

1. Lewis' definition of convention
2. Conventions in signaling games
3. Criticisms and alternatives

Quine and White argue that the supposed conventions of language cannot be very much like the central, well-understood cases of convention. Conventions are agreements--but did we ever agree with one another to abide by stipulated rules in our use of language? We did not. If our ancestors did, how should that concern us, who have forgotten? In any case, the conventions of language could not possibly have originated by agreement, since some of them would have been needed to provide the rudimentary language in which the first agreement was made. ... We have no concept of convention which permits language to be conventional; we are inclined to call some features of language conventional, but we cannot say why.

Lewis, *Convention*, page 2

Coordination problems:

(1) The meeting game (Two versions, Schelling and Lewis)

(2) The unexpected disconnection

(3) Hume's row boat

(4) The driving game

(8) The stag hunt

Trademarks:

1. More than one solution
2. What I prefer to do depends on your action

Definition of a coordination problem



Conventions are a particular type of solution to a coordination problem

	C_1	C_2	C_3
R_1	1,1	0,0	0,0
R_2	0,0	1,1	0,0
R_3	0,0	0,0	1,1

	C_1	C_2	C_3
R_1	1.5, 1	.5, .2	.5, .5
R_2	.2, 0	1.2, 1.2	.2, .5
R_3	0, 0	0, .2	1, 1.5

R_1 or C_1 : calling back

R_2 or C_2 : not calling back

	C_1	C_2
R_1	0,0	1,1
R_2	1,1	0,0

R'_1 or C'_1 : calling back if and only if one is the original caller

R'_2 or C'_2 : calling back if and only if one is not the original caller

	C_1	C_2
R_1	1,1	0,0
R_2	0,0	1,1

A COORDINATION EQUILIBRIUM is an action profile in which no agent would have been better off had *any one* agent alone acted otherwise.

	C_1	C_2	C_3	C_4
R_1	1.5, 1	.5, .2	.5, .5	0.5
R_2	.2, 0	1.2, 1.2	.2, .5	0, .5
R_3	0, 0	0, .2	1, 1.5	0, .5
R_4	.5, 0	.5, 0	.5, 0	.2, .2

All of my sample coordination problems have two or more different coordination equilibria. This multiplicity is important to the distinctive character of coordination problems and ought to be included in their definition. *If there is no considerable conflict of interest, the task of reaching a unique coordination equilibrium is more or less trivial.*

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Coordination problems must have more than one coordination equilibrium.

	C_1	C_2
R_1	1,1	1,1
R_2	0,0	0,0

But that is not enough. This game has two coordination equilibria, but there is “no need for either agent to base his choice on the expectation about the other’s choice.” (21)

