

# Lecture 14: Strategic Moves

## Today's Topics:

1. **Commitments, Threats, and Promises**
  - Moving first
  - Unconditional → Commitments
  - Conditional → Threats and Promises

2. **Credibility**

3. **Commitments**

4. **Threats and Promises**

5. **More Strategic Moves**

6. **Acquiring Credibility, or Countering the Other's**

## Chicken! (from Lecture 2, p. 30):

		<i>Bomber</i>	
		<i>Veer</i>	<i>Straight</i>
<i>Alien</i>	<i>Veer</i>	Blah, Blah	Chicken!, Winner
	<i>Straight</i>	Winner, Chicken!	Death? Death?

Diagram illustrating the Chicken! game matrix. The matrix shows the outcomes for the Alien (rows) and Bomber (columns) based on their choices (Veer or Straight). Red arrows indicate the Bomber's best response for each Alien choice: from (Veer, Veer) to (Veer, Straight) and from (Straight, Veer) to (Straight, Straight). Green circles highlight the outcomes where the Bomber wins: (Veer, Straight) and (Straight, Veer).

**How to win?**

**How to signal Straight credibly?**

**How to Commit?**

**Or what?**

## Strategic Moves:

are devices to manipulate the rules of the game:  
a strategic move as the 0th stage, and  
the altered original game, now the 1st stage.

Three types of 0th-stage strategic moves:

1. commitments
2. threats
3. promises

Each aims to alter the outcome of the 1st stage.

But all require *credibility*: the other player must *believe* that you will not renege, that you will follow through.

Mere declarations are not enough. Need extra (ancilliary) moves in the 0th stage to make them credible.

## Unconditional and Conditional Moves

- **An *unconditional* move is a (response) rule in which you move first and your action is fixed, to gain *first-mover advantage*.**
- ***threats* and *promises* can help when you move second: they are *conditional* because the response dictated by the rule depends on what the other side does, but**
- **A *strategic move* is a *preemptive action*, and the response rule must be in place *and communicated* before the other side moves first. (That is, they require a 0th stage to establish the threat or promise.)  
Intended to gain *second-mover advantage*, if credible.**

# I. Commitments, Threats, & Promises

## IA. Moving First?

**What does it mean to *move first*?**

**The move must be *observable* and *irreversible*:**

- **If not observable, then strategically simultaneous.**
- **If not irreversible, then one could move, wait for the other player to move, and the undo one's move to gain a 2nd-mover advantage, if it exists.**

## **I B. Unconditional Strategic Move**

**AI:** “In the game to follow, I shall do X,” – an unconditional strategic move, a *commitment*.

**With this declaration, AI in effect moves 1st. If credible, AI’s statement (the 0th stage) alters (other player) Bob’s beliefs and hence Bob’s actions.**

**“We never negotiate with terrorists” might dissuade terrorists from taking hostages.**

**X could be Stalin’s “scorched earth” defence of the USSR against Hitler’s Wehrmacht.**

## I C. Conditional Strategic Moves

**Al:** “In the game to follow, if you do *W*, then I’ll do *X*, but if you do *Y*, then I’ll do *Z*.”

**Al** is stating his *response rule*;

**Al** moves 2nd in the game to follow, and has already stated (at the 0th stage) how he will respond.

**Bob** must make a 1st (observable, irreversible) move.

**Al’s** conditional strategic move:

*deterrence*: stop **Bob** from *Y* (*Z* hurts **Bob**)

*compellence*: compel **Bob** to *W* (*X* rewards **Bob**)

If *Z* hurts **Bob**, then a *threat* of **Al’s**.

If *X* rewards **Bob**, then a *promise* of **Al’s**.

## 2. Credibility

**AI gains a higher payoff when Bob acts as AI wants.**

**Important: AI's payoff might be altered by AI's action — if AI's own payoff is increased by the response action, then Bob says, “AI'll do it anyway”: and it's ∴ not a strategic move.**

**∴ *To be effective*, AI's threatened action must be costly to *both* players — mutual harm.**

**e.g. Child of a sadistic parent will figure: why eat his broccoli — still won't get any ice-cream.**

**So the threat: “No ice-cream if you don't eat your broccoli!” is hollow unless the parent has an incentive to serve ice-cream.**

