Pleasure, Learning, Video Games, and Life: the projective stance

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ABSTRACT This article addresses three questions. First, what is the deep pleasure that humans take from video games? Second, what is the relationship between video games and real life? Third, what do the answers to these questions have to do with learning? Good commercial video games are deep technologies for recruiting learning as a form of profound pleasure, and have much to tell us about what learning could look like in the future should we relinquish the old grammars of traditional schooling. They are extensions of life insofar as they recruit and externalize some fundamental features of how humans orientate themselves in and to the real world when operating at their best. Video games create a projective stance in the sense of a stance toward the world in which we see the world simultaneously as a project imposed on us and as a site onto which we can actively project our desires, values and goals. A special category of games allows players to enact the projective stance of an 'authentic professional', thereby experiencing deep expertise of the kind that so widely eludes learners in school.

Introduction

The questions I want to take up are these: What is the deep pleasure human beings take from video games? What is the relationship between video games and real life? What do the answers to these questions have to do with learning? By video games, I mean the sorts action-orientated games played on computers and dedicated game platforms (e.g. the *Playstation 2*, the *XBox* and the *GameCube*), games such as *Half-Life*, *Deus Ex*, *Doom III, The Elder Scroll III: Morrowind*, *Ratchet and Clank*, *Jade Empire* and *Rise of Nations*, to name just a few.

I believe that good commercial video games are by no means trivial phenomena. They are deep technologies for recruiting learning as a form of profound pleasure. They have much to tell us about what learning might look like in the future, if and when we decide to give up the old grammars of traditional schooling (Gee, 2004).

I also believe that good video games are extensions of life in a quite strict sense, since they recruit and externalize some of the most fundamental features of how human beings orientate themselves in and to the real world, especially when they are operating at their best. In this article, I will argue that good video games create what I call a 'projective stance' – a double-sided stance towards the world (virtual or real) in terms of which we humans see the world simultaneously as a project imposed on us and as a site onto which we can actively project our desires, values and goals (Gee, 2003). I argue, too, that a special category of video games allows players to enact the projective stance of what I will call an 'authentic professional' and thereby experience deep expertise of the sort that so often eludes learners in schools.

The Projective Stance

Consider two related claims about playing video games:

1. In a video game, players *inhabit* the goals of a virtual character in a virtual world. The virtual world is designed to be *attuned* to these goals.
2. In a video game, a virtual character *instantiates* the goals of a real-world player. The virtual world is designed to *invite* the real-world player to form certain sorts of goals and not others.

The real interest is in the interaction between these claims. But let's get clear on what they each mean first. We can start with the first claim: In video games, players *inhabit* the goals of a virtual character in a virtual world. The virtual world is designed to be *attuned* to those goals.

In a video game, the real-world player gains a *surrogate* – that is, the virtual character the player is playing. By 'inhabit', I mean that you, the player, act in the game as if the goals of your surrogate are your goals.

Virtual characters have virtual minds and virtual bodies. They become the player's surrogate mind and body. You may wonder what I mean by the 'mind' of a virtual character. What I mean is this: as a player, you must – on the basis of what you learn about the game's story and the game's virtual world – attribute certain mental states (beliefs, values, goals, feelings, attitudes and so forth) to the virtual character. You must take these to be the character's mental states; you must take them as a basis for explaining the character's actions in the world.

By 'attuned', I mean that the virtual character, that character's goals, and the virtual world of the game are designed to *mesh* or fit together in certain ways. The virtual character (in terms of the character's skills and attributes) and the virtual world are built to go together in such a way that the character's goals are easier to reach in certain ways than they are in others.

Let's consider an example. Take the game *Thief: deadly shadows*. In this game, the player plays the master thief Garrett. In inhabiting Garrett's body (whether playing the game in first-person or third-person mode), the player inherits specific powers and limitations. In inhabiting Garrett's body, with its powers and limitations, the player also inhabits Garret's specific goals, goals having to do with stealing, infiltrating and stealthily removing or sneaking past guards to accomplish specific story-related ends in the game. Given Garrett's powers and limitations, these goals are easier to reach in some ways than others within the specific virtual world of this game.

The virtual world in *Thief* – the world through which you as Garrett move – is a world designed to interact with Garret's powers and limitations in terms of specific affordances and disaffordances. These affordances and disaffordances do not reside in the world alone, but in the combination of the specific mind/body Garrett brings to the that world and the way in which that world encourages or discourages that specific mind/body in terms of possible actions.

It is a world of shadows and hiding places, a world well fit for Garrett's superb (mental and physical) skills at hiding, waiting, watching and sneaking. It affords opportunities for [**AU: OK TO ADD 'OPPORTUNITIES FOR'?**] hiding and sneaking of all sorts. It is not a world well made for outright confrontations and frontal fights: in this world, Garrett can find no guns or weapons much beyond a small dagger, and the spaces that would allow outright fights with multiple guards are pretty cramped, allowing guards easily to surround Garrett. And, indeed, this is all to the good – it fits well with the mind/body Garrett brings to the game – since Garrett most certainly has grave limitations when it comes to fighting outright in the light. He can shoot an arrow unseen from the shadows or he can sneak past guards, but he's quite weak when he shows himself in the light for open battle. The way the world is made and the way that Garrett's mind/body is made, and the way they mesh, have major consequences for the sorts of effective plans and goals (you as) Garrett can make and carry out.

