



Google, gaming & getting ahead

Games & Observational Learning

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McNutt: **Game Embedded Strategy** (2010) McGraw Hill

Q: What is Game Theory about?

A: Observational learning in a time continuum

- Finding & extracting a pattern from a sequence of moves (historic v real-time)
- Understanding the pattern as wave movements
- Information embedded in observed behaviour
- Information filtering and 'transactive' memory?



Q: So what? Why?

- Information has a value
- Individual memory is 'outsourced' to Google, Facebook, LinkedIn...
- Behaviour can be 'tracked'
- Predicting likely future actions and reactions



Tracking decisions: Observe but do not judge

- Decisions, action are not isolated events
- They can reveal a pattern
- Observe, and filter the information embedded in the signal
- Information used to monitor and report on individual behaviour
- Cloud computing
- FBI Strategic Information & Operations Centre
- FBI Behavioural Analysis Unit



**Hegazy-McNutt 'Non-linear thinking' image...
time continuum**



Time continuum.. observing patterns in time, $dT/dt = -1$

- Last Month... 1 hour ago
- Last Week... 10 minutes ago
- Yesterday... 1 minute ago
- Today... Now
- Tomorrow... 1 minute later
- Next Week... 10 minutes later
- Next Month... 1 hour later



Host (updating your belief system) or... Guest (observing signals & type)

- WHERE TO HOST THE BBQ?
- Preference
- Regrets
- Disappointment
- Disaster

- Note: Host [incumbent] v Guest [entrant]