**∴ need credibility**



## **Credible, communicated commitments.**

**Commitments must be *credible* and *communicated* and understandable to be of value.**

- **By their nature, strategic commitments (threats or promises) are intended to change others' beliefs and behaviour; others must wonder: are they hollow? and the player will fall back on the uncommitted best action: is it nothing but a bluff?**
- ***Dr Strangelove* describes a Russian commitment — The Doomsday Machine — to respond to any incursion into Soviet airspace with an attack of nuclear missiles on the U.S. Unfortunately, the Russian have not yet told the Americans about it ...**

***Non-credible threats are ignored.***

### **3. Commitments**

**In Chicken! if Bomber makes a (observable, irreversible) commitment to Straight, so it's credible, then he wins by reducing Alien's possibilities to Veer only.  
How?**

**What if Alien has cut himself from communication?  
Then Bomber's action is not observable — ∴ not a commitment.**

**In Airbus v. Boeing (Lecture 3, pp. 3), how can Airbus deter Boeing?  
How can it *commit* to fight?**

## Why Commitment Is Important

**Two firms, Able and Baker, compete in a duopoly.**

**Able, the dominant firm, is contemplating its capacity strategy, with two options:**

- **“Aggressive,” a large and rapid increase in capacity aimed at increasing its market share, perhaps at a cost to its profits, and**
- **“Soft,” no change in the firm’s capacity.**

**Baker, a smaller competitor, faces a similar choice.**

**(Remember: no binding contracts —  
— *non-cooperative* game theory.)**

**(Contracts & side-payments & coalition formation are studied in *cooperative* game theory.)**

## Able and Baker

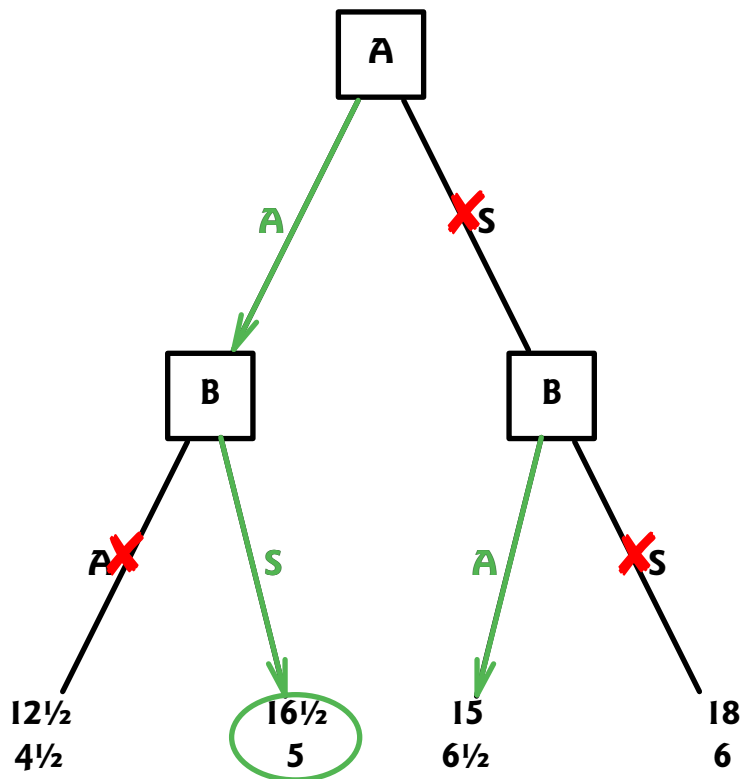
The POM shows the NPV associated with each combination of strategies:

		<i>Baker</i>	
		Aggressive	Soft
<i>Able</i>	Aggressive	12½, 4½	16½, 5
	Soft	15, 6½	18, 6

Simultaneous Payoffs (Able, Baker).

Using arrows, we easily see that Able has a dominant strategy of S.