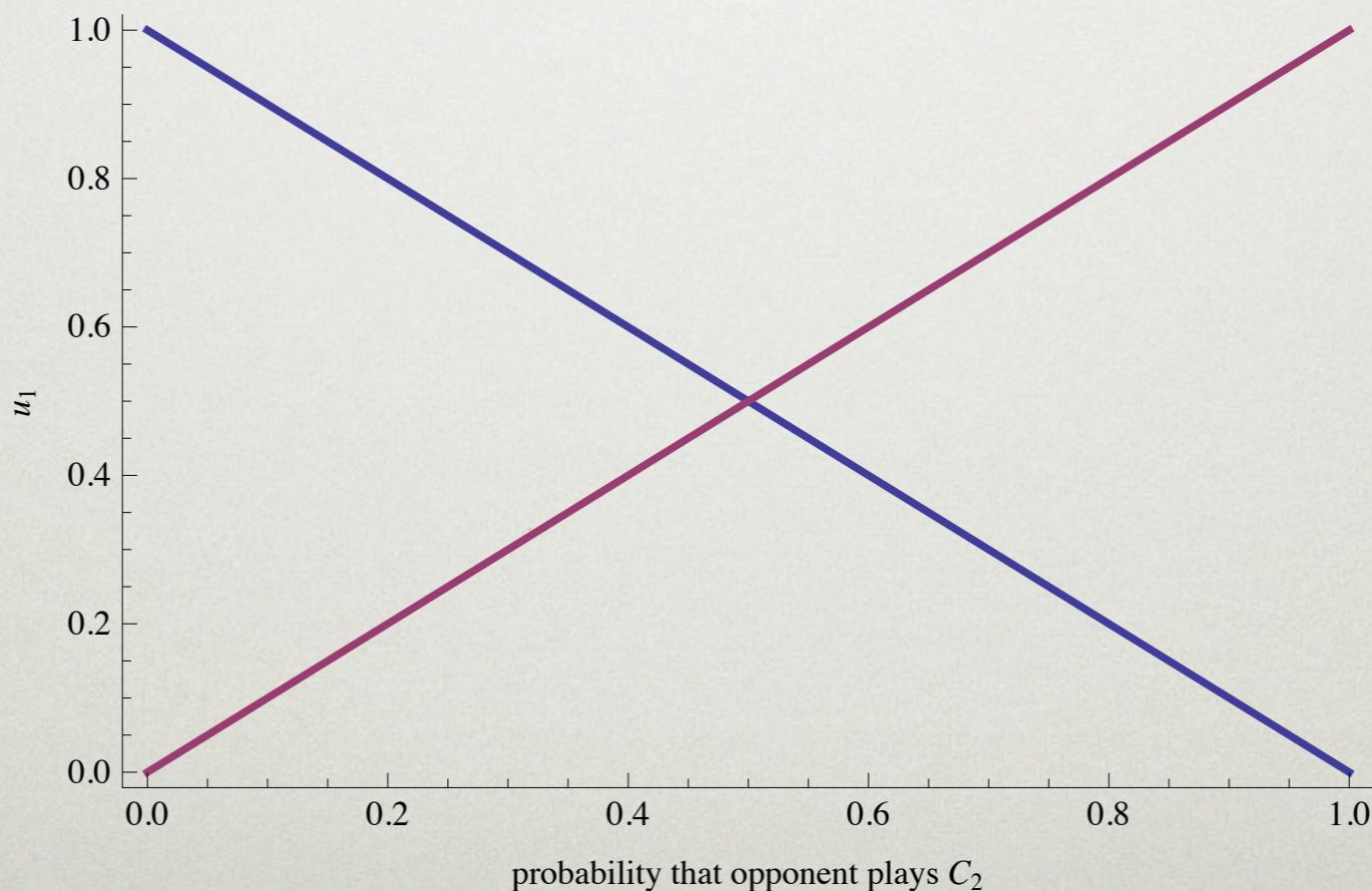
(= strict)

An equilibrium is a *proper* equilibrium if each agent likes it better than any other combination he could have reached, given the others’ choices.

A coordination problem must contain at least two proper coordination equilibria.

	C_1	C_2
R_1	1,1	0,0
R_2	0,0	1,1

Why play your part in a coordination equilibrium? Because you expect others to play theirs.



Generating mutual expectations:

(1) Agreement (= salience)

(2) Salience



(3) Precedence (= salience)

A regularity R in the behavior of members of a population P when they are agents in a recurrent situation S is a *convention* if and only if, in any instance of S among members of P ,

1. everyone conforms to R ;
2. everyone expects everyone else to conform to R ;
3. everyone prefers to conform to R on condition that the others do, since S is a coordination problem and uniform conformity to R is a proper coordination in S .

(page 42)

(first definition)

	C_1	C_2
R_1	1,1	0,0
R_2	0,0	1,1

I desire that I go
there on condition
that you will go
there



I expect that you
will go there

???

I have reason to
desire that I go there



I go there

I expect that you
desire that you go
there on condition
that I will go there

I expect that you
expect that I will go
there

???

I have reason to
expect that you have
reason to desire that
you go there

I expect that you
are rational to a
certain degree

I have reason to
expect that you
will go there

I expect that you
will go there

I expect that you expect that I
desire that I go there on
condition that you will go there

I expect that you desire that you
go there on condition that I will
go there

I desire that I go there on
condition that you will go there

I expect that you
expect that I expect
that you will go
there

I expect that you
expect that I will go
there

I expect that you
will go there

I go there

My replication
of your
replication of
my reasoning

My replication of
your reasoning

My reasoning

How can we produce these higher order expectations?

