

Convention for One

Abstract

Conventions have been universally defined, within philosophy, as emerging in social groups. The dominant tradition, starting with David Lewis, identifies conventions as arbitrary patterns of behavior that solve coordination problems within a group (Lewis, 1969). This note is intended to argue that single individuals can, and very often do, develop conventions of the sort philosophers are interested in. These conventions are arbitrary patterns of behavior that facilitate coordination between past and future selves.

Keywords— Convention, David Lewis, Game Theory, Coordination Game

1 Introduction

The account of convention from Lewis (1969), and follow-on work, still arguably constitutes the received view in philosophy (Rescorla, 2024). A convention, on this picture, is a behavioral regularity that solves a coordination problem in a group. Coordination problems, here, are strategic scenarios where group members are incentivized to coordinate, but where there are multiple, plausible ways to do it. Conventional greetings are a classic example—some groups shake hands, some bow, some kiss on the cheek. Any of these solutions works, but in order to coordinate a group must settle on just one of them. Conventions then are, by definition, arbitrary in the sense that they could have been otherwise, because coordination problems always have multiple solutions.

Conventions, on this picture, emerge within social groups. It is the need to coordinate behavior between individuals that drives their emergence. If we consider individual behavior, on the other hand, it seems there is no need for convention since individuals need not develop arbitrary rules to coordinate with themselves. Marmor (1996), for example, claims individuals cannot have conventions with themselves because, “After all, the uniqueness of coordination problems stems from the presumed ignorance of each agent of the other agents’ actions; no such ignorance is present, however, in the case of a single agent regarding his own past behaviour” (365).

This note will argue that, in fact, individuals can and do develop conventions to solve coordination problems with themselves, and that this is entirely common. Individuals often need to coordinate their own behavior over time, and often develop arbitrary patterns of behavior that facilitate this coordination. These include conventions of meaning individuals adopt to supplement their memory, conventions where individuals divide labor with themselves over time, and conventions where individuals repeat behaviors because doing so improves their outcomes in various ways.

Lewis (2010) (reprinted from 1975) actually briefly addresses the individual convention case: “We might think of [this sort of] situation as one in which a convention prevails in the population of different time-slices of the same man” (27).¹ But he seems to think that this is both unusual, and also not a literal case of a convention. In addition, later authors did not pick up on this idea, and every major account of convention following Lewis ignores the possibility. Here I argue that these cases are, in fact, common, and that they ought to fall under definitions of convention in the Lewisian tradition.

In section 2 I give some background on philosophical accounts, focusing on the Lewisian tradition since this framework is the received view, and the most useful for this paper. (Later I briefly discuss the possibility of individual conventions under other influential accounts.) Section 3 presents examples of individual conventions. I use models to discuss why the examples involve solutions to coordination problems,

¹Relatedly, in earlier work, Otto Neurath made the argument that in the case of language two subjects stand in the same relation as an earlier subject with his future self. See *Protocol Statements* reprinted in Cohen and Neurath (1983).

and why they display the right sorts of arbitrariness to constitute conventions. And in section 4 I discuss properties of individual conventions, and why they might matter to philosophy.

2 Lewis, Convention, and Game Theory

Lewis (1969) draws on game theory to define situations where a group faces a coordination problem and, thus, where conventions are possible. His focal game is pictured in figure 1. Two players choose from two options—A or B. If their choices match, they each receive a payoff of 1, and if they fail, 0. This could track driving on the right and left hand side of the road—two drivers want to do the same thing, but which side they choose matters much less. We might imagine a game with more options, or variations in payoffs, but this simple game captures the most basic strategic scenarios where the goal is to coordinate, and there are multiple ways to do it.