## What if Able moves first? a commitment.



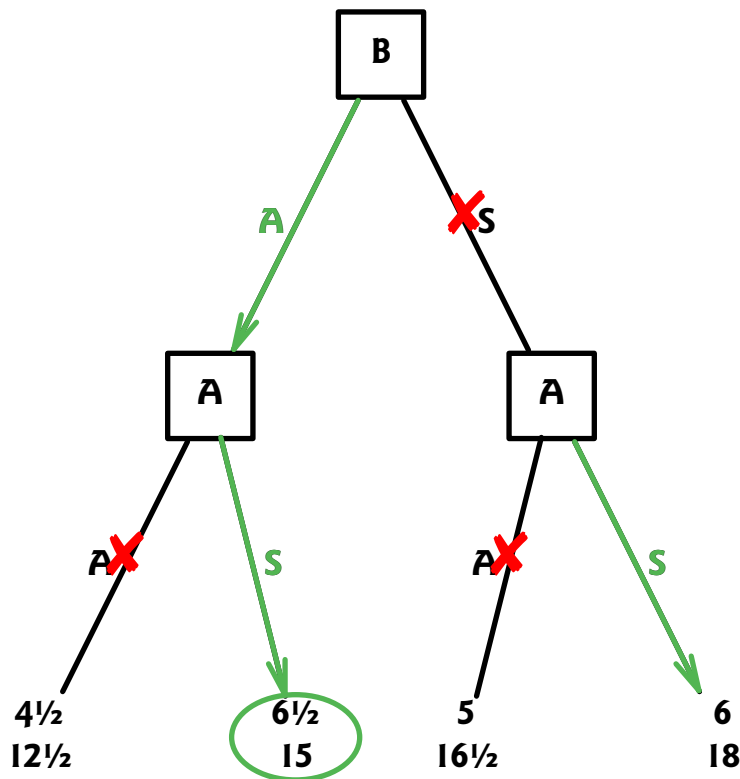
Sequential Payoffs (Able, Baker).

**{Able: Aggressive, Baker: Soft} is a R.E.  
with payoffs of  $16\frac{1}{2}$ , 5.**

**$\therefore$  A's commitment increases its payoff.**

**$\therefore$  a first-mover advantage**

## What if Baker moves first? a commitment.



Sequential Payoffs (Baker, Able).

**{Baker: Aggressive, Able: Soft} is a R.E.  
with payoffs of  $6\frac{1}{2}$ , 15, but S is a dominant strategy for  
Able. (Same payoffs as the simultaneous N.E.)**

## **The Value of Inflexibility**

**Inflexibility can have value: strategic commitments or moves that limit one's own choices can actually improve one's position.**

**How?**

**By altering one's rivals' expectations of about how one will compete, and so altering their decisions, and so one's outcomes.**

**By committing to what seems an inferior decision (Aggression), Able alters Baker's expectations and its action, to Able's advantage.**

**Altered perceptions.**

## 4. Threats and Promises

**US-Japan Trade talks. Each: Open or Closed markets.  
Ranked: 4 = best, 1 = worst.**

		<i>Japan</i>	
		Open	Closed
<i>USA</i>	Open	4, 3	3, 4
	Closed	2, 1	1, 2

Diagram illustrating the US-Japan Trade talks payoff matrix. The matrix shows the ranked payoffs (4 = best, 1 = worst) for each combination of market status (Open or Closed) for both the USA and Japan. Red arrows indicate dominant strategies: USA prefers Open (2,1 < 4,3) and Japan prefers Closed (1,2 < 3,4). A green circle highlights the outcome (3,4) where both countries have their preferred market status.

**USA leans to Open markets, Japan to Closed.  
Each has a dominant strategy → N.E. of Open, Closed.  
and for Japan this is the best combination.**