So we see that a video game creates a three-way interaction among the virtual character's mind/body, the character's goals and the design features of the virtual world in terms of affordances for effective action: virtual character ↔ goals ↔ virtual world.

In a game, the virtual character's powers and limitations mesh with the way in which the game's virtual world is designed in quite specific ways so that the virtual character's goals can be accomplished better in some ways than others. Finding this mesh or fit – 'sweet spots' for effective action – is, of course, one of the key skills required in playing a video game. You *can* play *Thief* as an out-and-out fighting game, eschewing stealth, but you will be fighting the mesh (that discourages such actions) between Garrett's mind/body (your surrogate mind/body) and the virtual world of the game all the way.

Now onto the second claim: In video games, a virtual character *instantiates* the goals of a real-world player. The virtual world of the game is designed to *invite* the real-world player to form certain sorts of goals and not others.

According to the first claim, in a game such as *Thief: deadly shadows*, you, the player, see the world from Garrett's perspective and need to find ways to use the mesh ('fit') in the world among Garrett's mind/body, his goals and the design of the virtual world to carry out *his* goals effectively.

But things work the other way round as well. Garrett becomes a reservoir that can be filled with *your own* desires, intentions and goals. By placing your goals within Garrett – by seeing them as Garrett's goals – you can enact your desires in Garrett's virtual world. But note that this is a process that works well only if you carefully consider that mesh ('fit') that exists in the game among Garrett's mind/body, his goals and the design of the virtual world. This is the only way in which your own goals will be effectively added to Garrett's and accomplished, since the game will resist goals that fall outside this mesh. In this sense, your own personal goals must become Garrett-like goals, goals that flow from his (virtual) mind and body as they are placed in this specific game world.

Let me give an example. At one point in *Thief*, Garrett needs to break into a museum to get an important object. This is Garrett's goal and you need to inhabit him and see the game world from the perspective of his affordances in this particular virtual world if you are to play this part of the game successfully. This is just claim 1.

But let's say that you as a player decide that you want to get through the museum by killing every guard (or, alternatively, by killing no one). This is not a goal that Garrett has in the game. There is no in-game way to decide what his goal would be in this respect. To realize this goal, you have to make it Garrett's in-game goal and treat it just the way you would his own goals, the goals that you are inhabiting (according to claim 1). You must do this, because the world in which Garrett moves allows this goal to be reached in some ways and not others, and it allows it to be reached more easily and effectively (even more elegantly) in some ways than others – this all thanks to the mesh built into the game among Garrett's mind/body, his goals and the specifics of the virtual world in which he moves (as designed by the game's designers).

We can thus revise our three-way interaction a bit. We can say now that a video game creates a three-way interaction among the virtual character's mind/body (the player's surrogate), the character's goals *and* the player's goals, and the design features of the virtual world in terms of affordances for effective action: virtual character (player's surrogate) ←→ character's goals + player's goals ←→ virtual world.

So, in playing a game, we players are both imposed upon by the character we play (i.e. we must take on the character's goals) and impose ourselves on that character (i.e. we make the character take on our goals). It is interesting to note that this is a theme Bakhtin (1981, 1986) focuses on for language. He uses the term 'centripetal force' for my term 'being imposed upon' and the term 'centrifugal force' for my term 'impose upon'. I think there is good reason for this symmetry between games and language, but this is a topic that needs to be taken up in a different article. However, we can certainly note that both language and games are semiotic systems for encoding experience in ways that ready human beings for actions they want or need to take (Gee, 2003, 2004).

Garrett is a *project* I inherit from the game's designers and thus, in that sense, an imposition. I had better understand that project if I am to carry it out well. And to understand it I have to think carefully about the design of the game – the mesh among Garrett, Garrett's goals and the virtual world.

But Garrett is also a being into whom I *project* my own desires, intentions and goals, albeit with careful thought about Garrett as a project – that is, once again, with careful thought about the design of the game. This amounts to saying that both to carry out the Garrett project and to project my desires, intentions and goals into Garrett, I have to *think like a game designer*. I have to reflect on and 'psych out' the design of the game. This dual nature of game characters – the fact that they are both projects the player has been handed and beings into which the players project their desires, intentions and goals – is why I refer to them as *projective beings*, a phrase meant to capture their double-sided nature (Gee, 2003).

So what? Who cares that video game characters like Garrett are projective beings? The double-sided projective nature of video game characters is one of the central sources of the

profound pleasures video games offer humans. This is so, I claim, because in the real world we humans receive our deepest pleasure – our most profound feelings of mastery and control – when we can successfully take what I will call a *projective stance* to and in the real world. This is when things really 'work' for us.

I will describe what I mean by the projective stance in a series of steps. But the first two steps can be taken in either order or carried out simultaneously. The following is what I mean by 'taking a projective stance' to and in the real world. First, we look at the real world, at a given time and place, and see it (i.e. other people and objects in the world) in terms of features or properties that would allow and enhance certain patterns of actions in word or deed. Second, we see that these actions would, in turn, realize the desires, intentions and goals of a human actor who took on a certain sort of identity or played a certain sort of role (and not others). These two steps amount to seeing, imagining or construing a fit or mesh among the world (construed in a certain way), a particular type of actor and specific goals that actor wants to carry our. Third, we then try to become that actor – become that sort of person. We act in word or deed in terms of that identity.

