

Avatars in Analytical Gaming

Guidelines for developing effective anthropomorphic characters.

Andrew J. Cowell (Presented by Scott Butner)



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Definitions: Avatar

av•a•tar |'avə,tār|

noun chiefly Hinduism

a manifestation of a deity or released soul in bodily form on earth; an incarnate divine teacher.

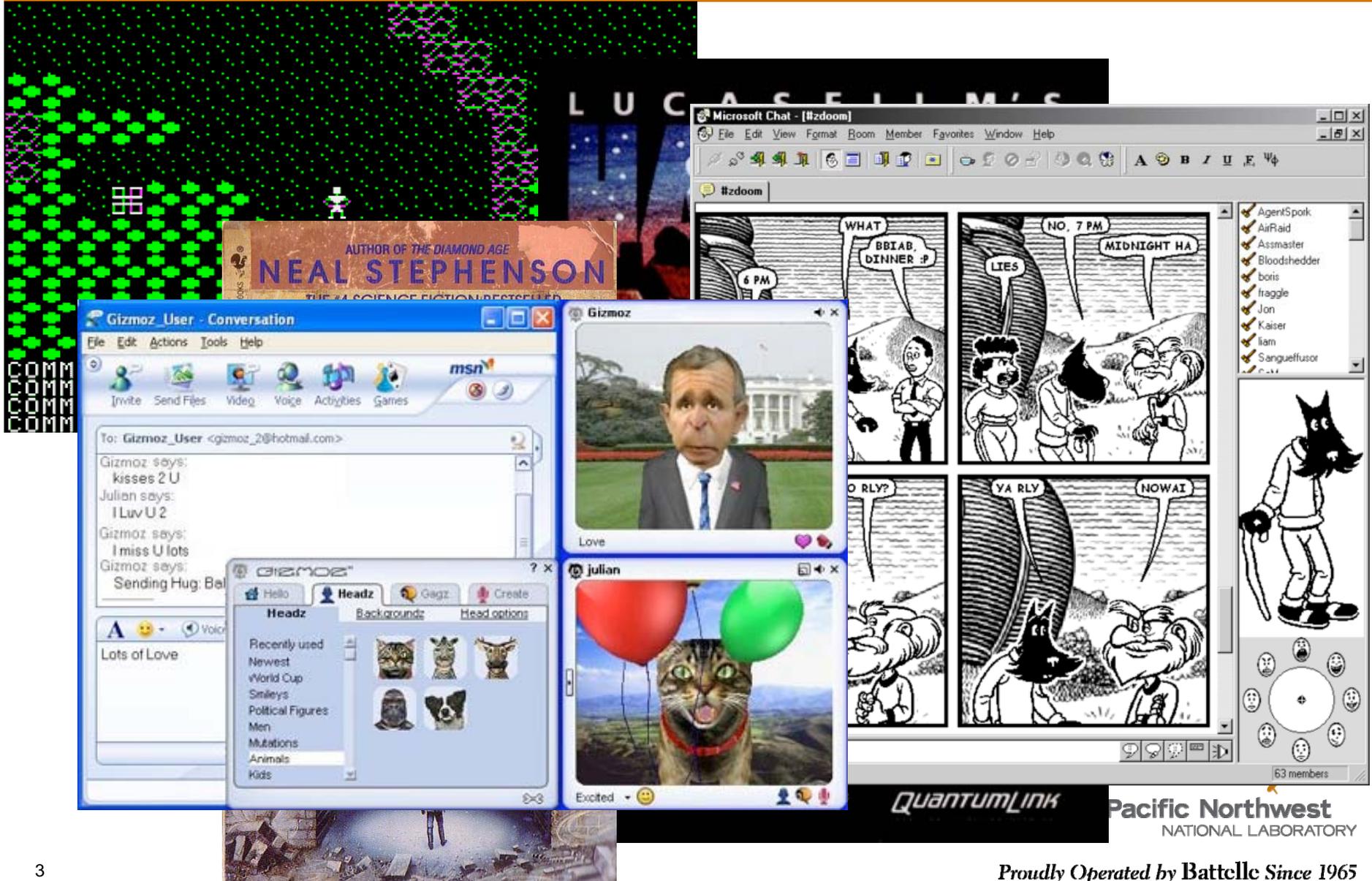
- an incarnation, embodiment, or manifestation of a person or idea : *he set himself up as a new avatar of Arab radicalism.*
- Computing a movable icon representing a person in cyberspace or virtual reality graphics.