**USA can use a *strategic move* to get Open, Open.  
How?**



## How?

**Not by using the unconditional move of Open, since  $\rightarrow$  N.E. of  $\{O,C\}$  already.**

**USA: “We’ll Close our market if you Close yours.”**

**Then in response only Japan has freedom of choice: USA echoes this.**

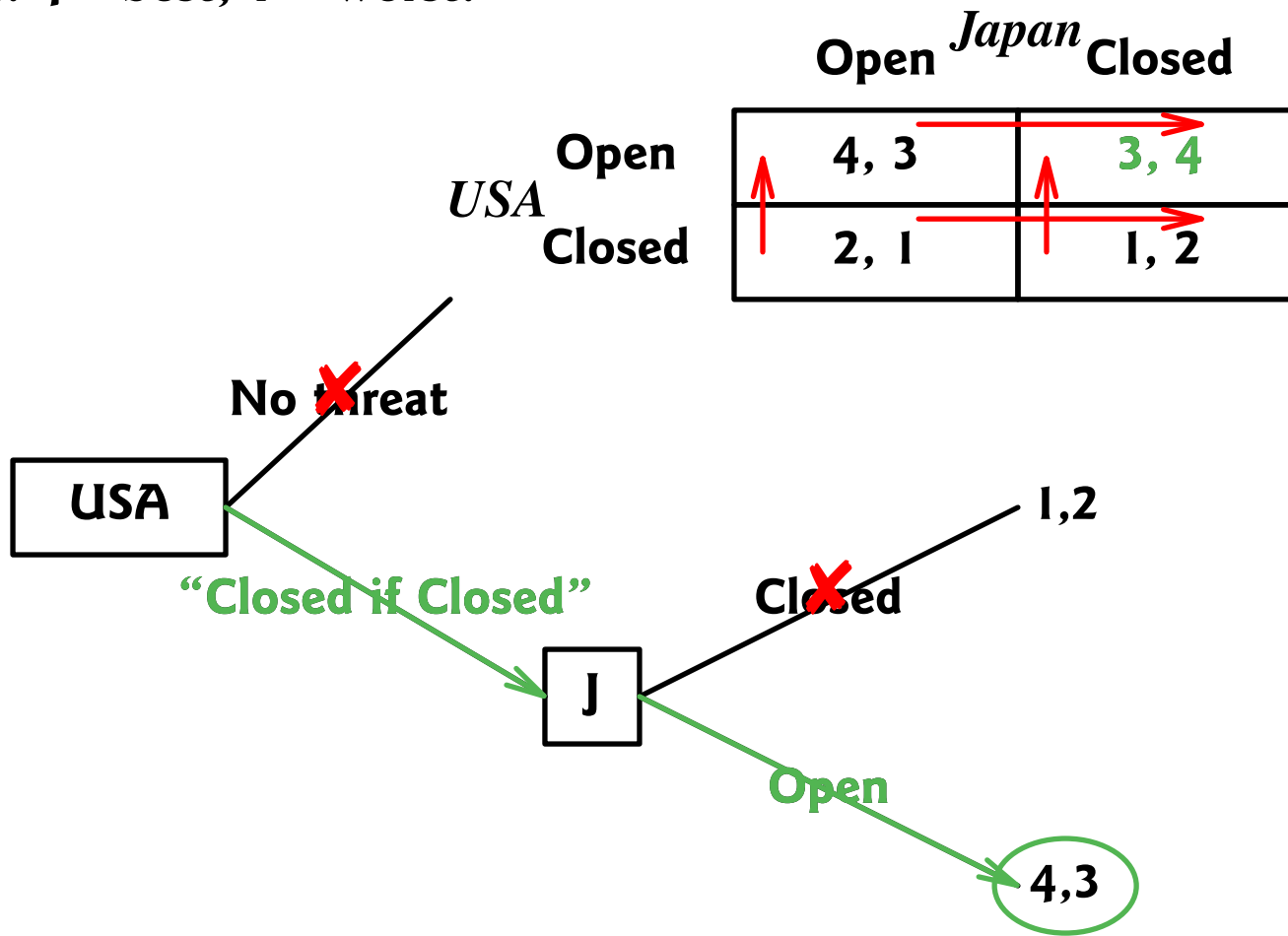
**Japan chooses Open (since 3 at  $\{O,O\}$  is better than 2 at  $\{C,C\}$  for them), and USA gets at 4 at  $\{O,O\}$  instead of 3 at  $\{O,C\}$ .**

**(Can use rollback on a two-stage tree, where USA gets to choose Threat or No threat first.)**

## USA v. Japan Trade game tree.

Payoffs (USA, J),

ranked: 4 = best, 1 = worst.



**R.E.: USA Threatens, then Japan Opens.**

## Rollback in the USA-Japan game:

1. **USA credible threat** → J doesn't follow its dominant strategy (of C).
2. **Credibility of US threat? a bluff? *Must inflict mutual harm: C,C*** → 1,2
3. **Threat incomplete: "and US Open if J Open."**
4. **Credible threat** → change in J's actions; deterring or compelling depends on where J is (its status quo ante)
5. **How to make it credible? Perhaps L-A-W, delegate to protectionists in the Admin?**
6. **Note: If a threat works, it doesn't need to be carried out. (Unlike a promise.)**
7. **J might use *salami tactics*: Open its markets slowly.**

## Warnings and Assurances

- **Warnings and assurance are non-strategic: there is *no temptation to renege*, since they are N.E. actions.**
- **If the rule says merely that you will do what is best at the time, then there is no change in others' expectations, and hence no influence.**
- **When it's in your interest to carry out a “promise”: it's an *assurance* — mere information.**
  - ∴ A warning  $\neq$  a threat, and**
  - ∴ An assurance  $\neq$  a promise.**

