

The Palace of Memory: Virtual Tourism and Tours of Duty in *Tactical Iraqi* and *Virtual Iraq*

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ABSTRACT

This paper discusses two projects developed at the University of Southern California with funding from the U.S. military: *Tactical Iraqi*, a videogame that is designed to accelerate a learner's acquisition of spoken Arabic to assist in the rapid deployment of soldiers into volatile tactical situations, and *Virtual Iraq*, a virtual reality simulation intended to lessen the effects of Post-Traumatic Stress Disorder among combat veterans. Both programs specifically address issues of memory related to inhabiting these VR worlds and connect spatial experiences to acts of practices of recognition, recollection, and remembering: *Tactical Iraqi* is designed to prompt soldiers to remember specific Arabic words and phrases; *Virtual Iraq* is intended to trigger memories and appropriate coping mechanisms in combat veterans suffering from Post-Traumatic Stress Disorder. This paper analyzes how the traditional "method of loci" or "art of memory" from classical rhetoric, which has been updated by Wong and Storkerson as a tool for hypertext theory, can also be applied to 3D graphical worlds with immersive multi-sensory environments. As Certeau argues, however, in his work on the "rhetoric of walking," the architectures of these virtual worlds should properly offer possibilities for tactical resistance in order to be fully inhabited by their users.

Categories and Subject Descriptors

H.5.1 [Information Interfaces and Presentation]: Artificial, Augmented, and Virtual Realities

General Terms

Design, Human Factors.

Keywords

Digital Experience, Virtual Reality, Method of Loci, Computer Game, Foreign Language Learning, Exposure Therapy

1. INTRODUCTION

The method of loci or *ars memoriae* is a technique for remembering often associated with the classical rhetorical tradition. According to advice in ancient, medieval, and Early Modern rhetorical manuals, the loci were physical locations, usually in a familiar and highly articulated public edifice, such as a church, palace, or forum. The method for this art of memory was famously credited to Simonides of Ceos by Cicero in *De oratore*, who tells the story of how Simonides uses his geographical memory of the orientation of specific signifiers in a particular scene to locate the bodies of his dinner companions in the chaotic rubble of a collapsed building after it had collapsed during the orator's absence during a celebratory feast hosted by his patron [8]

To use the method of loci, one walks through a public building several times, viewing discrete landmarks within it, in the same order each time. After several repetitions, the assumption is that one should be able to visualize each of the places in a logical sequence reliably and thus remember the associated content. Thus, to memorize a speech, the text is broken into pieces, each of which is symbolized by vividly imagined symbols or signs. In the mind's eye, the orator places each of these images into the loci. Objects of discourse can then be recalled in a precise order by imagining walking through the building again, visiting each of the loci sequentially, and viewing each of the images that was placed in the loci, thereby recalling each piece of the speech in the proper order [6, 7, 11, 41]. Classical writers in the mnemonic arts tradition recommended that the mental places be clearly set out, well lit, and at moderate intervals apart.

In 1997, Janine Wong and Peter Storkerson updated the theory of the method of loci to apply to hypermedia and interactive multimedia, by claiming that that recent forms of spatial organization provided "semantic context" in which communications can be made more intelligible [40]. Wong and Storkerson argued that this revival of these traditional rhetorical techniques was first suggested by Vannevar Bush in his argument for a new epistemology of "association" in information science. Furthermore, the ancients served as precursors to contemporary information design theorists, because the loci were to be chunked or grouped in sets of items, no more than what the mind's eye could encompass in one glance in the medieval equivalent of "working memory."

Since the U.S.-led invasion of Iraq in 2003, the American government has developed several computer generated environments that are intended to recreate the embattled nation's terrain – as well as its built environment – in games and simulations designed specifically for military personnel. These alternative worlds are often populated by computer generated versions of Iraqi citizens, and sometimes these representations employ intelligent tutoring techniques to make the user's interactions with these digital puppets more realistic. Game designers working on military contracts often aspire to what Lev Manovich has described as digitally composited smooth motion that correlates “different senses” that “simulate human experience” [25]. Although these games and simulations are often organized by “levels,” the user experience is sufficiently sustained to include the exploration of sequences of successive rooms, streets, or even events beyond the horizon of sight.

Two specific projects currently being developed by the University of Southern California with funding from the U.S. military have garnered considerable coverage in the mainstream national media: *Tactical Iraqi* from the Information Sciences Institute and *Virtual Iraq* from the Institute for Creative Technologies. Both programs specifically aim to enhance the user's memory: *Tactical Iraqi* is designed to prompt soldiers to remember specific Arabic words and phrases; *Virtual Iraq* is intended to trigger psychologically powerful memories in combat veterans suffering from Post-Traumatic Stress Disorder to condition them to develop appropriate and healthy compensatory mechanisms.