Of course, we humans often form goals first and then turn to the world to realize them, though there are times when the world suggests goals to us that we have not preformulated. If we take step 1 first, we are letting the world suggest vectors of effective action to us. If we take step 2 first, we come to the world with goals and an identity we want to render effective in the world and seek to find the mesh in the world that will make things work out right. In reality, we very often iterate the process – bringing goals to the world, looking for an effective mesh, reconstruing our goals, reconstruing the world and eventually acting and, if not effective, repairing and acting again. This sort of iterative process is not untypical of video-game play, either.

Let me be yet more blunt. What I am suggesting is that when we humans act in the world (in word or deed), we are 'virtual characters' (i.e. we take on specific identities such as 'tough cop', 'sensitive male', 'hip young adult', 'caring teacher', 'savvy consumer', 'needy friend', 'nationalist African-American', and so on and so forth through an indefinite list) acting in a 'virtual world' (i.e. construing the world in certain ways and not others). Of course, the consequences are usually more dear in the real world than in a game world, but in both cases we seek to see how the situation is 'designed' or how it can be viewed as 'designed' to enhance a fit or mesh among ourselves, our goals and the world.

Earlier, I noted an analogy between Bakhtin's remarks on language and the ideas about games I am trying to develop. Here again, I believe, we see an analogy between language and games. What I have called the projective stance is, I would argue, the basic stance that is foundational to conversation as conversation is described in research on conversational analysis, though this body of work does not use this term (e.g. Goodwin & Heritage, 1990; see also Wieder & Pratt, 1990).

We seek to construe the world and form an utterance at a given time and place so that it looks as if the situation invited just that utterance at that time and place. If we are successful, the mesh we construed has now been instantiated and exists, and our goal has been realized.

The argument, then, is that video games build on and play with a stance that is the norm for effective physical and social human action in the world. They externalize in images much of what remains 'mental' (usually unconsciously imaginative) in the real world when we are operating powerfully and effectively. In video games we play with life as if life were a toy.

The Professional Projective Stance and Ways of Seeing

Video games differ in an important way in terms of how they handle the projective stance. In this respect I want to talk about two different types of games (Gee, 2005). The first type of game I will consider is a game such as *Castlevania: symphony of the night*, one of the classic games in the *Castlevania* series. In this game, the player plays Alucard ('Dracula' spelled backwards), the half-human son of Dracula, who enters Dracula's castle to defeat his father.

The skills that Alucard and the player need and use to get through this game are generic action-game skills. Alucard walks, runs, jumps, blocks and attacks in ways that are typical of a great many video-game characters. For instance, Mario, in a game such as *Super Mario*, also walks, runs,

jumps and attacks, though in a quite different-looking world. These are the typical action skills that a great many virtual characters have in video games.

When I play *Castlevania* I, like Alucard, call on my rather generic action-gaming skills, skills that I use in one form or another in many other games. I push buttons to make Alucard walk, run, block or attack. Timing and combining the buttons in certain ways can be important. Like many other video-game characters, Alucard can do some special moves when I push two buttons at once. These are the typical action skills that a great many games require real-world players to have.

However, we need to note that Alucard has different game skills than I do. He knows how to move and fight in the game world, while I know how and when to order him to do so. I also control Alucard's timing, though he controls his own execution of his attacks, which he varies depending on the weapon with which I have equipped him. So Alucard and I have different action-game skills – different game-relevant action abilities – but we need to combine and co-ordinate these to play the game well and to succeed at it.

Let's call these game skills – parts of which Alucard has and parts of which I (the player) have and which become a coherent system only when they are combined – 'action gaming expertise'. Thus, in a game such as *Castlevania*, we get something like this: Alucard ➔action gaming expertise ➔ me. I place an arrow pointing to both sides to notate that the gaming expertise is parceled out between Alucard and myself, neither of whom has the whole set of abilities needed to play the game.

We can now see how we can get to a very different sort of game than *Castlevania*, if we consider one of Alucard's and my (the player's) limitations in a game such as *Castlevania,* however much this limitation is, in fact, part of the beauty of the game. Alucard – like all the heroes in *Castlevania* games – is a vampire hunter. When I play him, I am playing as a vampire hunter. However, even though Alucard is a vampire hunter, he has no distinctive skills associated with this profession. As I have said, he has pretty much the same skills – namely, running, breaking things and fighting with enemies – as Mario, and Mario is no vampire hunter. Alucard and Mario move in quite different virtual worlds, but they do lots of the same sorts of things.

As a player of *Castlevania*, I need not develop or use any skills distinctive of a vampire hunter, either. While images from vampire lore are important to the game, and while I may imagine all sorts of things about vampires while playing the game, the game does not demand that I emulate the vampire hunter's professional ways of thinking and acting. To win *Castlevania*, I have to think like a gamer, not like a professional vampire hunter. Now I must admit that I personally have no idea what the professional values, knowledge and practices of vampire hunters are. And *Castlevania* makes no attempt to emulate these or to teach them to players.