	SUN	RAIN
HOUSE	Regrets	Disappointment
GARDEN	Preference	Disaster



Thinking strategically in a time continuum

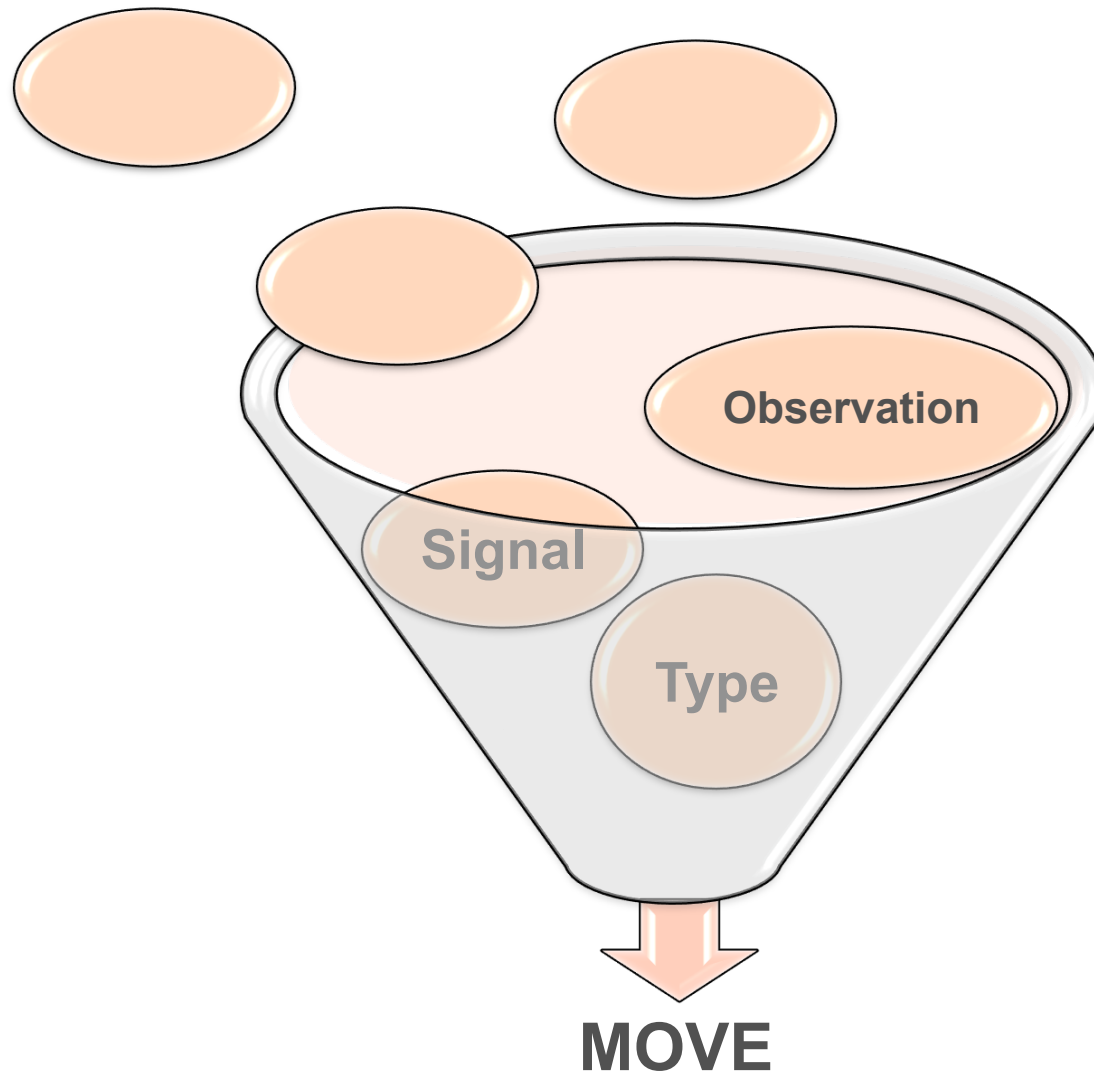
1st Objective

- Cascade effect
- Understanding the pattern (eg a restaurant queue, CTL) in what you observe

2nd Objective

- Observing in context
- What is the information in the pattern observed?