There are a number of significant design differences between the two projects. One is a game, and the other is a simulation; one is pedagogical in its orientation, and the other is therapeutic; one uses third-person perspective, and other uses first-person. Yet, there is also significant overlap between these virtual Iraqs, which were developed by research and development teams in close physical proximity to each other in Marina Del Rey, California, and both use pre-existing, off-the-shelf game technology environments that have a history in the consumer market.

In a *Los Angeles Times* editorial, policy analyst Max Boot praises this spatialization of military training and the translation of pedagogically-structured orientation experiences into virtual space. Specifically, he uses the example of *Tactical Iraqi* to argue that such situated learning enables participants to develop forms of cultural literacy that soldiers would otherwise be lacking. Boot enthuses about visiting “the Expeditionary Warfare School, where captains study Arabic by playing a sophisticated computer game complete with animated characters” [4]. Boot claims that this computerized language instruction exemplifies the critical training that simulates “the human terrain” of the theater of conflict in Iraq.

However, this “human terrain,” which can now be inhabited through virtual reality interfaces would ideally allow for certain forms of improvisation. In his work on space and boundaries, Michel de Certeau has outlined the elements that define the inhabited space of the built environment and argues that individuals' tactical practices, or practices opposing regulation and ideological control by the interests in power, respond to the city's physical and social landscape with certain forms of situated resistance. For de Certeau, the way that individuals use and move through the space defines the city. As in the method of loci, de Certeau compares verbal linguistics to the “rhetoric of walking”

in which the physical movement of different individuals defines and embeds meaning into a space [10]. He claims that spatial order “organizes an ensemble of possibilities (e.g., by a place in which one can move) and interdictions (e.g., by a wall that prevents one from going further)” so that “the walker actualizes some of these possibilities. In that way, he makes them exist as well as emerge” [10]. For de Certeau, everyday actions make lived spaces readable and thus believable and memorable. These actions, by a marginalized majority are designated as “tactics,” and they are often the only available tools of a population that doesn't have access to the “strategies” of those in power who can operate outside of a specifically situated environment.

More recently, Ian Bogost has argued that the experience of the *flâneur* wandering through the city of Paris or other urban landscapes, which is epitomized in the work of Baudelaire, Benjamin, and Bukowski, is useful for understanding the “configurative structure of procedural texts” like videogames [3]. Bogost believes that this rhetoric of walking gives the reader/player/user a “set of options” for negotiating contemporary human experience in which the “chance encounter” can be “embodied as a unit of cultural currency.”

Of course, more rapid and unconstrained types of movement are also possible in virtual environments. Other kinds of military simulations that recreate the space of combat may move through territory with more apparent mastery of space, such as by flying. For example, Patrick Crogan has argued that flight simulators have a particular primacy in digital experiences of play and to the relationship of war to peacetime cultural practices of entertainment [9]. The more common experience of walking or driving slowly, however, is uniquely well-designed for recognition and reintegration of specific memory cues.

2. TACTICAL IRAQI: GAME OVERVIEW

Tactical Iraqi, a language-learning software course and educational video game, originated at the Center for Advanced Research in Technology for Education (CARTE) at the Information Sciences Institute of the University of Southern California. Researchers at CARTE had previously authored a range of imaginative but seemingly disconnected distance learning initiatives that featured computer generated animated agents, software capable of expressive speech analysis and synthesis, and programs organized around the presentation of pedagogical drama.

After the 2003 U.S. led invasion of Iraq, it became possible to test large-scale applications of CARTE research to the problem of foreign language learning. A critical shortage of Arabic speakers existed in the U.S. armed forces, and the theater of conflict was coalescing around stressful and confusing situations of urban warfare, military occupation, and post-conflict reconstruction in the face of persistent insurgency.

Tactical Iraqi is envisioned as part of a larger Tactical Language Training System (TLTS) under the umbrella of the DARPA Training Superiority program, which is intended to develop “just-in-time” training technologies incorporating intelligent tutoring, simulations, and games into preparation for combat readiness. Another “just-in-time” military video game, *Ambush!*, was launched even more rapidly -- after just six months -- to assist soldiers in locating roadside dangers, such as improvised explosive devices (IEDs), whose presence could be signaled by

anything from a seemingly innocuous dead camel to an electric toy [39]. Like *Tactical Iraqi, Ambush!* took advantage of an existing platform, the commercial game *Operation Flashpoint*, and used this networked multiplayer system to realistically model interactions between members of a military convoy. At present, *Tactical Iraqi* has spawned its own privately held company that specializes in tactical language training and is making forays into the commercial market.

The current version of *Tactical Iraqi* includes elements of traditional computer-based tutorials and language recognition software, a PsychSim multi-agent system, and an *Unreal Tournament 2003* game engine. The Mission Game (Fig. 1) of *Tactical Iraqi* is an interactive story-based 3D game where learners practice carrying out a designated mission through a specific avatar, Sergeant John Smith.