Concordant mutual expectations via agreement:

Suppose you and I want to meet tomorrow; today we happen to meet, and we make an appointment. Each thereby gives evidence of his interest in going where the other goes and of his intention to go to a certain place. By observing this evidence, we form concordant first-order expectations about each other's preferences and action. By observing each other observing it, we may also form concordant second-order expectations. By observing each other observing each other observing it, we may even form concordant third-order expectations. And so on; not forever, of course, but limited by the amount of reasoning we do and the amount we ascribe to each other. The result is a system of concordant mutual expectations of several orders, conducive to coordination by means of replication.



Concordant mutual expectations via salience:

Maybe subjects tend to pick the salient when they have no stronger ground for choice. Or they might expect each other to have that tendency, and act accordingly; or they might expect each other to expect each other to have that tendency and act accordingly; and so on.

Concordant mutual expectations via precedent:

We may tend to repeat the action that succeeded before if we have no strong reason to do otherwise. Whether or not any of us really has this tendency, we may somewhat expect each other to have it, or expect each other to expect each other to have it, and so on

A regularity R in the behavior or members of a population P when they are agents in a recurrent situation S is a CONVENTION if and only if it is true that, and it is common knowledge in P that, in any instance of S among members of P ,

1. everyone conforms to R ;
2. everyone expects everyone else to conform to R ;
3. everyone prefers to conform to R on condition that the others do, since S is a coordination problem and uniform conformity to R is a coordination equilibrium in S .

(page 58)