Our interest is in the
sequence of moves as a pattern

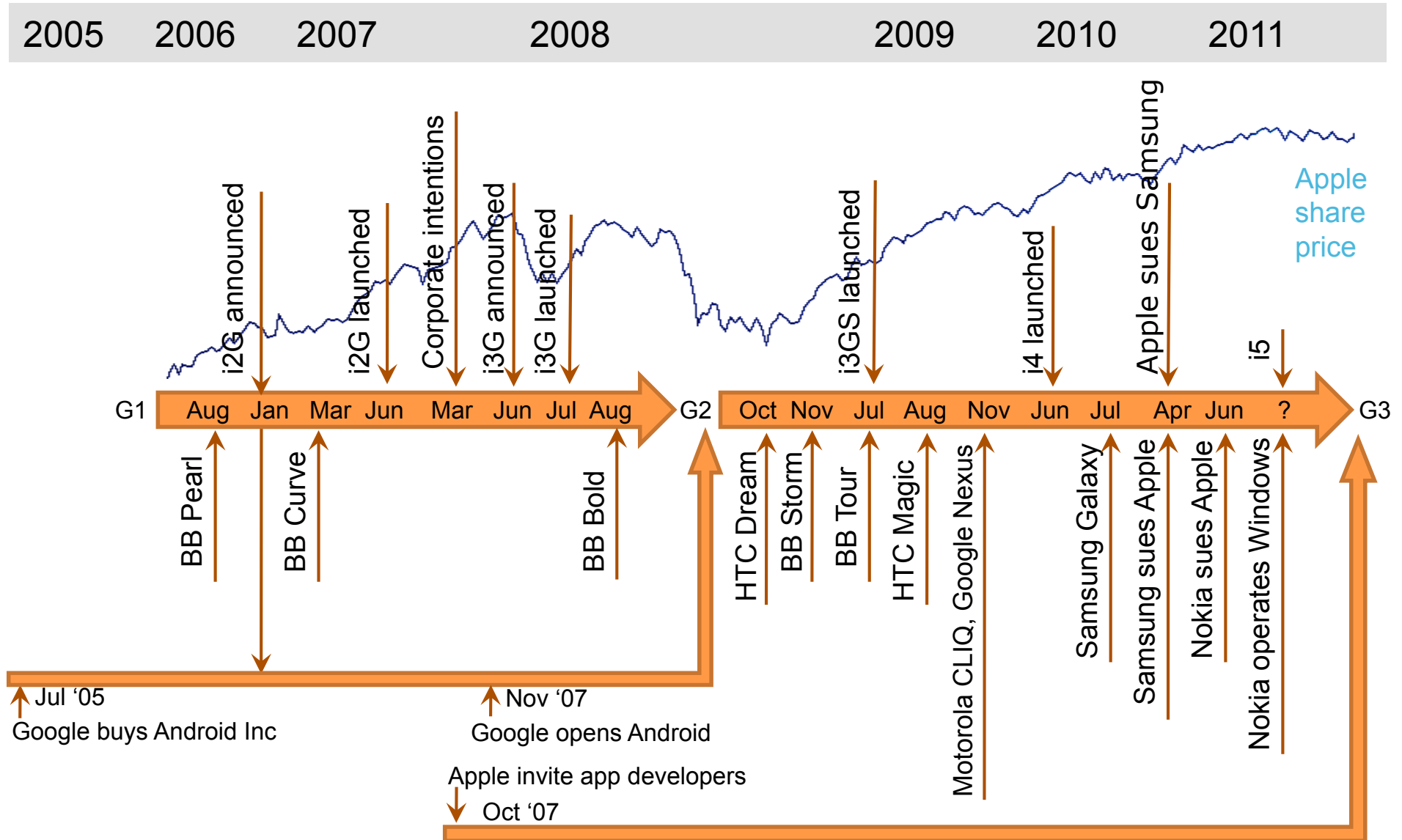


1st Objective: Cascade Effect

- Observe individual type
- Private information & truthful revelation: memory cost of deception
- Action and reaction: Yes
- Action and diffusion: 'Black Swan' effect
- What market should a firm be in?



CTL: 2005 Google & Android



2nd Objective: In Context

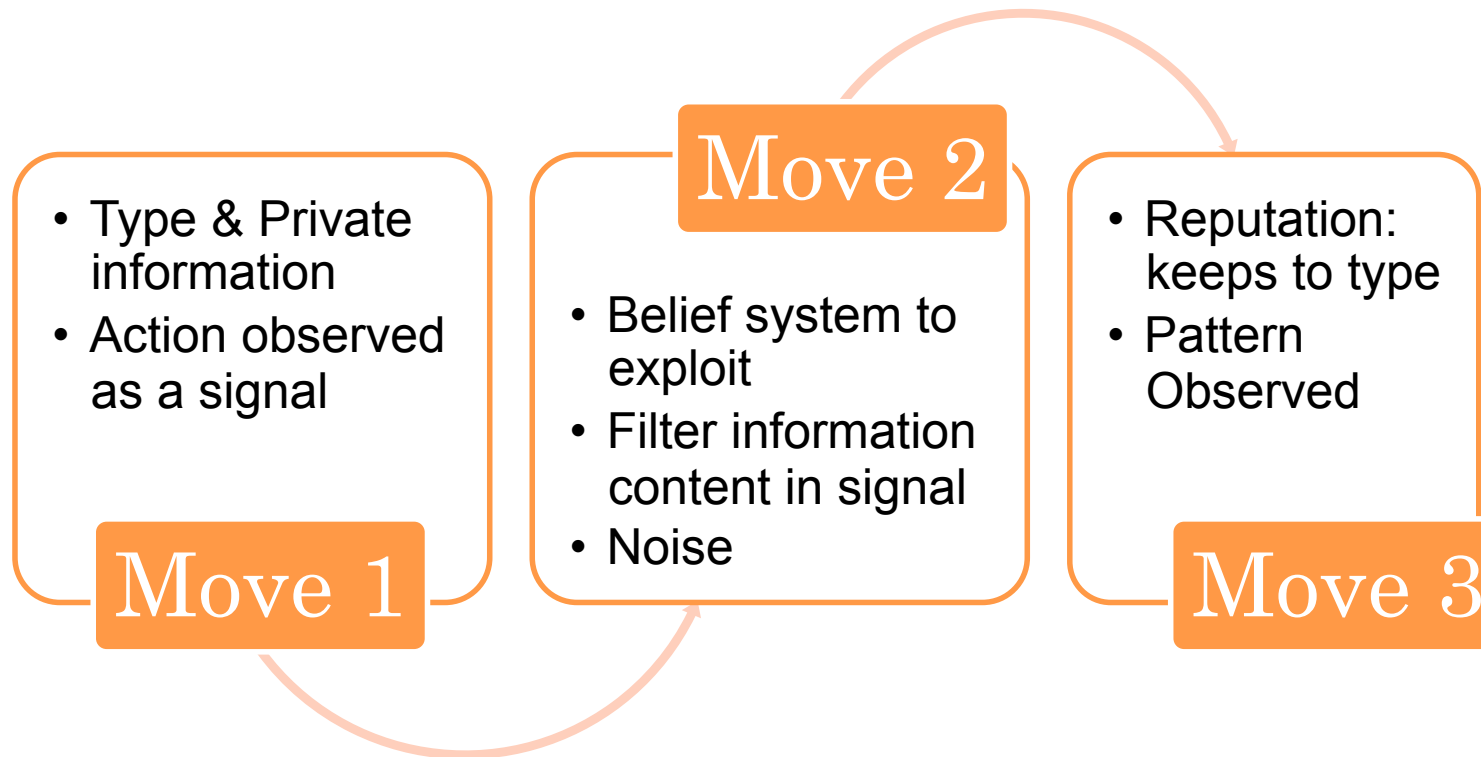
- Signals: observe but do not judge
- Signals contain information?
- Type & Signals
- Keeping to type: trust and truth
- Signalling cycle... the critical time line: CTL