Things, however, are different in a game such as *Full Spectrum Warrior*, the second type of game I want to discuss . (Note: I am well aware that this game is ideologically laden. I am well aware that it carries messages, beliefs and values about war, warfare, terrorism, cultural differences, the United States military and the role of the United States and its army in the modern, global world. I myself don't agree with many of these messages, beliefs and values. But all that needs to be left to the side for now. It is not that these issues are not important. However, right now, our only mission is to understand the game *Full Spectrum Warrior* as an example of a particular type of game. Without such understanding, critique would be superficial at best, in any case.)

This game teaches the player how to be not a professional vampire hunter, but a professional soldier. It demands that the player thinks, values and acts like one to 'win' the game. You cannot bring just your game-playing skills – the skills you use in *Castlevania*, *Super Mario* or *Sonic Adventure 2 Battle* – to this game. You do need these, but you need another set of skills as well. And these additional skills are, in fact, a version of the professional practice of modern soldiers – specifically, in this game, the professional skills of a soldier commanding a dismounted light-infantry squad composed of two teams.

In *Full Spectrum Warrior*, the player controls two (sometimes three) squads of four soldiers each. The player uses the buttons on the controller to give orders to the soldiers, as well as to consult a global positioning satellite[**AU: CORRECT?**] (GPS) device, use a radio for support and communicate with command. The instruction manual that comes with the game makes it clear from the outset that players must think, act and value like a professional soldier to play the game successfully:

> You command a dismounted light infantry squad, a highly trained group of soldiers who understand how to operate in a hostile, highly populated environment. Everything about your squad – from the soldiers to its equipment to its tactics – is the result of careful planning and years of experience on the battlefield. Respect that experience, soldier, since it's what will keep your soldiers alive. (p. 2)

We have seen that in *Castlevania*, neither Alucard nor the player incorporates any depth of professional knowledge about vampire hunting into his skill set. However, in *Full Spectrum Warrior, both* the characters the player manipulates (the soldiers on the squads) and the player him or herself knows (or comes to know) professional military practice. As the manual says, the soldiers 'understand how to operate in a hostile, highly populated environment' and the player learns this or fails at the game.

Full Spectrum Warrior is designed in such a way that certain sorts of professional knowledge and certain types of professional skill are built right into the virtual characters, the soldiers (and into the enemies as well). The game is also designed to teach players some of the attitudes, values, practices, strategies and skills of a professional officer commanding a squad. For instance, consider what the manual has to say about 'moving your soldiers':

> Moving safely in the environment is the most important element of successful command. The soldiers on your teams have been trained in movement formations, so your role is to select the best position for them on the field. They will automatically move to the formation selected and take up their scanning sectors, each man covering an arc of view. (p 15)

Note, again, the value statement here: 'Moving safely in the environment is the most important element of successful command'. I guarantee you that, in this game, if you do not live and play by this value, you will not get far. You'll just spend all your time carrying wounded soldiers back to CASEVACs,[**AU: PLEASE SPELL OUT**] because of another value the game demands: 'The U.S. Army has zero tolerance for casualties!' This value is enforced by the very design of the game, since if even one of your soldiers dies, the game is over and you have lost.

But note also that your soldiers, the virtual characters in the game, actually have professional knowledge built into them: 'The soldiers on your teams have been trained in movement formations, so your role is to select the best position for them on the field. They will automatically move to the formation selected and take up their scanning sectors, each man covering an arc of view'. In turn, the game demands that you, the player, attain such knowledge, as well: 'your role is to select the best position for them on the field'.

There are lots of things your soldiers know and lots of things you, the player, need to come to know. However, these are not always the same things. That is, your soldiers know different things than you know, they have mastered different bits of professional military practice than the bits you need to master to play the game. For example, they know how to take a variety of different formations and you need to know when and where to order them into each such formation. You yourself do not need to know how to get into such formations (in the game, you don't place each solider in position – on the order, they assume the formation as a group).

As another example of the way in which knowledge is parceled out between you and your troops in this game, consider ways of moving your soldiers from one position to the next in hostile territory. There two ways to do this; one is called 'rushing' and the other is called 'bounding':

> The standard press version [single push of the A button] of a move order is the Rush. It is the fastest way to move since all four soldiers move toward the destination simultaneously. Well trained U.S. soldiers never fire a weapon without stopping their movement and going sighted (raising the gun to a firing position). In other words, Rushing soldiers never fire while moving, so they will not engage targets until they finish the move and you issue a fore order.
>
> The hold version [hold the A button down] of a move order is the Bounding Overwatch or Bound. Bounding is the safest way to move when your team is going into unknown territory or moving against one or more enemies that are close together because your soldiers are sighted and return fire as they move.
>
> Issuing a Bound order has two steps. First you press and hold the A button while the movement cursor is out to order the Bound. This automatically opens the fire sector cursor so you can set the area for your soldiers to covering. Pressing the A button again completes the

> Bound order.
>
> Once they receive a Bound order, the soldiers will move into position. The first two soldiers will start toward the destination while the rear two soldiers provide cover fire. Once the first two soldiers finish their movement, they cover the rear soldiers' move. When soldiers fire while Bounding, they automatically suppress to keep the target's head down.
>
> Note that Bounding is very unsafe if there are enemies who are too far apart to be in the same fire sector. If you Bound under these circumstances, you are very likely to lose one of your soldiers. (p. 16).