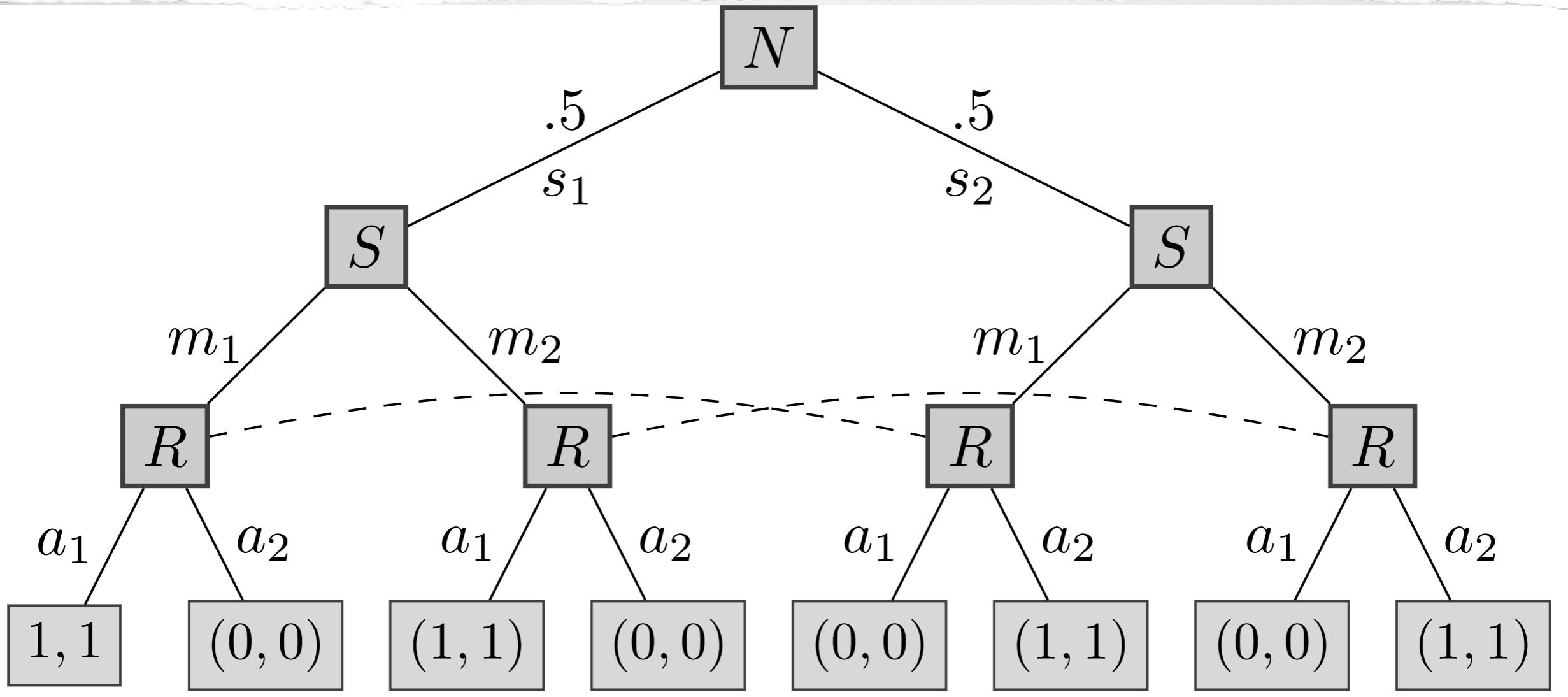
Paul Revere

Strategies are contingency plans:

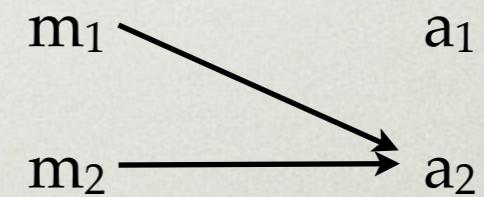
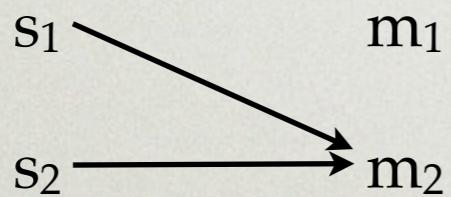
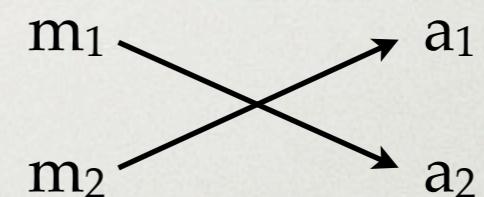
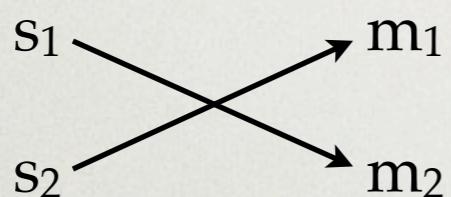
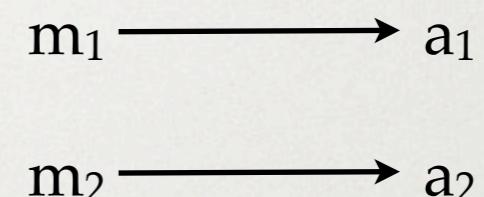
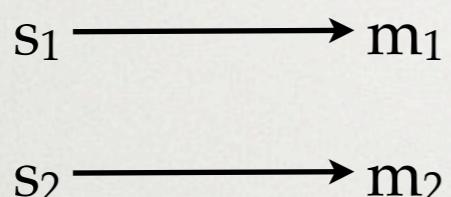
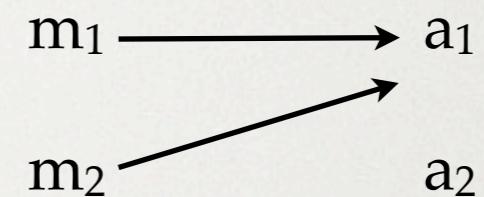
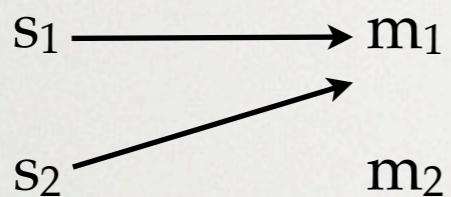
R1:

- If the redcoats are observed staying home, hang no lantern in the belfry.
- If the redcoats are observed setting out by land, hang one lantern in the belfry.
- If the redcoats are observed setting out by sea, hang two lanterns in the belfry.