Architecture of a Game

- Playing a game without information
- Playing a game with 'good' signals
- What is the optimal move, given X?
- How does the value of the signal vary with X under different actions?
- Playing to win
- Playing not to lose

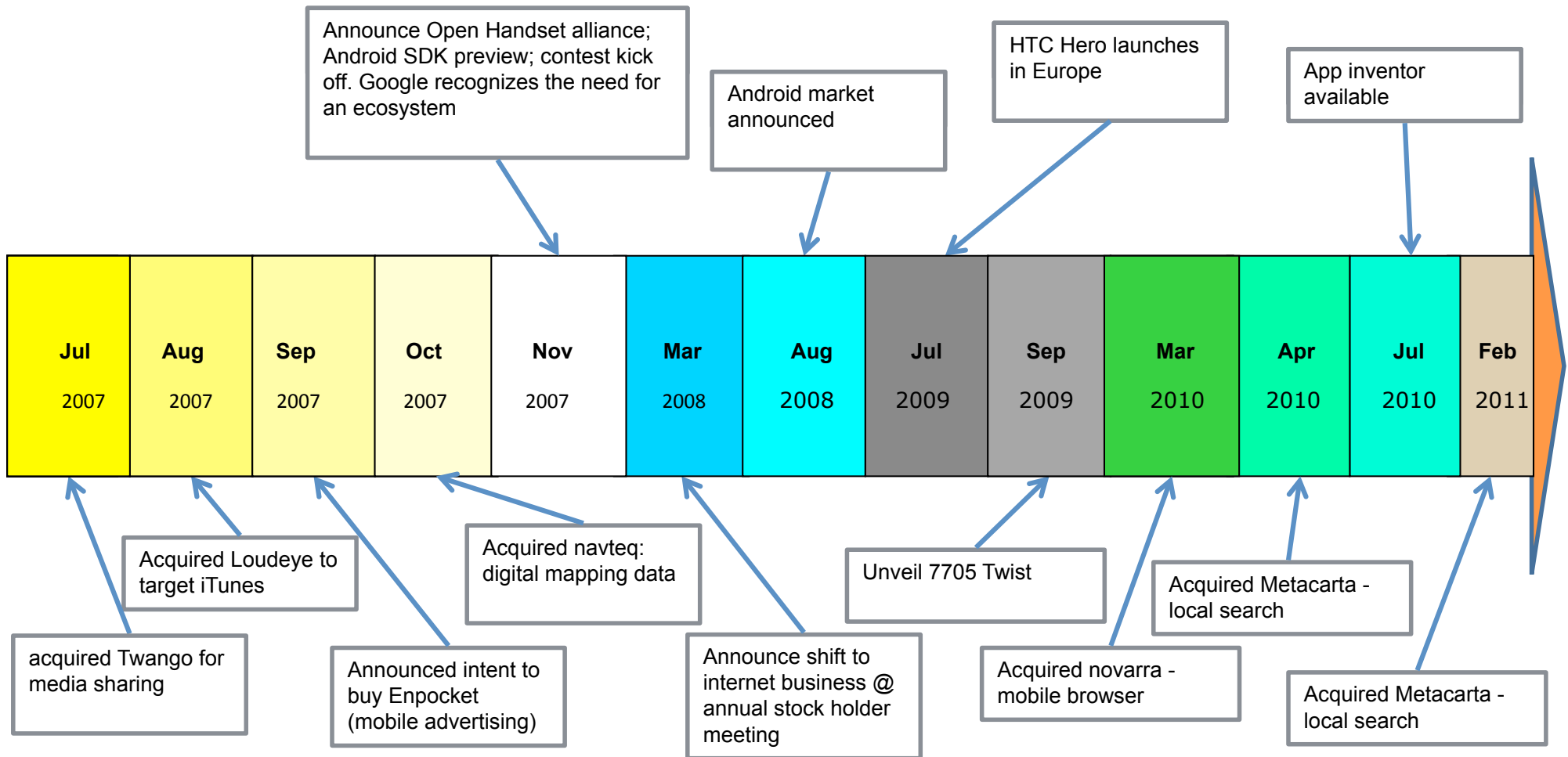




CTL – observe and filter the information

Example (abstract) Google Android signalling

Critical Time Line Nokia/ Apple/ Google - Western Europe – Mobile Handset



Game Embedded Strategy [GEMS] & Tn=3

The sequence of moves is observed

- 1. by rivals as a pattern, revealing your 'type' as a player...reveals insight into company strategy
- 2. Can I trust you? Private information is not observable, only actions are.