Note, once again, the values: 'Well trained U.S. soldiers never fire a weapon without stopping their movement and going sighted (raising the gun to a firing position)'. Note, again, as well, the parceled-out knowledge. Your soldiers know how to rush and bound (and they will abide by the value of not firing without stopping and going sighted). You need to know when to rush and when to bound and what area to have your bounding soldiers cover (i.e. to be prepared to stop and fire at if they see any enemies in the area). Note, too, the strategic knowledge that is needed: 'Note that Bounding is very unsafe if there are enemies who are too far apart to be in the same fire sector. If you Bound under these circumstances, you are very likely to lose one of your soldiers'.

Of course, most of the knowledge, values, strategies and skills the player picks up in this game, he or she picks up not from reading the manual, which is, after all, only a small booklet, but from playing the game. The game has a tutorial, hints, and much in its design that helps players learn the knowledge, values, practices, strategies and skills necessary to be enact professional military knowledge and play the game well.

So, a game such as *Full Spectrum Warrior* requires more than generic gamer knowledge and skills – it requires professional knowledge and skills as well, But this professional military knowledge is parceled out – shared between – the virtual characters and the player, each of whom knows some things in common, but different things as well. The technical term for a situation like this, where parts of a coherent knowledge domain (like military knowledge) are parceled out in this way, is to say that the knowledge is *distributed* (Hutchins, 1995).

What a game such as *Full Spectrum Warrior* adds to the gaming space, something that is not in games such as *Castlevania*, is a shared professional role and distributed professional knowledge between the virtual character (or characters) and the real-world player. *Full Spectrum Warrior* allows players to experience *expertise*, to feel like an expert.

I argued above that in a game such as *Castlevania,* the formula Alucard ← action gaming expertise → player is at work. In such a game, the virtual character and the real-world player share knowledge and skills in respect to gaming. In a game such as *Full Spectrum Warrior*, this formula, while still required, is overlaid with an additional one: Soldiers ←military expertise → player. In *Full Spectrum Warrior*, the virtual character(s) and the real-world player share both gaming expertise (as in *Castlevania*) and military expertise, which are, of course, combined and integrated.

I have used words such as 'professional' and 'expert', words that make me uneasy. The word 'professional' brings to mind doctors and lawyers and other sorts of people with high status who get paid well for specialist skills. But that is not what I want to mean by the word. What I want to mean by the word 'professional' is what I will now call 'authentic professionals'. Authentic professionals have special knowledge and distinctive values tied to specific skills gained through a good deal of effort and experience. They do what they do because they are committed to an identity in which their skills and the knowledge that generates them are seen as valuable and significant. They don't operate just by well-practised routines; they can think for themselves and innovate in their domains when they have to (Bereiter & Scardamalia, 1993). Finally, authentic professionals welcome challenges at the cutting edge of their expertise. This is the sort of identity one must at least role play in order to play *Full Spectrum Warrior* successfully. Being a professional is a commitment to being in the world in a certain way, with a certain style and operating by certain values.

Many video games involve the formula virtual character(s) ← authentic professional expertise → real-world player. For example, *Thief: deadly shadows* involves the professional identity of a master thief. Thieving expertise is distributed among the virtual character (Garrett) and the real-world player. The booklet for *Thief: deadly shadows* has this to say about you, the player, and Garrett:

> In *Thief: deadly shadows*, you play Garrett, a master thief in a dark, sprawling metropolis known only as the City. Rarely seen and never caught, Garrett works alone in the shadow of night, constantly trolling for information and eyeing his next prize. He can sneak past any guard, pick any lock with ease, and infiltrate the most ingeniously secured residences. (p. 4)

Actually, of course, Garrett cannot do any of these things by himself. He has only part of the requisite knowledge and skills. He can make himself virtually disappear in the dark, blending into the background so thoroughly guards don't see him, even as they walk right past him. But you, the player, must know where and when to hide him and when to emerge from the shadows to strike. Garrett and you share a system of professional knowledge, strategies and skills, as well as certain values (e.g. both you and Garrett need, in the game, to see artful theft as a value).

There need be no name for the profession that the virtual character and the player share. In the game *The Chronicles of Riddick: escape from Butcher Bay*, you play Riddick. Here is what the game's booklet has to say:

> Welcome to Butcher Bay, the toughest triple-max security prison in the universe. Impossible to escape, or so they say. Inside these walls are dank tunnels, dimly lit corridors, and other hazardous areas filled with guards, savage inmates and deadly creatures that prowl the darkness. Chaos, madness, and death lurk around every corner.
>
> Only the cunning will survive. Use your strength to overpower enemies. Use your ability to see through darkness to save you. You are Richard B. Riddick, and only you can break out of this hell. (p. 2)

Riddick has special sight that allows him to see clearly even in the darkest corridor. He is so tough in words and demeanour that he inspires fear in the toughest characters (even a guard in a full robotic mesh-suit calls for back up when he confronts Riddick). He can engage in great feats of athleticism in quickly moving around the vents and corridors of the prison. And, like Garrett, he can hide in shadows and attack from the dark. He exemplifies and exudes 'attitude'. But, you, the player, must supply the specialist tactics and strategies to instantiate Riddick's skills and values, you and Riddick must combine your skills to pull off being a professional hard-ass prison escapee of a quite distinctive sort.