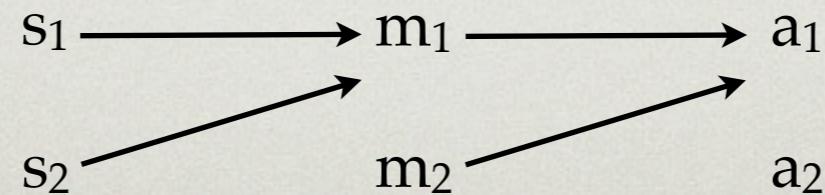
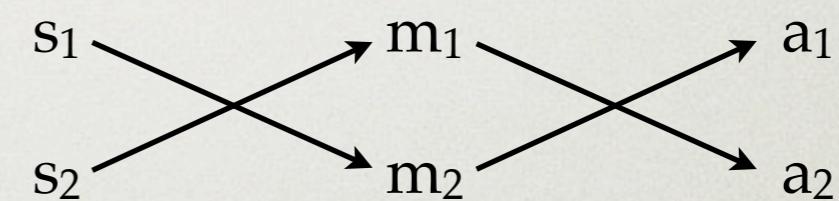
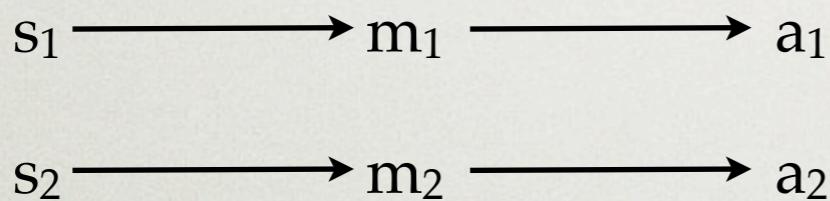
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A two state, two message, two action Lewis signaling game



	a_1a_1	a_1a_2	a_2a_1	a_2a_2
m_1m_1	.5, .5	.5, .5	.5, .5	.5, .5
m_1m_2	.5, .5	1, 1	0, 0	.5, .5
m_2m_1	.5, .5	0, 0	1, 1	.5, .5
m_2m_2	.5, .5	.5, .5	.5, .5	.5, .5



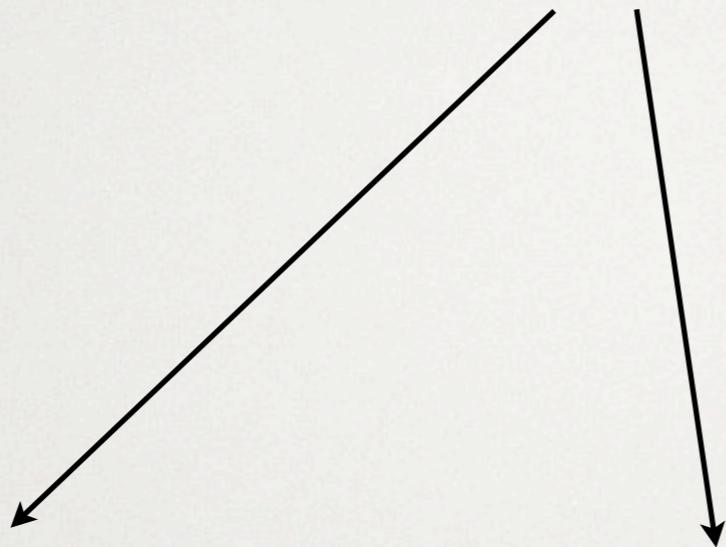
I have now described the character of a case of signaling without mentioning the meaning of the signals: that two lanterns meant that the redcoats were coming by sea, or whatever. But nothing important seems to have been left unsaid, so what has been said must somehow imply that the signals have their meanings.

Chopsticks vs. Forks?

Are conventions really maintained by rationality and mutual expectations?

Can we evolve conventions?