ORIGIN from Sanskrit *avatāra* 'descent,' from *ava* 'down' + *tar-* 'to cross.'



a.k.a.: embodied conversational agents, Intelligent virtual agents, believable agents, embodied chatbots, anthropomorphic computer characters, ...

Avatars – Brief History



Avatars – Brief History (2)



Avatar Representation

- ▶ Different granularities, depending on environment
 - Scripted environments: hyper-realistic, anthropomorphic characters that use complex nonverbal behavior
 - Virtual worlds: realistic, anthropomorphic characters with some simple nonverbal behavior
 - Chatrooms/Forums: Simple, static two-dimensional picture

Avatar Utility

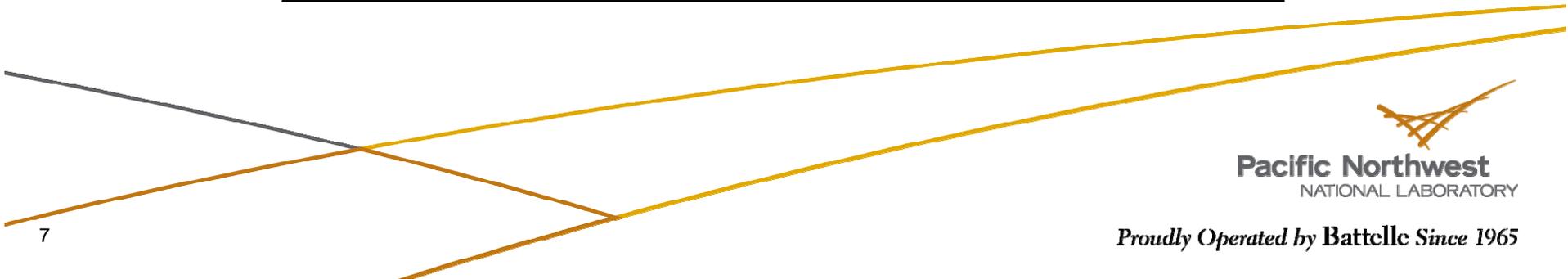
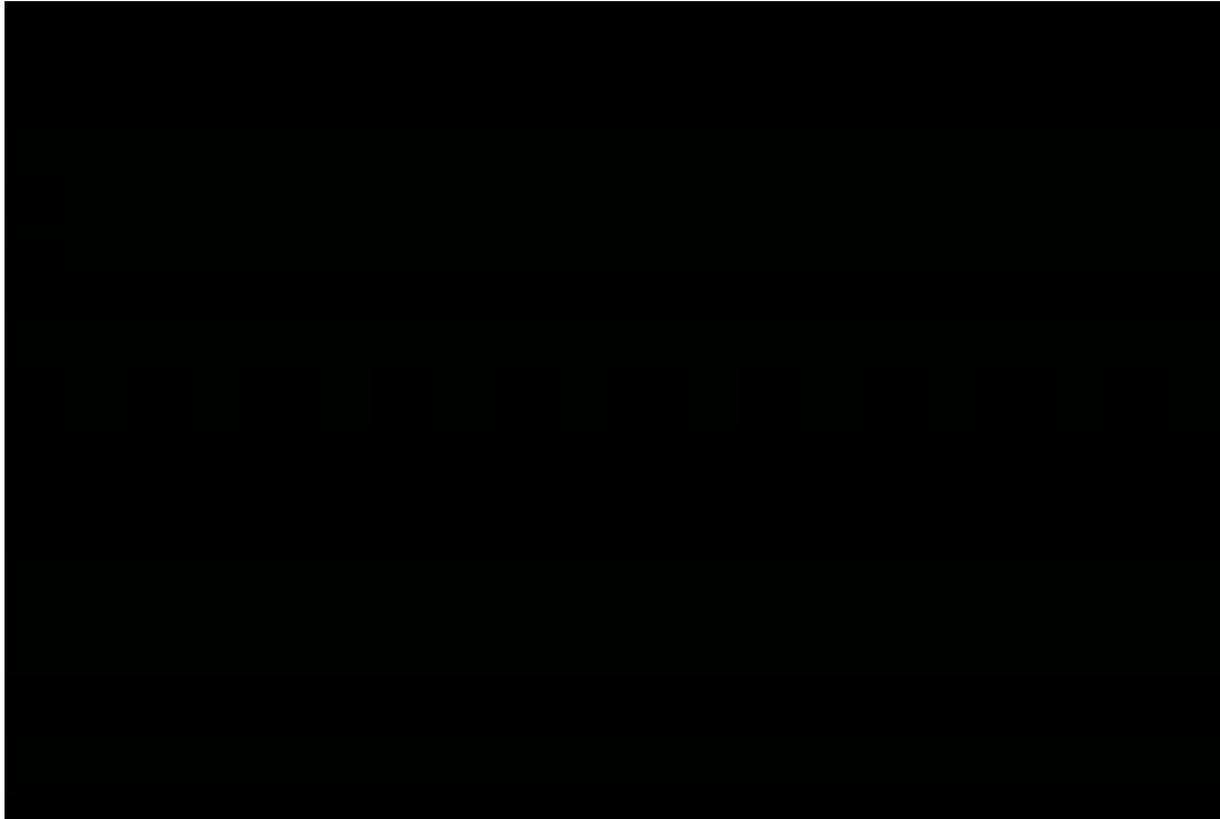
- ▶ Why use realistic avatars?
 - A means to localize oneself with others
 - e.g., avatar representations in Second Life
 - Portrayal of character
 - The avatar provides some insight into the ‘person behind the mask’
 - Engagement
 - Leverage skills learned in the real world to interact, one version of the ‘holy grail’ of human-computer interfaces.
 - Entertainment
 - They’re fun!
- ▶ For serious, analytical games, a realistic avatar may be the key aspect of the environment...