Figure 1. Asking for information from two pedagogical agents in the Mission Game in *Tactical Iraqi*

In an earlier version of the game, the mission was to rebuild a damaged water plant with the assistance of a “Shiite leader of uncertain loyalties” [27]; the present iteration involves rebuilding a girls’ school. The game uses a “third-person shooter”-style interface that is limited to input from a keyboard, microphone headset, and mouse. As John Smith, the player navigates through a computer generated landscape of streets, cafés, and private homes that are rendered with naturalistic lighting, texture mapping, and modeling of 3D masses. He is also able to interact with flat objects, such as business cards or photographs, and those rendered in three dimensions, such as eyeglasses or cups of tea.

In addition to this virtuosity of “perceptual realism,” the game is intended to have what Alison McMahan has called “social realism,” which she describes as being constituted by “organizing rituals and ceremonies” [26]. Many of the rites in the game involve formulaic greetings and the social consumption of nonalcoholic beverages, along with their associated practices of rhetoric. Such social realism is considered to be an essential feature of the maturation of videogames as significant cultural products [13].

Negotiating through John Smith’s transitions from public to private spaces via his Unreal Puppet poses particular challenges to

verbal and nonverbal communication, particularly when trust is limited and the action takes place on a stage with multiple spectators, all potentially antagonistic when given the wrong cues. The learner’s limited language proficiency can restrict access to certain critical spaces, and even in the public zone of the *agora*, the environmental bubble where cultural exchanges and mutual appropriation is permissible according to Ostwald [29], John Smith is subject to humiliation that can be reported back to his superior officers and to verbal abuse by native speakers that can include being called a “son of a bitch” (or literally “dog son of a dog”) or a “donkey.” To help John Smith in his mission, there are no weapons or martial arts tricks available; the player’s only tools are spoken words and gestures. Fortunately for Smith, an Arabic-speaking female member of the squad can prompt appropriate responses and make suggestions.

Paralinguistic learning is an important aspect of the Mission Game, because – in the rhetorical situations that the designers of *Tactical Iraqi* have envisioned – the cultural meaning of particular gestures can have consequences as speech acts. Researchers based much of their model of linguistic interaction and face-saving strategies on the work of Brown and Levinson on the difference between what is “said” and what is “implicated” [5]. Some of these connections between paralinguistic signifier and signified would even be counterintuitive to U.S. military personnel. For example, a “thumbs-up” can have a highly insulting inverse meaning, while removing one’s eyeglasses demonstrates knowledge of a regionally-specific gesture of respect. These signs are also associated with particular settings in the virtual world.

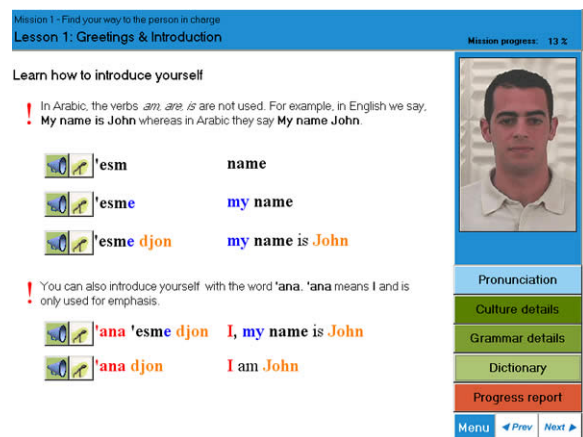


Figure 2. A coaching section in the Mission Skill Builder in *Tactical Iraqi*

Not all of the learning takes place in the realm of spatialized experience. The Skill Builder (Fig. 2) is a set of interactive exercises organized around practice drills in the target language, in which learners say words and phrases and listen to and respond to sample utterances. Vocabulary is chosen to be appropriate for the social context of the related unit in the game. A virtual tutor, who appears as little more than a disembodied talking head, evaluates the learner’s pronunciation and syntax and gives feedback that provides encouragement and forestalls negative affectivity in the learner. Navigation through the pages of this

virtual workbook relies on abstracted symbols, such as arrows and icons.

The Skill Builder initially proved to be an important factor in achieving measurable improvement in the learning outcomes of military experimental subjects post-test. [19]. Nonetheless, the literature on language learning indicates that such an approach would be incomplete on its own [22].

A speech-enabled Arcade Game (Fig. 3) gives learners further practice opportunities in Arabic, although the learner's map of the 3D world is predicated on distance and miniaturization rather than scale interactions as a social actor in shared civic space. In the Arcade Game rapid response time is more important than it is in the Mission Skill Builder or the Mission Game. Principal Investigator Lewis Johnson also concedes, "You had to put in something you blow up" to provide an enjoyable video game experience. In the Arcade Game, objects can be picked up by correctly naming directions, and "enemy" elements of different colors periodically appear to be destroyed.