To be Garrett or Riddick requires thought, strategy, decisions and values. *Thief* requires these precisely because the game demands that the player share an authentic professional identity and skills with a master thief. It demands more: the player must make Garrett an authentic professional thief of his or her own sort. My Garrett, for example, would not kill anyone, except in extreme cases, and loved, at times, to taunt guards by showing himself, only to disappear before they could find him. Your Garrett might be different.

By creating a joint authentic professional identity (in terms of knowledge, values, attitudes, practices, strategies and skills), games such as *Full Spectrum Warrior*, *Thief* and *Riddick* demand that the player *learn to see the world* in a certain way, different for each game. Though set in quite different locals and time periods, the physical worlds of these games are at a general level pretty much the same. Like the real world, they are composed of buildings and spaces. But each game, to be played successfully, demands that each of these worlds be looked at in very different ways.

Full Spectrum Warrior requires that you (the soldiers-you) see the world as routes between cover (e.g. corners, cars, objects, walls, etc.) that will keep you protected from enemy fire. *Thief* requires that you (Garrett-you) see the world in terms of light and dark, in terms of places where you are exposed to view and places where you are hidden from view. *Riddick* requires that you (Riddick-you) see the world also in terms of light and dark (where you can hide and where you can't), though much less so than in *Thief*, but also in terms of spaces where you have room for manoeuvre in all-out physical attacks on your enemies (e.g. you don't want to get backed into a corner).

It is important – and this is something we know from recent research on the mind – that seeing, knowing and action are deeply interconnected for human beings (Glenberg, 1997; Glenberg & Robertson, 1999; Barsalou, 1999a, b). Humans, when they are thinking and operating at their best, see the world in terms of affordances for actions they want to take. Thus, we see the world differently as we change our needs and desires for action.

You see the world in *Full Spectrum Warrior* as routes between cover because this prepares you for the actions you need to take, namely attacking without being vulnerable to attack yourself. You see the world of *Thief* in terms of light and dark, illumination and shadows, because this prepares you for the different actions you need to take in this world – namely, hiding, sneaking, appearing at just the right moment for a surprise attack and moving unseen to your goal. So, too, with *Riddick*. And when you see the world in the right way, you have effective knowledge of and for that world – it's the difference between knowing Galileo's Laws of Motion as a set symbols you can repeat and actually being able to see how they apply to specific situations in the world to accomplish something.

In a good game, players find and act on a near-perfect fit or mesh between the virtual character's skills, the real-world player's skills, the way the real-world player sees the virtual world and the desires, goals and actions shared out between the virtual character and the real-world player. If a player perversely insists on seeing Garrett's world in the way in which players need to see the world of a first-person shooter like *Max Payne*, for example, Garrett would look and feel like an inept and clumsy character and the player would feel inept, as well. Garrett can run out and directly assault guards with his dagger, but since he can't fly smoothly through the air in slow motion while firing a clip of ammo, as Max Payne can, he is usually cut down quickly. Playing the game this way is a mismatch between Garrett's body (the player's surrogate body in the game) and the ways in which the player needs to see the game's world in preparation for effective, rather than ineffective, action.

What I am saying here is that games such as *Full Spectrum Warrior*, *Thief* and *Riddick* allow players to take a projective stance to the (virtual) world, but a stance that is rooted in the knowledge, values and ways of seeing and being in the world of an authentic professional, an 'expert'. In the real world, if you want, for example, to be a successful physicist, to know as a physicist in ways that are effective for action (problem solving), you must learn to see as a physicist. And this involves seeing the right 'meshes' in the world in terms of who you, as an individual, are; who a physicist is; your goals and desires both as an individual and as a physicist; and the properties of the world at a time and place that will effectively allow your actions to enhance those goals and desires. But this is the heart and soul, too, of our second category of games, games such as *Full Spectrum Warrior*.

Learning

If we took *Full Spectrum Warrior* as a model for learning, it would violate what both conservatives and liberals think about learning, especially learning in school. It forces the player (learner) to accept (for this time and place) a strong set of values connected to a very specific identity. Indeed, the player must follow military 'doctrine' as formulated by the United States Army or find some other game to play. This is too constraining for the liberals.

On the other hand, *Full Spectrum Warrior* isn't about facts. There's no textbook on army doctrine. It doesn't teach by skill-and-drill. After the tutorial, which is pretty didactic, there is little explicit instruction. Rather, the player (learner) is immersed in a world of action and learns through experience, though this experience is guided or scaffolded by information the player is given and the very design of the game itself. There is too much freedom here for conservative educators.

As a model of learning, *Full Spectrum Warrior* suggests that freedom requires constraints and that deep thinking requires a framework. Once the player adopts the strong values and identity the game requires, these serve as a perspective and resource from which to make decisions about actions and with which to think and resolve problems. If there is no such perspective, then there is really no basis for making any decision; no decision is really any better than any other. If there is no such perspective, then nothing I think counts as knowledge, because there is no framework within which any thought counts as any better than any other.