For Lewis, conventions are patterns of behavior in a group that solve this sort of problem by settling on one of the options. Specifically conventions correspond to the pure strategy *Nash equilibria* of this game—pairs of strategies where neither player wants to switch given what the other is doing. There are two—both players playing A or both B. His full definition has lots of bells and whistles, including common knowledge requirements, and requirements for widespread adherence to conventional behavior.² The core of the account, though, which is preserved in later work, is that conventions are arbitrary solutions to coordination problems in groups. A main focus of this later work is on how groups arrive at these coordination solutions via learning and cultural evolution.³

There is another, important, basic coordination game (figure 2). This second sort can be called a *complementary coordination game* because actors must take complementary actions, as opposed to the previous *correlative coordination game* where actors

²He also refines Nash equilibria in his definition, though there is some disagreement as to how he does this in his more and less formal definitions.

³For further work in this tradition see Vanderschraaf (1995, 2001, 2018); Skyrms (2014, 2010, 1998); Sugden et al. (2004); Binmore and Samuelson (2006); Binmore (2008); Sugden (2011); Simons and Zollman (2019); O'Connor (2021).

		Player 2	
		A	B
Player 1	A	1,1	0,0
	B	0,0	1,1

Figure 1: A simple correlative coordination game. Two players must match their behavior to receive a payoff.

want to correlate behavior. Players now get a payoff for taking different actions—A and B—rather than the same action. This might reflect a scenario like social dancing. Partners coordinate when one steps forward and the other back, rather than both doing the same steps. Or it could capture division of labor where two parties coordinate by doing different jobs.

		Player 2	
		A	B
Player 1	A	0,0	1,1
	B	1,1	0,0

Figure 2: A simple complementary coordination game. Two players must complement their behavior to receive a payoff.

I will introduce one more game discussed extensively in Lewis and useful here. In the *signaling game* (figure 3) the *sender* observes some state of the world, and the *receiver* acts upon it. Both players want to coordinate the action to the actual state of the world, but the receiver is unable to observe this state directly. Instead, the sender sends a *signal* and the receiver acts contingent on the signal. In the simplest version there are two states (1 and 2), two signals (*a* and *b*), and two acts (1 and 2). Both players get a payoff of 1 if they match state and act, and 0 otherwise. The figure should be read as a tree starting with the middle node *N*. “Nature” chooses a state, then the sender (S) chooses a signal, and last the receiver (R) chooses an act. Payoffs are shown at the final nodes. (And dotted lines indicate the receiver cannot tell the difference between these pairs of nodes.)

This is also a coordination game because actors solve the problem by assigning either signal *a* or signal *b* to state 1 (and the other to state 2). It does not matter which, but it does matter that they share a convention of meaning.

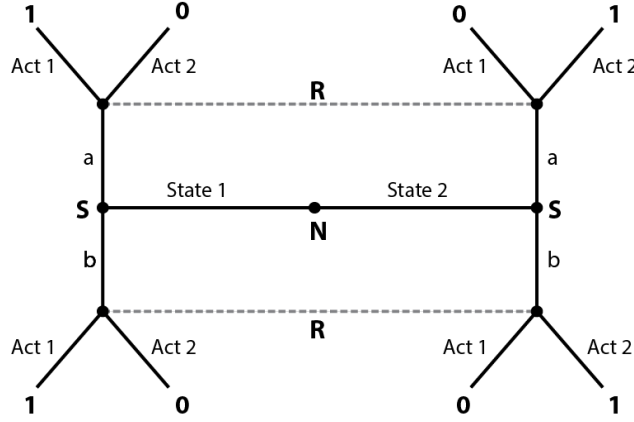


Figure 3: A simple signaling game. Two players must coordinate state and act through an informative signal.

Since Lewis there have been many friendly amendments, quite a few criticisms, and a few very different accounts of convention (Rescorla, 2024). Since this is a short note I only discuss these when relevant below. Notably, these accounts focus on social groups as a necessary seat of convention.