What is strategy? CTL: Today's decision depends on the one we shall make tomorrow

- Time periods t [action] and $t+1$ [reaction]
- About extracting information from time period t to time period $t+1$
- Predicting competitor reaction in $t+1$
- Analyse what market your company should be in in $t+1$
- Decisions are not isolated events



Trust & Signalling Mismatch (Non-Binding Chat)

- Example Signal at (March 12 2007) = New Century Financial Shares suspended in the US. Did you observe?
- Example: Early 2007 Singal b = ‘moonshot’ of reported launch of a gPhone and Apple launch the iPhone earlier than planned in 2007?
- Example: Leo the Liar is the only person who can save you from a cliff edge where you are hanging on with one hand. Leo asks for your hand so that he can pull you up..do you give Leo your hand?
- Belief system: Barcelona v Man Utd.....I know that he knows that I know.....Player type: Arjen Robben - Man Utd v Bayern Munich [2010] and England v Netherlands [2012]



	High Price Player A	Low Price Player A
High Price Player B	Cartel, cooperation	B's loss
Low Price Player B	A's loss	Competition



Thomas Schelling-John Nash (signalling) premise....

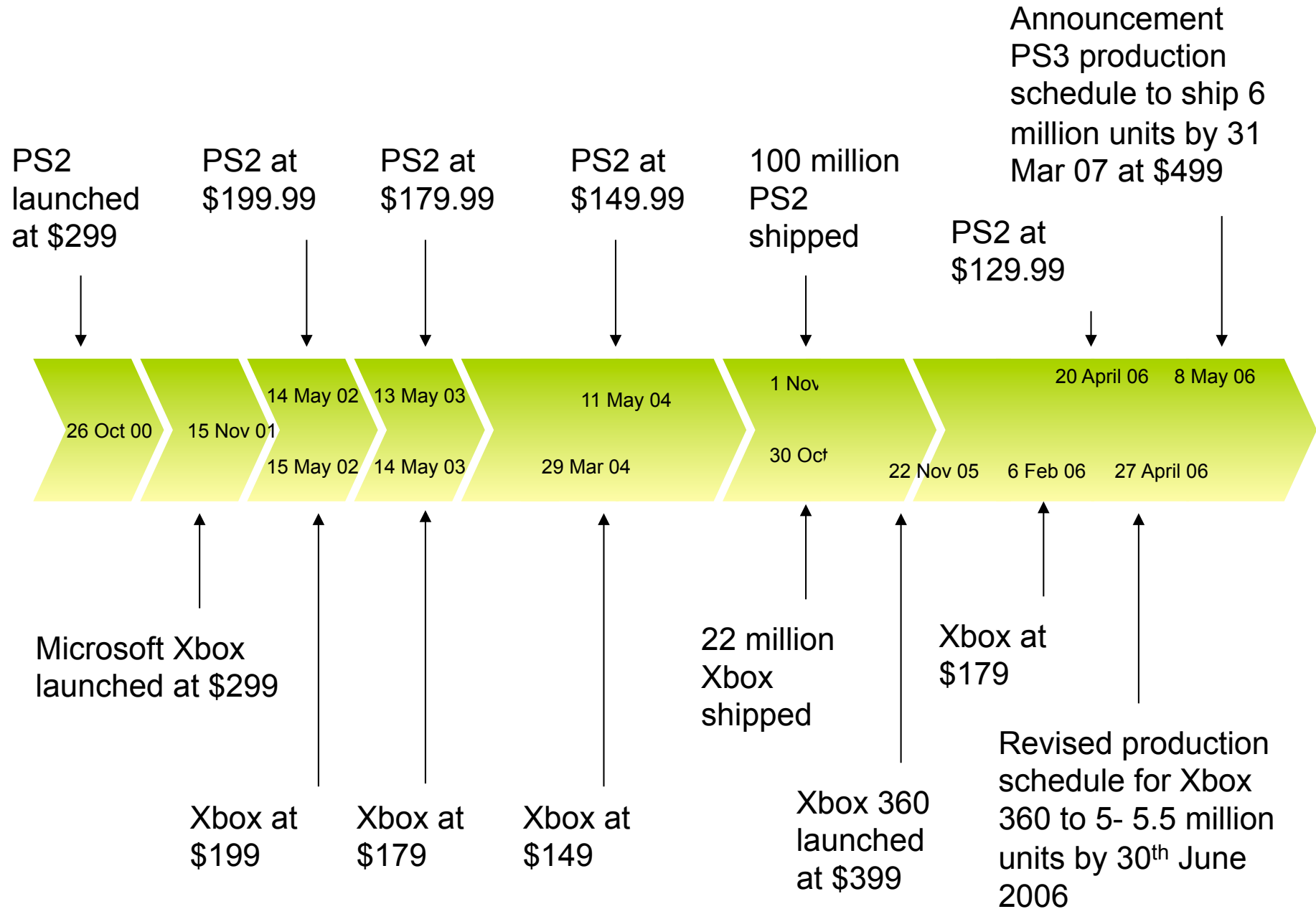
- Observe the signals & identify the type
- Understand your strategy as simple action-reaction... where reaction = action of other player
- Likely reaction from a competitor: Who?
- Binary Reaction: D or E will react?
- Non-Binary Reaction: what is probability that D will react?
- Being 'ahead of the game' v 'we didn't win by a lot, but we won by enough' Romney on Michigan Primary Feb 28 2012