Figure 3. The aerial view of the speech-enabled Arcade Game in *Tactical Iraqi*

Although ostensibly intended for speeding up the acquisition of prepositional and descriptive phrases, the Arcade Game has none of the social interactions that are simulated by the Skill Builder or the Game and directly equates linguistic competence with destructive force, much like that of the perspective of aerial bombardment. Early virtual theorist Janet Murray writes that this kind of digital experience is particularly compelling, because arcade-style action provides a "tight visceral match between the game controller and the screen action. A palpable click on the mouse or joystick results in an explosion. It requires very little imaginative effort to enter such a world because the sense of agency is so direct" [28].

In addition to these photorealistic arenas of play -- from third-person, first-person, and God's eye viewpoints respectively -- the learner has a number of other resources available. The Web Wizard provides a hypertext with English translations, an overview of the structure and elements of a sentence, and notes pertaining to Arabic syntax and grammar for learners interested in

exploring the structure and meaning of words and phrases. The MP3 Player Kit allows learners away from computers or visual cues to review audio files with the lessons' words and phrases to reinforce correct pronunciation and fluency.

Unlike some government-funded videogames or simulations, there is no overarching reference map to the digital territory that represents the domain of potential user experience. In other words, with the exception of following directions or interpreting body language, spatial forms of digital representation in the mission game of *Tactical Iraqi* rarely serve the purpose of additional informational display. Furthermore, the single-dimensional axis of representation, instantiated in quantitative displays such as the "trust meter," is generally privileged over two or three-dimensional matrices.

Of course, techniques for embodied language learning are actually nothing particularly new; they predate digital virtual environments by decades. For example, in the 1970's Bulgarian psycholinguist Georgi Lozanov championed "Suggestopedia," a technique that emphasized the learner's embodied physical state, bodily comfort, and sensory perception to encourage receptivity and to lower learning anxiety and resistance [24]. Suggestopedia also used game play and encouraged learners to assume an identity within the target language, just as foreign language software simulations do [22]. In some ways, *Tactical Iraqi* represents a more timid form of embodied learning: curricular materials only attend to auditory and visual stimulation, and learners are restricted to occupying an identity that is on the periphery of membership in the target language not at its center.

In the contemporary context, video game pedagogy advocate James Paul Gee has argued that situated learning environments can also be created with the tools of a traditional classroom, given that the right set of productive learning practices are in play to minimize anxiety about educational risk-taking and maximize the intuitive character of the interface of the knowledge to be confidently owned [14]. Similarly, as it will later be apparent in the case of *Virtual Iraq*, the conditions for some forms of successful virtual reality exposure therapy should also be replicable in conventional psychodrama scenarios.

Furthermore, the learner is not truly independent. He or she knows there is constant surveillance by other stakeholders in remote locations. The experimenters and potentially the player's commanding officers can compare the player to other learners with specialized tools. The Performance Assessment Module collects data at each learner's machine, transmits the information to a central TLTS database, and produces individualized performance scorecards with multi-dimensional benchmarks based on aggregated data.

Moreover, transgressive play in which the learner tests the boundaries of the physical space and experiments with breaking the explicit rules of interaction is strongly constrained by game designers. Although subversive game practices may seem similarly undesirable to educators who uniformly value attentive obedience, from a certain pedagogical perspective resistance to instructions from social superiors is a pre-condition for permanent learning and the ownership of knowledge. For example, in his essay on *Tomb Raider*, Gee claims that transgression is actually central to effective learning and that defiance of authority figures is critical for the acquisition of specialized knowledge in game

play [14]. In other words, to play the game as Lara Croft successfully, the player must sometimes ignore the Professor's instructions or only listen selectively or even risk open disobedience. Squire and Jenkins similarly believe that even games like *Grand Theft Auto* can help students understand political resistance in history games and simulations, such as those about the American Revolution [36].

In contrast, games developed by the U.S. military actively discourage transgressive play in the game world, perhaps for obvious reasons. The chain of command depends on submitting to orders from those in authority without questioning those commands. For example, a player in *America's Army* who experiments by shooting his commanding officer in the first few seconds of the game forecloses any future opportunities for learning, because he immediately finds himself in the brig and thus prohibited from movement. Although *Tactical Iraqi* focuses on suggestions and responses rather than orders from other military personnel to foster a sense of autonomy in game play, John Smith only experiences negative consequences from not following his directives, and the Pavlovian mechanisms of the game are consistent with a language learning methodology that emphasizes obedient responses to stimuli as a reinforcement to learning.

3. VIRTUAL IRAQ: SIMULATION OVERVIEW

Virtual Iraq (Fig. 4) also adapts off-the-shelf game technology for military users. However, unlike *Tactical Iraqi*, *Virtual Iraq* employs what Michael Heim has called "strong" VR [16], because the user wears an immersive head-mounted display. In addition to visual information, the participant is exposed to the sounds, sensations, and even smells associated with progressively more harrowing combat-related experiences from duty on patrol in Iraq.