It is clear that if someone built a war game incorporating a quite different doctrine – that is, requiring quite different values and identity – from that of *Full Spectrum Warrior*, then decisions and ideas that were right in that game might well be wrong in the other. For example, a doctrine that allowed soldiers to run and shoot at the same time would lead to different sorts of decisions and different ways of solving problems in some contexts. Of course, the test of which doctrine was

better in a given situation would be which one works best in that particular war setting. It is also clear that the absence of any doctrine would leave the player with no basis on which to make decisions, no basis on which to construct knowledge.

It is clear, then, too, that in *Full Spectrum Warrior*, its doctrine – its values and the identity it enforces on the player – is the foundation of the set of actions, decisions and problem solutions from which the player can choose. Actions, decisions or problem solutions outside this set are either not allowed by the game or are very unlikely to work. Of course, if there is no such set to choose from – if anything goes – then the learner has no basis on which to choose, is simply left with infinite choices with no good way to tell them apart.

Some liberal education does just this to children. They are immersed in rich activities – for example, doing or talking about science – but with no guidance as to what are good choices, decisions or problem solutions. The idea is, perhaps, that they will learn by making mistakes, but with so many choices available and so little basis for telling them apart, it is more likely they will go down garden paths (however creative), wasting their time.

Let me give one concrete example of what I am talking about. Galileo discovered the laws of the pendulum because he knew and applied geometry to the problem – not because he monkeyed around with pendulums or saw a church chandelier swinging, as myth has it (Matthews, 1994). Yet it is common for liberal educators to ask children innocent of geometry or any other such tool to play around with pendulums and discover for themselves the laws by which they work. This is actually a harder problem than the one Galileo confronted – geometry set possible solutions for him and led him to think about pendulums in certain ways and not others. For the children, every possibility is still open and they have no powerful tools that help them approach the problem in more rather than less fruitful ways.

On the other hand, unlike conservative educators, *Full Spectrum Warrior* knows that knowledge – when one is going to engage in something like warfare – is not constituted by how many facts one can recite or by how many multiple-choice questions one can answer on a standardized test. No, *Full Spectrum Warrior* realizes that true knowledge in a domain (such as warfare) is based on one's ability to build simulations ('models') in one's head, based on previous experiences and thoughtful conjecture, that prepare one for future action. It is also based on being able to apply values to determine whether the simulation is a good one and to evaluate its outcome when one has acted on it – values given by the values and identity with which the learner started.

One can have a purely verbal definition of a concept such as 'work' in physics or 'bounding' in military practice. These verbal definitions are pretty useless (other than for passing tests), since they don't help facilitate future action in these domains (Gee, 2004). On the other hand, if you can run a simulation in your head of how the word 'work' applies to an actual type of situation in such a way that the simulation helps you prepare for action and dialogue in physics, then you *really* know what the concept means. The same goes for 'bounding' in the military domain. Of course, you will run somewhat different simulations for 'work' in different contexts and when preparing for different sorts of actions in physics. And equally obviously, the simulations you build will be partly determined by the wealth of experience you have had in doing and talking about physics.

If liberals often leave children too much to their own devices, conservatives often forestall their opportunities for learning to build good simulations to prepare themselves for fruitful action in a domain (such as physics) by immersing them in facts, information and tests detached from any meaningful contexts of action. Ironically, facts come free if we start from carefully guided experience (as in *Full Spectrum Warrior*) that helps learners build fruitful simulations to prepare for action. Anyone who plays *Full Spectrum Warrior* will end up knowing lots of military facts because these facts become necessary tools for building simulations and carrying out actions that the player wants and needs to carry out. The same facts become much harder to learn when detached from such simulations and actions.

Since fruitful thinking involves building simulations in our heads that prepare us for action, thinking is itself somewhat like a video game, given that video games are external simulations. If I have to meet with the boss over a problem, I can prepare myself by imagining (simulating in my mind) possible ways the meeting might go, possible responses and actions on my part and possible outcomes. I can use such simulations – based, in part, on my earlier experiences in person or through media and, in part, on my own conjectures and imagination – to get ready for action. In

action, I evaluate the outcome of my actions and run new simulations to correct for errors or mishaps.

Full Spectrum Warrior allows players to experience military situations in a visual and embodied way. They can then learn to build simulations of these in their heads and think about possible actions and outcomes before rushing into action. They can then act in the game, judge the consequences (partly based on the values and identity that military doctrine has given them), and build new, perhaps better, simulations to prepare for better actions. Without doubt the same process would work for learning in other domains – domains such as, say, biology, physics or social science, the sorts of things we learn in school.

The recipe is simple: Give people well-designed visual and embodied experiences of a domain, through simulations or in reality (or both). Help them use these experiences to build simulations in their heads through which they can think about and imaginatively test out future actions and hypotheses. Let them act and experience consequences, but in a protected way when they are learners. Then help them to evaluate their actions and the consequences of their actions (based on the values and identities they have adopted as participants in the domain) in ways that lead them to build better simulations for better future action. Though this could be a recipe for teaching science in a deep way, it is, in *Full Spectrum Warrior*, a recipe for an engaging and fun game. It should be the same in school.

