for designing and evaluating game achievements [Online]. In: Proceedings of the DiGRA 2011 Conference: Think Design Play, Hilversum, The Netherlands, 14–17 September 2011. Available from: <http://www.digra.org/wp-content/uploads/digital-library/11307.59151.pdf> [Accessed 22 Nov. 2018].
- Heidegger, M., (2001) *Being and Time*. Translated by John Macquarrie and Edward Robinson. Oxford: Blackwell.
- Helm, B., (2009) Emotions as evaluative feelings. *Emotion Review*, Vol. 1 (3), pp. 248–255.
- Hinojosa, R., (2010) Doing hegemony: military, men, and constructing a hegemonic masculinity. *Journal of Men's Studies*, Vol. 18 (2), pp. 179-194.
- Huizinga, J. (1949) *Homo Ludens. A Study of the Play-Element in Culture*. Translated by R. F. C. Hull. London: Routledge & Kegan Paul.
- Jensen, G. H., (2013) Making sense of play in video games: Ludus, paidia, and possibility spaces. *Eludamos: Journal for Computer Game Culture*, Vol. 7 (1), pp. 69-80.
- Jordie, (2019) This hockey fight was so violent I threw up just blogging about it. *Barstool Sports* [Online]. Available from: <https://www.barstoolsports.com/philadelphia/this-hockey-fight-was-so-violent-i-threw-up-just-blogging-about-it> [Accessed: 19 March 2019].
- Juul, J., (2013) *The Art of Failure: An Essay on the Pain of Playing Video Games*. Cambridge: MIT Press.
- Kimmel, M., (1995) Clarence, William, Iron Mike, Tailhook, Senator Packwood, Magic . . . and us. In: Kimmel, M., and Messner, M. A. (eds.) *Men's Lives*. 3rd ed. Boston: Allyn and Bacon, pp. 497-506.
- Kshirsagar, A., Dreyfuss, B., Ishai, G., Heffetz, O., and Hoffman, G., (2019) Monetary-incentive competition between humans and robots: experimental results. In Proc. of the 14th ACM/IEEE International Conference on Human-

- Robot Interaction (HRI'19), IEEE [Online]. Available from https://users.nber.org/~heffetz/papers/Kshirsagar-Dreyfuss-Ishai-Heffetz-Hoffman_hri19a-sub1146-cam-i20.pdf [Accessed: 17 March 2019].
- McLuhan, M., (1973) *Understanding Media: The Extensions of Man*. Toronto: Signet.
- Merleau-Ponty, Maurice, (2013) *Phenomenology of Perception*. London: Routledge.
- Nohr, R. F., (2015) "Now let's continue testing": *Portal* and the rat in the maze. In: Neitzel, B., Hensel, T., and Nohr, R. F. (eds.) *"The cake is a lie": Polyperspektivische Betrachtungen des Computerspiels am Beispiel von Portal*. Münster : Lit-Verlag, pp. 199-224.
- Ouellette, M., and Conway, S., (2018) He scores through a screen: Mediating masculinities through hockey video games. In: Voorhees, G. and Taylor, N. (eds.) *Masculinities in Play*. London: Palgrave Macmillan, pp. 109-126.
- Petrović, V. M., 2018 Artificial Intelligence and Virtual Worlds—Toward Human-Level AI Agents. *IEEE Access*, (6), pp. 39976-39988.
- Ratcliffe, M., (2013) Why mood matters. In: Wrathall, M. A., (ed.) *The Cambridge Companion to Heidegger's Being and Time*. Cambridge: Cambridge University Press, pp. 157-76.
- Ruggill, J. E., and McAllister, K. S. (2011) *Gaming Matters: Art, Science, Magic, and the Computer Game Medium*. Tuscaloosa: University of Alabama Press.
- Sharpe, L. L., Clutton-Brock, T. H., Brotherton, P. N., Cameron, E. Z., and Cherry, M. I., (2002) Experimental provisioning increases play in free-ranging meerkats. *Animal Behaviour*, Vol. 64 (1), pp. 113-121.
- Slaby, J., (2008) Affective intentionality and the feeling body. *Phenomenology and the Cognitive Sciences*, Vol. 7 (4), pp. 429-444.
- Sutton-Smith, B., (1997) *The Ambiguity of Play*. Cambridge: Harvard University Press.
- van Lent, M., and Laird, J. (1999) Developing an artificial intelligence engine. Proceedings of the game developers conference, pp. 577-588.
- van Lent, M., and Laird, J. (2001) Human-level ai's killer application: Interactive computer games. *AI Magazine*, Vol. 22 (2), pp. 15-26.
- van Ryn, L., Apperley, T., and Clemens, J. (2019) Avatar economies: affective investment from game to platform. *New Review of Hypermedia and Multimedia*, Vol. 24 (4), pp. 1-16.
- Weber, B. G., Mateas, M., and Jhala, A. (2011) Building human-level ai for real-time strategy games. In 2011 AAAI Fall Symposium Series.