Figure 4. A scene from *Virtual Iraq*

Although forcing patients to relive traumatic experiences might seem counterintuitive to generally held assumptions about psychic healing, such programs have been shown to be highly effective, particularly in conjunction with traditional talk therapy [34].

According to researchers, this kind of exposure therapy facilitates not only memory-construction but also the essential narrative activities that foster psychological integration after traumatic events. In addition, VR provides an objective and consistent format for documenting the sensory stimuli that the patient is exposed to that is not possible when the therapist must extrapolate from limited verbal information supplied by the patient that describes his or her internal state. Finally, less social stigma may be attached to therapeutic activities associated with video game play or activities of "training" associated with conventional masculine gender roles.

Exposure to traumatic cues can be carefully calibrated in the VR therapeutic environment, but the immersive nature of the experience typically leads to a strong sense of what John Steuer has described as "telepresence" in which "vividness" and "interactivity" are maximized [37]. In *Virtual Iraq*, computer graphics are projected in a Head-Mounted Display (HMD), and the user can decide where to look in the virtual environment. This visual information is augmented with motion tracking, localizable sounds, vibration platforms, and, in some scenarios, scent delivery technology. Patients can travel through this virtual world on foot or via motor vehicle, but the walking simulation is particularly vivid, since it is paced with actual footsteps as the patient goes down streets and alleys on patrol. The therapist can also manipulate a "Wizard of Oz" interface to increase further verisimilitude in the patient's digital experience by adjusting the weather conditions or time of day to best approximate the trauma scenario.

Virtual reality therapy has been already used for Post-Traumatic Stress Disorder (PTSD) in many political contexts that replicate a variety of geographic locales [31]. Those in New York who suffer from PTSD from the September 11th terrorist attacks might have been treated by reliving the experience with the *Virtual World Trade Center* that was developed by the Program for Anxiety and Traumatic Stress Studies at Cornell University. *Virtual Bus Bombing*, which was developed by the University of Haifa, allows Israeli citizens to grapple with witnessing suicide bombing attacks. These VR technologies were first developed for veterans in *Virtual Vietnam*. Even the *Virtual Office* presents a quotidian war zone for patients who suffer from anger-management disorders.

In addition to using work from other VR therapy researchers, the designers of *Virtual Iraq* integrated art assets from *America's Army* and *Tactical Iraqi*, the *FlatWorld Simulation Control Architecture*, NDL's Gamebryo engine, and considerable content exported from the game *Full Spectrum Warrior* to increase both vividness and interactivity for participants. Ironically, this use of *Full Spectrum Warrior* shows how game development can come full circle, since the X-box game being repurposed by researchers originated from a military training game.

The *Virtual Iraq* simulation also developed from another modern day form of the method of loci that was used by Rizzo's team with both stroke victims and children with attention deficit hyperactivity disorder. Patients could negotiate around the spaces of virtual living rooms, offices, and classrooms to locate specific objects that were situated in the virtual space. However, in the virtual environment of combat, the mnemonic assets acquired in

moving through the 3D world are associated with emotional rather than cognitive function.

4. VIRTUAL TOURISM AND SPHERES OF TRUST

The initial trust problem encountered by *Tactical Iraqi* researchers involved players who avoided the game space entirely when using the program, often by hiding out in the Mission Skill Builder. Project documents indicated that “the learners were generally reluctant to start playing the game, because they were afraid that they would not be able to communicate successfully with the non-player characters” [17]. In fact, rather than anticipating that play would be a pleasurable experience, “Learners usually started playing the game only when experimenters insisted that they do so” [17]

Certainly, virtual tourism in a combat environment provokes anxiety in learners for a number of reasons. *Tactical Iraqi* differs significantly from commercially-produced language-learning software that features interactions with digital characters in circumstances of virtual travel, although these language learning programs incorporate similar speech recognition technology so that the learner may converse with the program’s computer generated characters. The on-screen interlocutors who populate programs like those developed by the *Living Language* series sit docilely behind ticket counters or hotel registration desks; they never do more than register polite confusion when the learner struggles with pronunciation or syntax, because interactivity is limited to polite exchanges. In contrast, autonomous pedagogical agents in *Tactical Iraqi* may shout at the learner’s avatar or make angry accusations or threaten the learner’s avatar with physical harm, so that he is required to flee from the café, storefront, or private home in which a scene of linguistic failure has taken place.

To overcome this problem, researchers focused on replicating introductory social rituals in the virtual environment and applying forms of conventional etiquette to the world of the simulation. As the research team from *Tactical Iraqi* writes, “We found that if the experimenter introduced them directly to the game and encouraged them to try saying hello to one of the characters there, they got engaged, and were more confident to try it” [18].