3 Conventions for One

I will use examples to motivate the idea that individuals can and do develop conventions to solve the types of coordination problems just introduced. Let us start with individual signaling conventions. As will become clear, these involve arbitrary patterns of signaling that allow individuals to coordinate their behavior over time when memory will not suffice.

E1 Kate is often awake in the middle of the night. Kate also has to take a pill well before eating in the morning, so starts taking it at night if she is awake. But she finds it difficult to remember, across wakings or in the morning, whether she has taken it or not. Kate starts tipping over her medicine bottle as a signal to herself that she has already taken the pill.

E2 Matthew tends to be forgetful, and so takes notes to himself in a small

journal. Over time, he adopts a shorthand for some words. In his grocery lists, for example, he starts writing “CER” for cereal.

Kate supplements her memory using signals to her future self. We can represent this case with the signaling game. The states of nature are “pill taken” or “pill not taken”. The signals are “bottle right side up” and “bottle upside down”. The sender is “earlier Kate” and the receiver is “later Kate” who, notably, both want to coordinate but do not care how they do it. In the end she develops an arbitrary solution where “bottle right side up” means she hasn’t taken the pill. She might just as easily have reversed the meaning.

Matthew, likewise, has an arbitrary pattern of communication with his future self—many signals could have let his future self know whether to buy cereal or not. The states are “need cereal” and “don’t need cereal”. The signals are “CER” and no signal. (In signaling games no signal can be modeled as a signal since it can carry information like “there is cereal in my cabinet”.) The two versions of Matthew both want him to purchase cereal only when it is needed, and achieve this coordination by settling on a conventional pattern of signaling.

Notice Matthew builds off a broader linguistic convention. This, though, does not mean his convention is a group convention. It is developed for personal usage, responds to a personal need to coordinate over time, and is not recognized in the larger group. And, in fact, many group level conventions build off previous group conventions in just this way—broader linguistic conventions often build off previous ones, for example.

In both cases, the actors need not use a convention to achieve coordination. Either could just remember what the past version of themselves already knew. (Kate had taken her pill, or Matthew did not need cereal that day). This ability to use memory to solve personal coordination problems is likely one reason previous accounts have tended to ignore individual signaling conventions. But in each of these cases, and many real ones, individuals do actually use conventions because they reduce cognitive load. Memory is often more difficult, and less dependable, than relying on a personal convention of meaning to coordinate behavior over time.

Likewise, for many group conventions there are also non-conventional solutions

to the relevant problem as well as conventional ones. For example, some societies have a convention that people walk on the right, or left, on a sidewalk to prevent collision. But alternatively people could walk however and adjust as they go along. Using a convention, in this case, lowers cognitive load for all involved similar to the way personal conventions reduce cognitive load in **E1** and **E2**.

Now let us consider cases where individuals solve complementary coordination problems with themselves. Both of these involve division of labor with the self over time.

E3 Tori must feed her three cats once a day, either before or after work. Since she is busy, it is not easy to remember whether she has done it. Her solution is to always feed them immediately before bed.

E4 Ben makes two stops each day as he walks to and from school—at the grocery store and his post office box. Since they take him in opposite directions, it makes sense to do one in the morning and one in the afternoon. He starts always going to the post office in the morning and the grocer on the way home.

In Tori's case the players are "morning Tori" and "evening Tori", the actions are "feed the cats" and "do not feed the cats", and both versions of Tori prefer she "feed" just once, but do not care when. As with previous examples, Tori faces a coordination problem, but need not solve it with a convention. Instead, she could remember what she did in the morning, and switch things around as she liked. But, again, constraints on cognition make it easier to stick to an arbitrary, conventional solution. Ben, likewise, uses a conventional solution to reduce cognitive load while dividing labor with the self.

This type of case is extremely common. Individuals are constantly facing complementary coordination problems with themselves—many actions need to be taken periodically, but not constantly, and need to be traded off with other necessary tasks. Habits and routines execute conventional solutions—showering upon waking up, cooking at the end of the day, brushing teeth before bed, can all allow us to divide labor

with the self effectively. Again, individuals often use non-conventional solutions to this sort of problem by, for example, planning and executing a novel series of tasks. But, again, individual conventions are common solutions.