## 5. More Strategic Moves

- **More complicated options than above. Instead of establishing a response rule directly, you could allow someone else to take advantage of one of these options:**
  - **Allow someone else to make an unconditional move before you respond, *or***
  - **Wait for a threat before taking any action, *or***
  - **Wait for a promise before taking any action**
  
- **Cases in which someone who could move first does even better by allowing the other side to make an unconditional move first:**  
**sometimes it is better to follow than to lead.**

## **Leave your opponent an escape.**

- **But sometimes your goal: to prevent your opponent from making an unconditional commitment:**
  - “When you surround an enemy, leave an outlet free.”  
Deny the enemy the credible commitment of fighting to the death.
- **It’s never advantageous to allow others to threaten you:**
  - you could always do what they wanted you to do without the threat;
  - the fact that they can make you worse off if you do not cooperate is bad, because it only limits your available options.
- ***But if the other side can make both threats and promises, then you can both be better off.***

## Getting the threat right ...

– *Monty Python's Piranha Brothers*

**The Operation:** 

1. Select a victim.
2. Threaten to beat him up if he paid the “protection” money.

**The Other Operation:** 

1. Select a victim.
2. Threaten not to beat him up if he didn't pay the “protection” money.

**The Other Other Operation** 

1. Select a victim.
2. Threaten to beat him up if he didn't pay the “protection” money.

## 6. Credible Commitments

- **“Continental Airlines said yesterday that it would raise airfares on about two-thirds of its routes ... to take effect September 5.” *New York Times*, August 29, 1992.**  
**“Continental Airlines has dropped its plan to raise domestic airfares by 5%.” *USA-Today*, 1992.**
- **“Microsoft officials won’t confirm or deny that its commitment to ACE with OS/2 3.0 was a bluff, but the [previous] announcement bought them about six months.” *UnixWorld*, February 1992.**
- **“On January 5, Boeing, the world’s top aircraft maker, announced it was building a plane with 600 to 800 seats, the biggest and most expensive airliner ever. Some in the industry suggest Boeing’s move is a bluff to preempt Airbus from forging ahead with a similar plane.” *Business Week*, 1993.**

**See the linked HBR case:**

[www.people.hbs.edu/besty/Esty\\_Airbus\\_Boeing.pdf](http://www.people.hbs.edu/besty/Esty_Airbus_Boeing.pdf)



## **Ten-Fold Path to Credibility**

### **A:**

- 1. Leaving outcome beyond your control**
- 2. Mandated negotiating agents**
- 3. Burning your bridges**
- 4. Cutting off communication**

### **B:**

- 5. Reputation**
- 6. Moving in steps**
- 7. Teamwork**
- 8. Rational irrationality (method in one's madness)**
- 9. Contracts**
- 10. Brinkmanship**

## Two Underlying Principles

- A. *Limiting one's own ability to back out of a commitment or curtailing one's own freedom—three possibilities: deny oneself any opportunity to back down,***
- by cutting oneself off from the situation, or**
  - by destroying any avenues of retreat, or even**
  - by removing oneself from the decision-making position and leaving the outcome to chance.**

**See methods 1, 2, 3, and 4.**

## Changing the effective payoffs

- B. *Making it costly for oneself to renege, by changing the payoffs of the game.***
- to make it in one's own interest to follow through on one's own commitment:**
    - turn a threat  $\implies$  a warning,**
    - turn a promise  $\implies$  an assurance.**

**See methods 5, 6, 7, 8, 9, and 10.**

## **6.1 Leaving the Outcome beyond Your Control**

### **Dr Strangelove's Doomsday device:**

- its automatic trigger was essential;**
- it made a good deterrent because it made aggressive action tantamount to suicide.**
- But a cost: what if the aggression is based on a mistake?**
- Cannot turn off the doomsday device's automatic retaliation.**

**Want a threat no stronger than necessary to deter the rival.**

## 6.2 Mandated Negotiating Agents

**Buying a new car – “I’m on your side and I want the sale, let me ask the boss about the trade-in price”.**

**One’s bargaining situation can be improved if one has an agent to negotiate on one’s behalf.**

**A union leader may be less flexible because of his reputation. Or an agent may not have authority to compromise**

**But using an agent can raise problems of divergence of interests – the Principal-Agent problem – which raises the issue of the appropriate *contract* between the principal and her agent. (See Lecture 19.)**