Other players were eager to engage with the Unreal puppets, but were not as enthusiastic about language acquisition skills. When asked to participate in game play by researchers and commanding officers, this group of players chose to merely “game the system,” by joining collaborative activities that postponed rather than promulgated learning. A project paper about the evaluation of *Tactical Iraqi* records that the game “when played in beginner mode gave learners the impression that they simply needed to memorize certain phrases to get through the game. After the first day the subjects showed up with printed cheat-sheets that they had created, so they could even avoid memorization” [18]. Like gamers who aspire to simply exploit a system’s shortcuts by relying on “cheat codes” to arrive at the conclusion of the game more rapidly [32], these Fort Bragg soldiers had decided to take advantage of systemic loopholes and subvert the very learning process that others might undertake in good faith.

In October 2004, another test was scheduled at Fort Bragg that was deemed to be much more “successful” than the first. Test

subjects were drawn from an all-male group from the U.S. Army Special Forces. To the experimenters, these men seemed to represent a superior class of learner and were characterized by researchers as having “intelligence greater than the average soldier.” Those who evaluated the game claimed that this particular group worked with *Tactical Iraqi* as a single, coherent unit more effectively. These soldiers were praised for making “better use” of the Mission Game and for not relying on “cheat sheets” [18].

It could be argued that these soldiers were more like the John Smith envisioned by the game designers, since in his backstory Smith is a sophisticated specialist in “economics and public finance” in the military who has launched a career as a “financial and loan consultant” when off-duty back in the U.S. Perhaps these Special Forces subjects were able to endow the burley, bumbling Smith of game play with some of the incipient, intangible, exceptional qualities that Smith’s designers had endowed him with in his backstory and thus could negotiate the game world and familiarize themselves with the phrases associated with the various loci more easily.

Although initially there were plans to create a parallel version of the game with a female protagonist, Major Kate Jones [27], game developers are no longer actively pursuing a version with a female mission leader. Researchers cited cost and design issues, the demographic features of the typical service person, and a perceived female acceptance that the armed forces are dominated by the ideology of a single gender. However, from the perspective of applied linguistics, this permanent postponement seems an area of serious concern, especially given published research that identifies significant gender differences in Arabic language use, particularly in studies by Hassan [15] and Bakir [2]. Nonetheless, promotional materials about *Tactical Iraqi* prominently feature endorsements by female service people for the program, including female instructors from West Point and Fort Carson, Colorado. Yet what Arab linguist Amy Perkins seems to be asserting is actually the suitability of the game for those of the *opposite* sex. As she says, “These guys aren't going to sit in class learning Arabic.”

Certainly, a substantial body of criticism now exists about the manifold benefits of playing and learning across gender lines through video game play. As Gee and many others have argued, transgender play is both common and educational, so female service people playing as Smith may be empowered and enlightened by the experience [14]. Furthermore, the *Tactical Iraqi* program features a female voice in the Skill Builder that encourages awareness of gender difference in the tutorial mode. And in the Mission Game, Sergeant Smith is accompanied by a three-dimensional Sergeant Samia Faris, whose presence is acknowledged from the opening scene at the Hai Al-Nahar café and whose cultural knowledge as a “native speaker” cues the learner about how to properly engage in Smith’s identity building in Jasim’s house. Because access to physical spaces that could be occupied by female characters from the indigenous culture is so risky to the learner’s avatar from the perspective of supposed Iraqi gender norms, early interactions focus on male-only environments.

In its most recent testing phases, the pool of human subjects for *Tactical Iraqi* was even expanded to include adolescent civilians. In a February 2006 interview Principal Investigator Johnson said,

“I think it’s fair to say the younger you are the more natural it is. We’ve tried the program also with teenagers, and it’s really remarkable to watch. You know that before long they’ve already made contact with the local leader and are ready to sit down and plan the reconstruction. They really take to it” [30].

In contrast, testing with human subjects is much less further along for the *Virtual Iraq* simulation, although the first large-scale clinical trials are currently underway at Camp Pendleton and other military bases. Because of the immersive nature of the environment, considerable development time was necessary to create and integrate art assets and design scenarios and to satisfy research protocols involving psychological research on human subjects.

Although at present the only interior space in which the user can walk around and move through rooms in *Virtual Iraq* is an elaborately decorated mosque, this form of spatial orientation and exploration is a strong element of the simulation design. To this end, the project team makes use of the nearby FlatWorld interface, a warehouse-sized sound stage stocked with props and scenery to represent remote theatres of conflict: corrugated metal sprayed with Arabic graffiti, peeling Iraqi election posters with citizens holding small flags, synthetic rubble, sandbags, false fronts draped with camouflage or netting, and bombed out dwellings abbreviated to little more than a door or window. Many of the sets are constructed to create “reality sandwiches” that combine digital flats with synthetic environments [31].