Critical Analysis: Signals

- Do not 'be surprised' by unseen events
- Recognise the best that you can do given the reaction of a competitor: the Nash reply
- Make better informed decisions (on how to respond)





Sequence of Moves as a Wave Movement

- The wavelength is the timing of reactions
- Behaviour is a 'vibrational pattern' in time and space
- Observe the price signals as amplitudes in the wave pattern
- CTL allows us to observe what sequence would look like in $t+1$



Andt+1 is here

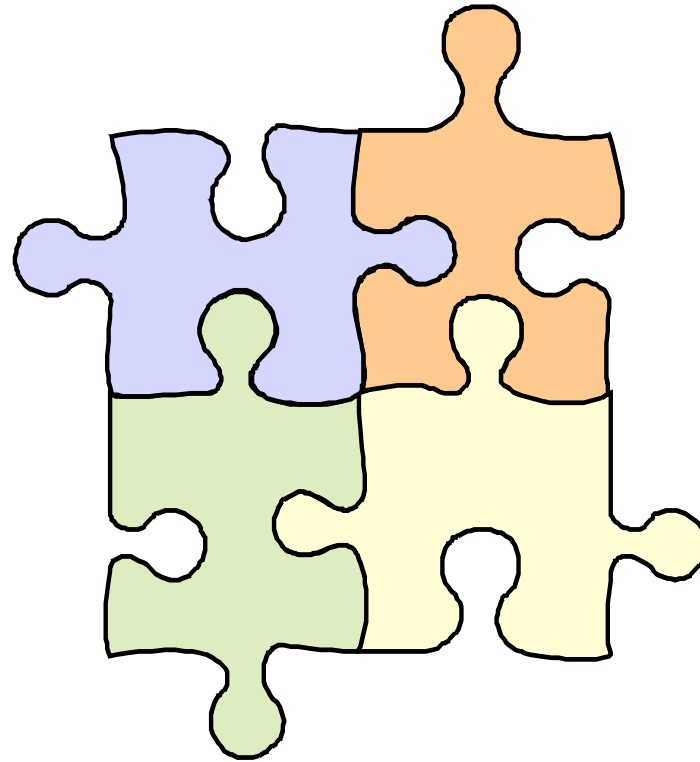
- The future is not what it used to be !!
- Feel the force, Luke: let go of your conscious self and act on instinct !!
- Do you agree?



Q: Why GEMS?

A: Opportunities identified that can be seized

- The biggest risk to a company is ignorance of potential risks, not having a Nash reply, requiring team-driven critical imagination based on SLT...



Strategic Lateral Thinking (SLT): filtering information in a time continuum

- Relevance and importance of Player type: vision of $t+1$ informs action in t
- Footprints in the game as patterns
- ‘Near-rival’: Player A reacts first to Player B...why not Player C? Nash reply minimises surprises
- Market-as-a-game evolving in time
- ‘Spherical’ competitors from anywhere at anytime in a game..Google & Moto, HP & Palm





Thank you for listening.....

Sapere aude

***‘That which one can know,
one should dare to know’***



Thank you for listening.....

Mark Twain

***'If you tell the truth you
don't have to remember
anything'***



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