## **6.3 Burning Your Bridges (or Sinking Your Ships)**

**Cortés' burnt ships had two effects:**

- his soldiers had no alternative but to fight,**
- the Aztecs could see that there was no easy out for the would-be conquistadores, while they could retreat inland, which they did. Importance of all participants seeing the bridges being burnt.**

**Polaroid's undiversified business: instant photography. Successfully defended itself in court against Kodak's instant film and camera, but digital technology then sidelined Polaroid, which has now abandoned its instant photography.**

**Figuratively burning one's bridges with a particular group may increase one's credibility with other groups.**

**Pulling down the Berlin Wall as a burnt bridge for Eastern Germany's "reformist" government.**

## **6.4 Cutting Off Communication:**

**Can make a decision truly irreversible.**

- Extreme form: last will and testament.**
- Posting a letter/receiving a letter.**
- Pressing the “Send” button.**
- Turning off one’s mobile.**
- Closing one’s hotmail/Facebook account.**
- Other examples?**

**Problem: absence may reduce enforceability of the contract: trustees.**

## 6.5 Reputation:

**In a repeated interaction, reputation may be valuable. (“Never negotiate with terrorists /Sendero Luminoso/Al Qaeda/etc.” Why? Costly? Alternatives?)**

**Sometimes *destroying* your reputation has commitment value, by committing you *not* to take actions in the future against your best interests.**

– **Despite a commitment never to negotiate with hijackers, what if the government reaches a negotiated settlement and then breaks this by attacking the hijackers?**

– **with this action the government denies itself the ability to negotiate with hijackers in the future: how could hijackers ever be able to believe the government’s future promises?**

**In a once-in-a-lifetime situation, reputation may not matter (tourists, beware!)**



## **6.6 Moving in Steps – “salami slices”**

**Break the threat or promise into many, small pieces, and then each is dealt with separately, one after the other.**

**Establishment of trust? Convert a once-off into a repeated game, in which reputation is important.**

**Paying the builder.**

**End-game strategies? (such as Always Defect)**

## **6.7 Teamwork**

**Peer pressure in Alcoholics Anonymous. Pride and self-respect are lost when commitments are broken — enough to drive one to drink?**

**As well as social pressure, the army uses coercive desertion penalties as well as inculcation of love of country and loyalty to one's mates to induce commitment. (See Shakespeare below.)**

**Honour code at Stanford makes not only cheating an offence but also failing to report others who you know to have cheated; exams are not monitored.**

**Accessories after the fact (=deed).**

## **6.8 Let's destroy our credibility!**

**Destroying the credibility of a promise makes credible the threat never to negotiate. (Tax/immigration amnesties and perverse incentives, and side effects.)**

**The player cultivates a reputation to create credibility for her future commitments, threats, and promises.**

**Pride in our word, our promises, is an end in itself, but also improves the credibility of our commitments.**

**But *irrationality* may make credible the player's threats – Osama bin Laden, the North Koreans.**

**So, it may be rational to be “irrational”!**

## 6.9 Contracts:

**Agreeing to punishment if you fail to follow through will make your commitments credible.**

- **Pay the programmer a lump sum because it's the end of the financial year, even though the promised program is three months late?**

**No: The contract is the commitment device.**

**But beware, contracts can be *renegotiated*,  $\therefore$  *the party who enforces the action or collects the penalty must have some independent incentive.***

**Possible to write contracts with neutral parties as enforcers, who must care whether the commitment is kept.**

**$\therefore$  Contracts alone cannot overcome the credibility problem.**

## 6.10 Schelling's *brinkmanship*:

- establish a *risk*, but not a certainty, that retaliation will occur.
- A risk cannot be ignored, even if it seems very unlikely. (U.S. versus the USSR in Europe, the Cuban missile crisis.)

## Saint Crispin's Day

*© God of battles! steel my soldiers' hearts;  
Possess them not with fear; take from them now  
The sense of reckoning, if th'opposed numbers  
Pluck their hearts from them ...*

*We few, we happy few, we band of brothers;  
For he to-day that sheds his blood with me  
Shall be my brother ...*

*And gentlemen in England now a-bed  
Shall think themselves accurs'd they were not here  
And hold their manhoods cheap whiles any speaks  
That fought with us upon Saint Crispin's day.*

*That he which hath no stomach to this fight,  
Let him depart; his passport shall be made,  
And crowns for convoy put into his purse:  
We would not die in that man's company  
That fears his fellowship to die with us.*

**Henry V**, [IV, i and iii]