Although both programs have not yet reached the stage of widespread use, the news media has presented considerable coverage about both these simulated environments. Items on *Tactical Iraqi* appeared in *Newsweek*, *USA Today*, *The Los Angeles Times*, *The New York Times*, *National Geographic*, and *Forbes* and on the BBC, National Public Radio, and ABC News [38]. *Virtual Iraq* was featured in broadcast news stories from the BBC, NPR, CNN, ABC, CBS, Reuters, and even Al Jazeera and in print in *Newsweek*, *The Washington Post*, *The Nation*, and *Le Figaro* [35]. This coverage is almost uniformly positive and never presents contrary viewpoints from advocates for traditional language learning or talk therapy. However, since news stories about new technologies tend to emphasize characteristics that promote ideologies of progress, this slant is not distinctive to these projects.

Television coverage has been particularly attentive to recreation of the user’s spatial experience of these games and simulations. For example, an ABC news broadcast used camera techniques, such as zooms and pans, to create an even greater depth of illusion from the digital images of interactions on patrol depicted on the screen display; the video coverage also used split screen to juxtapose the virtual patrol going down computer-generated single-point perspective streets alongside a real patrol similarly penetrating the potentially hostile urban environment [1].

5. THE DESERT OF THE UNREAL AND THE PALACE OF MEMORY

In “Welcome to the Desert of the Real,” Slavoj Žižek posits that Western countries that were traditionally isolated from the poverty and violence of the rest of the world were abruptly jerked out of their Matrix-like bubble into the “desert of the real” in which the actual bleak landscape of the mechanisms of cultural

production under late capitalism can be viewed [42]. However, I would claim that the attacks of September 11th have only accelerated the rate at which spatial simulacra are being created, particularly those that construct several parallel universes all known as “Virtual Iraq.” In addition to games and simulations such as *Tactical Iraqi* and *Virtual Iraq*, there have also been initiatives to create computer models of 3D space for the looted Iraqi national museum and several despoiled archeological sites and for database modeling of the urban environment of Baghdad [23]. This is particularly ironic because the attacks themselves, which were not related to the war in Iraq for which they provided rhetorical justification, were facilitated by the hijacker’s access to simulation technology in the form of commercial flight simulators.

Although constructing spaces – be they physical or virtual – that direct the movement of human users invariably manifests hegemonic strategies that constrain individual subjects, the possibility of exploration through the “rhetoric of walking” also opens up some potentials for new scripts. For example, Principal Investigator Rizzo has described how patients experiencing *Virtual Vietnam* would insert particular human figures or other objects, such as a water buffalo, into the rice paddy in describing their recollection of the VR simulation, and Principal Investigator Johnson has explained that the early resistance of learners to entry and further penetration of the virtual environment was overcome by creating opportunities for unconstrained, informal interactions with the virtual characters and new training worlds designed to ease the user’s transition to the virtual space.

Yet the creation of 3-D spaces in virtual environments not only allows for certain forms of tactical improvisation within the simulated space, but because of the intense media attention that these projects have received, it also includes the general public in the “rhetoric of walking” in these virtual Iraqs, albeit often for the purpose of seeming to have provided solutions to persistent and perhaps intransigent problems in the theater of battle.

To their credit, these programs also hypothetically open a door to traditional private spaces to the larger public and allow outsiders to see inside the restricted classroom or clinic of military personnel. As Michel Foucault has argued, regulation by professional disciplines polices vision and only permits certain authorized specialists to see into otherwise privileged spaces and realms of the body and psyche [12]. Videogames and simulations make these sites of linguistic conflict and physical trauma visible to those outside the educational or medical establishments.

Indeed, Rizzo has argued that his work on *Virtual Iraq* can be read as a form of political resistance, because it makes the hidden costs of warfare visible to the public. He even attributes the interest of the foreign press in his project to this subversive aspect of the program.

As public renderings, these virtual Iraqi vistas and labyrinths aren’t copies or exact replicas of public and private spaces in the real world. Although the architecture and topography of the virtual world exploits the surface realism of the *Unreal Tournament 2003* game engine, *Tactical Iraqi* does not attempt to recreate actual locations in Iraq in its 3-D environment. Despite the fact that game designers worked from photographs of remote locations in the Middle East, the experience of “virtual tourism” is constrained. In other words, *Tactical Iraqi* does not attempt to

recreate specific buildings or landmarks, unlike the simulated doubling of specific public spaces from foreign countries in games like *Tony Hawk's Underground 2*.

To maximize relevance for mission-transference, it was apparently necessary for the designers of *Tactical Iraqi* to create a sufficiently generic Iraqi playscape to prepare soldiers who could be deployed anywhere in the country. Elements of an earlier game set in Lebanon, *Mission to Arabic*, were also part of the design history of *Tactical Iraqi*, so that the game may unintentionally further a digital experience of postmodern cultural pastiche. Moreover, researchers plan to apply the *Tactical Iraqi* game to other contexts in the Middle East and even intend to offer instructional modules in other languages, such as Pashto, which would be designed for service in Afghanistan, where the natural ecology and man-made space is very different from Iraq.