Full Spectrum Warrior also realizes, as we have already seen, that deep learning – real learning – is too hard to do all by oneself. The learner needs powerful tools, like Galileo's geometry. These tools have to incorporate their own skills, knowledge and perspectives – all of which geometry has with a vengeance; algebra works quite differently, with different in-built skills, knowledge and perspectives, better than geometry for some things and not for others.

We have seen that soldiers in *Full Spectrum Warrior* are smart – they know things. They know different things than the player, things the player doesn't have to know. This lowers the player's learning load. Furthermore, as the player gains knowledge, this knowledge can be integrated with the soldiers' knowledge to create a bigger and more powerful type of knowledge. This allows the player (learner) to do and be much more than he or she could if left all alone to his or her own devices. The actor in *Full Spectrum Warrior* is an integration of the soldiers' knowledge and the player's knowledge. The soldiers are smart tools and knowledge is distributed between them and the player.

But tools aren't any good if they do not fit with the purposes and perspectives of the learner. In *Full Spectrum Warrior* the soldiers not only know important things, they are built to fully share the doctrine – values and identity – by which the player is acting. All tools are value-laden in this way, and *Full Spectrum Warrior*'s soldiers are built with the right values – they fit with the player's emerging intentions built on the player's emerging values and identity (based on the doctrine the game enforces).

Full Spectrum Warrior allows players to integrate their emerging professional military knowledge with the professional knowledge of the soldiers. The player, in this way, is guided into thinking, acting, valuing and deciding like a professional of a certain sort. The player experiences the feel of expertise even before the player is a real expert or even really expert at the game. This is a beautiful example of an important learning principle virtually ignored in school: performance before competence.

Schools usually insist that learners study hard, become competent (the test shows it!) and then perform (and yet research shows they usually can't actually *do* anything beyond answer test questions). Of course, there is little motivation to study and become competent, when the learner has no real idea what it feels like to act effectively in a domain or why anyone would want to become competent in the area. Further, all the facts and information the learner is studying would make a lot more sense if the learner had had any opportunities to see how they applied to the world of action and experience. Without that, they are 'just words' for the learner.

In *Full Spectrum Warrior*, on the other hand, the player (learner) performs, even when not very competent, aided by the soldiers' knowledge, the doctrine the game is enforcing and the very design of the game world itself. Players feel competent before they are. They know what it means to be competent and why anyone would want to be competent in the domain. They pick up facts, information, skills, tricks of the trade. They enact values and a certain identity. All of sudden – miracle of miracles – they *are* competent. And, further, they are competent in a sense well beyond

just being able to answer test questions. They can act, value, feel, decide and solve problems like a pro or at least like a novice pro, a pro in the making now. Maybe they will never become a real professional, but they will always know what it was like to act and feel like one in that area.

Learning school things, things like biology, say, could work in just the same way. Strong doctrine, values and identity, smart tools, distributed knowledge, well-designed experience, guidance on how to build useful mental models or simulations and on how to evaluate their outcomes, performance before competence, competence that goes beyond verbal definitions and test taking [**AU: THIS ISN'T A COMPLETE SENTENCE—PLEASE CLARIFY**](Shaffer, 2004). But, in reality, this is all very rare indeed in school, though common in good video games.

Of course, I know that some readers are put off by my military example and still quite disturbed by that strong term 'doctrine'. Strong doctrine, leading to values and identity, engagement and commitment, real choices from within a reasonable and fruitful set of choices, and ways to evaluate what one has done are *necessary for real learning*, however much they comport badly with the beliefs of liberal educators. It is a pity, indeed, that we have such good examples of such good learning in the military domain, in the case of both commercial games such as *Full Spectrum Warrior* and non-commercial simulations used by the military for training, and not in such domains as biology, physics, history, social science, urban planning, ecology and many other more academic-like domains. It is equally a pity that the military does not have simulations as good as the ones they have for warfare for understanding culture and building peace (or running prisons).

But there is no reason in principle why this should be so. It surely is a shame that we live in a society that adopts a deeper theory of learning in its video games and in its training of soldiers than it does in its schools. It is surely also a shame that the military so often succeeds with the very eighteen-year-olds whom the schools have failed with. Whatever one thinks of modern technological warfare in a global world (I don't like it), it is not something that dummies can do.

But, of course, strong doctrine, values and identity can lead to intolerant ideologues, as well, whether these be soldiers, scientists or religious fanatics. There is obviously a paradox here: no deep learning without doctrine and doctrine can be dangerous. But this paradox is easy to resolve at the educational level: Be sure that learners have lived and acted in multiple worlds based on different doctrines. Be sure they can compare and contrast and think about the relationships among doctrines. They'll make smart choices, then, I believe, about what ultimately to believe and how ultimately to act.

Some doctrines work better than others for given situations and learners will learn this. Here, again, the video-game industry is out ahead: the store shelves are full of different worlds based on different doctrines. *Full Spectrum Warrior* sits alongside *Thief* and *Riddick*. Maybe someday it will sit beside Galileo's world and doctrines as well.

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