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Zero Hour: America's Medic



Focus on Non-Player Characters

- ▶ In regular games, NPC's are typically a supporting cast
 - Challenging opponents, team members, etc
- ▶ In games such as Zero Hour, the perceived credibility of the roles played by NPC's is key for the experience
 - Injured people, law enforcement personnel, other emergency staff
- ▶ Gabarro defined three levels of trust
 - Trust of Character – do the characters look right?
 - Trust of Competence – do the characters act correctly
 - Trust of Judgment – do the characters make the right judgments based on role?
- ▶ We focus on Gabarro's first dimension

Non-Verbal Behavior

- ▶ We use multiple modes when decoding credibility
 - Uniforms, titles (e.g., Dr.),
- ▶ Non-verbal behavior gives us another, often unconscious, modality
- ▶ Non-verbal behavior provides:
 - information (Ekman)
 - regulates interaction (West & Zimmerman)
 - emphasizes social control (Mehrabian & Williams)
 - manages affect (Eddelman & Iwawaki)

NVB Suggestions for NPC's

▶ Facial Expression

- Use animated facial expressions & head movements
- Avoid the use of a single neutral expression
- Minimize non-smiling, lowered brow expressions

▶ Eye Contact

- Maintain eye contact with the user, but not continuous (e.g., staring)
- Ensure eye contact is controlled and deliberate
- Reduce excessive eye blinking
- Avoid looking down or away, especially just before a response
- Avoid swift eye movements

NVB Suggestions for NPC's

▶ Paralanguage

- Use a moderately fast rate of speaking
- Avoid long pauses
- Use slight variations in pitch, rate and volume
- Avoid the use of a flat, nasal voice
- Avoid 'non-fluences' (e.g., repeated words, stuttering)

▶ Gestures

- Ensure gestures appear spontaneous, unrehearsed and relaxed
- Match gestures to the verbal message
- Keep hands and elbows away from the body
- Avoid defensive and nervous gestures (e.g., fidgeting)

NVB Suggestions for NPC's

▶ Posture

- Advocate open postures (e.g., upright stance, square shoulders, straight back) and express interest by leaning towards the user with head tilted forward
- Suppress closes postures (slouched, rigid, legs and arms crossed) and avoid obstructing the mouth when speaking

▶ Of course – suggestions are based on typical interactions

- If person is injured in Zero Hour, we shouldn't expect the character to be smiling...but to act in role.

Summary

- ▶ Realistic avatars that interact in a controlled manner, supportive of the role and situation enable users to ‘suspend belief’
- ▶ Users that are able to reach this level of interaction shall get the most out of the experience
- ▶ But ... this is only one dimension
 - Significant work still required to ensure the perception of
 - Competence
 - Judgment