

# Perspectives on Design: Challenge and Conflict

Prof. Jim Whitehead  
CS 80K, Winter 2006  
February 10, 2006

# Upcoming Game-Related Talks

- Bruce Gooch
  - Abstract Computer-Generated Imagery
  - Monday, Feb. 13, 11AM, E2 599
- Finnegan Southey
  - Bayesian Opponent Modeling in Games
  - Wednesday, Feb. 15, 11AM, E2 599
- You are welcome to attend these talks

# Challenge

“We measure ourselves by the challenges we face. In the universe of possibilities that encompasses what we could be, it is the challenge we face up to that delineate who we actually are. We therefore go through life seeking new challenges that permit us to expand our identities.”

- Chris Crawford, “Chris Crawford on Game Design”, p. 37.

# Aspects of Challenge

- Challenges take place in a defined context
  - This sets the conditions under which the challenge is presented
    - Financial, physical, emotional, etc.
- Conditions under which a challenge is presented are its rules
  - Game rules are designed to create challenge
- Goal is overcoming the challenge
  - Even if you find a loophole in the rules that allows you to easily win, this hasn't overcome the challenge
  - Winning via exploiting loopholes isn't as satisfying

# Dimensions of Challenge

- Cerebellar Challenges
  - Cerebellum sits at the base of the brain
  - Breaks higher level tasks into fine-grain commands to trigger individual muscles
  - Few sports that are solely cerebellar: discus, shotput, javelin

# Dimensions of Challenge

- Sensorimotor challenges
  - Cerebellar challenges typically include some form of sensory control loop
    - Receive input via one or more senses
    - React to this input
    - Generate commands to muscles to alter the system
    - Most typically this involves receiving visual input, then responding to that
      - Aural challenges may not exist, or are rare
  - Sports vs video games
    - Most sports involve the entire body in sensorimotor challenges
    - Most video games do not – the body is best left mostly immobile
      - Dance Dance Revolution is an exception, as are many recent arcade games

# Dimensions of Challenge

- Spatial Reasoning
  - Analyze the interactions among the physical positions of game elements to determine future actions
    - If an enemy pops up, need to figure out if it's an immediate threat, a medium-term threat, etc.
    - Also need to estimate distance to formulate plans for reacting to the enemy
    - Strategy games often use spatial reasoning to create complex networks of pieces and their interactions

# Dimensions of Challenge

- Pattern Recognition
  - Identifying patterns, and reacting to them in your play of the game
  - Checkers, Chess, Go all involve pattern recognition
  - Can be visual patterns, as well as deeper patterns of the interactions of pieces
- Discussion: Does Dance Dance Revolution have pattern recognition challenge, or sensorimotor challenge (or both?)

# Dimensions of Challenge

- Sequential Reasoning
  - Stringing together long sequences of steps
  - Chess is exemplar: players must examine many possible sequences of moves
  - Video games often have these kinds of challenges, since they are natural to programmers
    - However, the general population often finds them a tedious challenge
      - Crawford recommends keeping them to a minimum

# Dimensions of Challenge

- Numerical Reasoning
  - Requiring the player to perform computations, or track things numerically
  - Computers are very good at this
  - People often find this tedious
    - Crawford recommends avoiding these kinds of challenge
  - What if you are trying to create a computer game to teach these kinds of numerical skills?

# Dimensions of Challenge

- Resource Management
  - Effectively using a limited supply of scarce resources to handle problems or achieve goals in the game
    - Shooters: ammunition and health
    - Strategy: often dozens of resources
  - Can be overdone. Not necessarily a good idea to add more resource management to an existing game to make it more complex

# Dimensions of Challenge

- Social Reasoning
  - Challenges which revolve around social interactions and goals
  - Difficult to achieve at present: involves complex emotional models of characters, and broad autonomy for characters

# Conflict

- “Conflict makes challenge personal.”
- “Challenge without conflict is entirely predictable; when you go mano a mano with a crossword puzzle, you know exactly what you’re getting into.”
- “Conflict enlivens and animates challenge; without conflict, challenge is limp and passive.”
  - Chris Crawford on Game Design, p. 55

# Conflict for Men and Women

- Crawford:
  - Men rely heavily on physical forms of conflict
  - Women tend towards social conflict
- Discussion: agree/disagree?

# Forms of Conflict

- Physical
  - Physically attack the other player
  - Typically the goal is to dominate the other player, and intimidate them, not give them significant injury
- Verbal
  - Insults, boasting, insulting joke, narrative assault
- Political
  - Recruit allies, undercut opponent's social alliances
- Economic
  - Affecting your opponent financially
  - Primary conflict in business environments