Software developers in *Virtual Iraq* similarly avoided mimetic realism and sought to create generic rather than specific landscapes to heal their client's wounded psyches. In other words, despite being in control of a multi-sensory barrage of hyper-real stimuli, the ideal therapist still wants there to be some neutral canvas on which the patient could recreate details from his or her memories of the seminal crippling traumatic event.

However, user's tactical practices in these virtual spaces are severely constrained by the presence of monitoring spectators, such as researchers, military commanders, and therapists. In contrast, Ian Bogost has described how Machinima artist Jim Munroe subverts traditional rules of game play when he creates *My Trip to Liberty City* in which he assumes the roles of "Canadian Tourist and Priest" and is allowed to wander around the game-scape of *Grand Theft Auto* engaging in independent aesthetic and ethical experiences of his own devising [3]. Tasks to be completed in the virtual space of these military-funded virtual experiences can not be avoided or appropriated. For example, in *Virtual Iraq* a traumatized veteran would not be allowed to daydream over the geometric patterns in the mosque for hours or look up lazily at the sky for the entire session, and in *Tactical Iraqi* karaoke singing or disk jockey commentary would be discouraged as activities at the microphone.

In navigating these spatial environments, the user is often more disoriented than oriented, particularly in the case of *Virtual Iraq*, where concussive blasts can alter the user's sense of directionality, and explosions can make it difficult to see.

Furthermore, if, as Ann Kaplan has argued, we are living in a "trauma culture" then the lived space of deliberative experience is at risk, particularly when mass media formations almost infinitely replicate traumatic scenes of spectatorship in cinematic reconstructions or flattened out digital screen interfaces of the digital screen in ways that depersonalize and dissociate violence and recast it as melodrama that can serve particular nationalistic agendas [20]. Yet, Bob Rehak has argued that it is precisely the alternation or even simultaneous experience of "participatory and spectatorial" digital experiences that gives game environments their value for human subjectivity [33]. Thus, as players orient themselves, they acquire individual and cultural memory as they move through the game world.

In his explorations of the visual culture of civic life, Bruno Latour gives "making things public" more significance than the common

idiomatic meaning of the phrase might suggest. He explores the broader, more traditional notion of *res publica* and considering how "things public" are literally constructed for and received by political audiences. Using the language of software development, Latour characterizes a range of political and scientific representations, which are "representative" and "realistic" to varying degrees, as manifestations of what he calls "object-oriented democracy." For Latour, "democracy" can be seen in terms of its Greek etymology, as a form of civic participation that is as much about division as it is about a unitary ethos [21].

Games like *Tactical Iraqi* and simulations like *Virtual Iraq* can serve as "things public." They reveal conflicts and contradictions from which civilian voters and taxpayers are generally shielded. 3-D environments created for video games can encourage practices of study and debate about these concrete, albeit virtual, objects. Like other simulation environments created for the U.S. military, they may ultimately also become shared spaces that include visitors from the public.

Of course, Latour is writing about obviously public spaces: "Scientific laboratories, technical institutions, marketplaces, churches and temples, financial trading rooms, Internet forums, ecological disputes – without forgetting the very shape of the museum inside which we gather all those *membra disjecta* – are just some of the forums and agoras in which we speak, vote, decide, are decided upon, prove, are being convinced. Each has its own architecture, its own technology of speech, its complex set of procedures, its definition of freedom and domination, its ways of bringing together those who are concerned – and even more important, those who are not concerned – and what concerns them, its expedient way to obtain closure and come to a decision" [21].

The virtual objects, social puppets, built environment, physical terrain, and perceptual spaces of this computer-generated Iraq can take the user into the realm of public matters while also exploring the private spaces associated with the user's own memories: intimate spaces of private living and traumatic spaces of violent combat.

For example, in the fourth scene of *Tactical Iraqi*, "At Jasim's House," the user must navigate through the spaces of a private home. There the learner must orient Smith in a range of kinship relations. The learner can even offer to show Jasim a photograph of his "family" back home in the U.S.. Should the learner omit the social niceties of establishing Smith's personal background when faced with Jasim's polite but mildly probing questions, Jasim will refuse to use his authority as a "senior official" to help the mission, because the learner has too abruptly initiated "business" discourse before a sufficiently intimate rapport could be established.

By making these intimate, humanizing spaces of private life visible in Iraq, the members of the general public who are likely to admire the impressive government-developed technology might at the same time see a kind of virtual home worth preserving rather than treat Jasim's house as something to be exploded in traditional shooter play.

In other words, creating political spectacles can have positive as well as negative implications. If government-funded video games and virtual reality simulations serve as forms of public display, as

critics we need to grapple with how best to interrogate that visibility and understand the potential for rhetorical exchanges, although we may well have to wait for political spectacles that are more sophisticated than the current military offerings.

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