Lewis



Sugden, Skyrms,
Vanderschraaf, Young...
(Conventions are some
solutions to some class of
games)

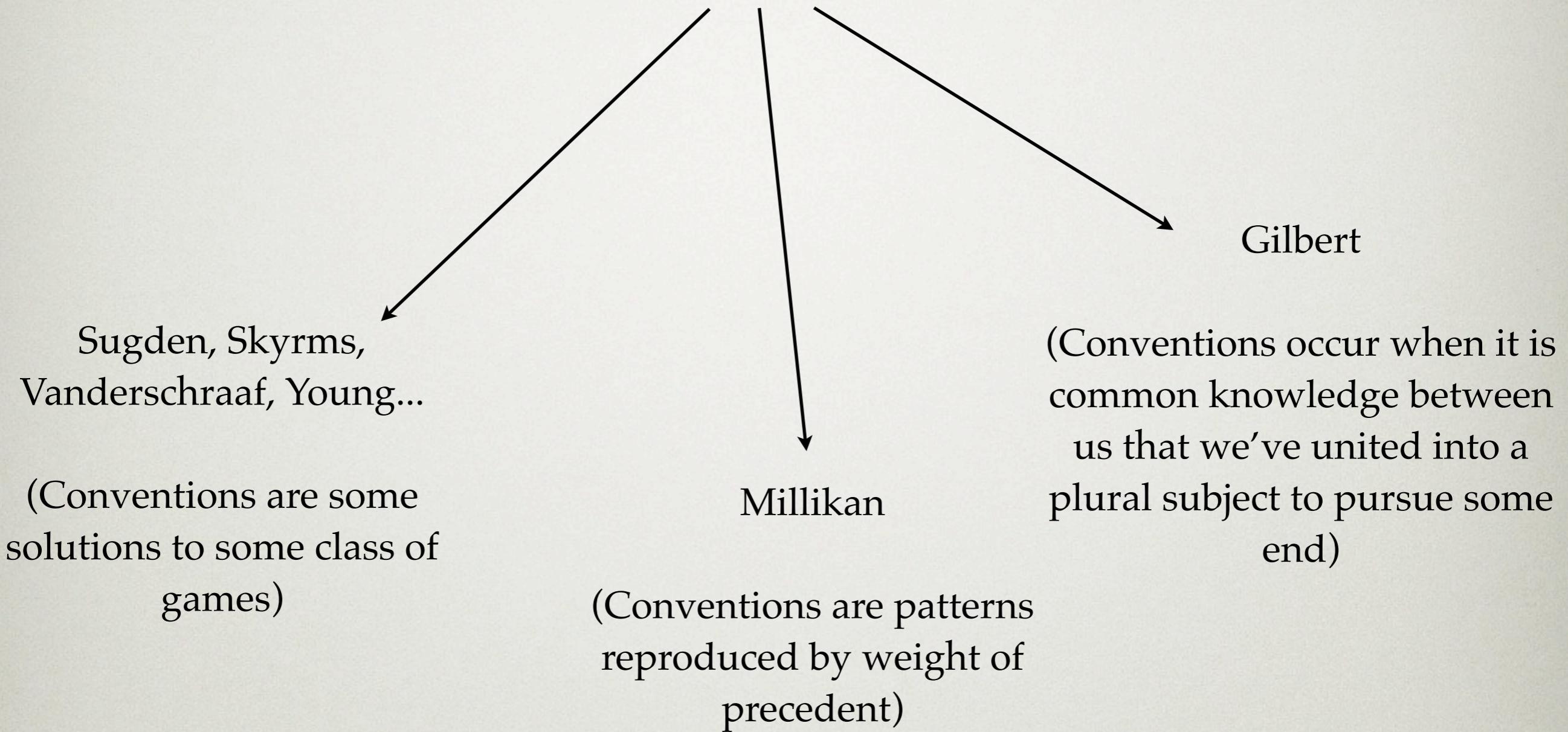
Millikan

(Conventions are patterns
reproduced by weight of
precedent)

Conventions that aren't regularities? Sending thank-you notes?

Conventions are essentially normative: they concern what people should do! Lewis's definition of convention doesn't mention normativity, so something is fundamentally wrong with his analysis.

Lewis



Foreshadowing:

Lewis has explained why conventions might be stable (they are strict Nash equilibria), but has he really explained how conventions have come to be?

How do populations find their ways to conventions?