Last, let us consider cases where individuals develop conventions that correlate their own behavior over time.

E5 Ryan has chickens who need food and water every day. There are two doors to the coop—front and back. If Ryan always goes to the same door in the winter he keeps the snow trampled down and it is easier to walk. He starts always choosing the front.

E6 Banin has to learn to program during his PhD. For each project, it does not matter whether he uses Python or Netlogo. But after trying Python first, he sticks with it on future projects.

E5 can be modeled by a correlative coordination game where the players are “past Ryan” and “future Ryan”, the actions are “use the front door” and “use the back door”, and Ryan prefers to repeat the same actions because it is physically easier to do so.⁴ Notice this is the first case where memory and cognitive load play no role in making a conventional solution preferable. Instead while Ryan could choose either route any day, the convention is physically easier

The Banin case is similar in structure, but different in what makes a convention preferable—constraints in learning abilities make it easier to repeat past actions. The players are, again, past- and future-Banin, the actions are “use Python” and “use Netlogo”. He gets a better payoff for using the same program multiple times, since in doing so he does not pay a cognitive cost for learning. But it doesn’t matter which he chooses. This points to a wide range of cases for individual convention—all those situations where humans face repeated problems that require significant skill learning to solve, and where there are multiple solutions.

All the examples here fit naturally under a Lewisian account of convention. We have coordination problems and we have arbitrary solutions that solve these problems.

⁴In this case one might ask why past Ryan would care what future Ryan does, given that he is the one tramping through the snow the first time. But since Ryan is one person, we can assume he cares about his future self.

Although we do not have a group where these conventional solutions emerge, the conventions are helpful in that they coordinate behavior between multiple versions of an individual.

4 Discussion

A possible response is that some of these examples push against what we would want to call convention. Are all cases of habits that order our behavior conventions? Are all learned skills where an alternative might have worked conventions? Where do we draw the line? My response is that convention is not, in reality, a tidy category with easily delineated boundaries, but a vague category with both paradigmatic and border cases. Some of these individual conventions are probably best understood as border cases of convention, though others are arguably more paradigmatic.

Relatedly, a skeptic might respond that conventions by definition only occur in social groups. On that position, the arguments here are moot, because group emergence is a core aspect of conventionality. There is no definitive response to such a skeptic, but I argue that all these examples, and many more, fit with the spirit of Lewisian convention, and that it is more natural to include them under its umbrella than to exclude them.

Individual conventions—if we accept them—will tend to have somewhat different properties from group conventions. For example, many discussions of convention emphasize stability. Lewis’s complete account required that all parties expect others to conform to the convention, and prefer to conform if others do. These expectations and preferences should lead group members to repeat behaviors, and thus ensure stability. Later accounts draw on facts about human learning to ground the stability of convention (Binmore and Samuelson, 2006; Vanderschraaf, 2001; Skyrms, 2014).

We might expect individual conventions to generally be less stable than group ones. To change an individual convention requires changes in the expectations and behaviors of just one person. Tori, for example, could decide tomorrow to start feeding her cats in the morning. But this difference in stability is a difference in degree, not

kind. Group conventions can also be more or less stable (Simons and Zollman, 2019). Some group conventions are widespread, or highly institutionalized, and thus very hard to change—like right-side driving. But smaller groups can often easily generate new conventions, and some sorts of coordination scenarios easily admit small changes over time that lead to constant evolution (as in the case of fashion). Furthermore, some individual conventions, like the Banin case, are highly stable because it is difficult for even one individual to learn a new skill.

Compared to groups, individuals tend to have highly aligned interests with themselves. Since Lewis highlighted common interest as important to the emergence of convention, in this way individual conventions fit well with his tradition. This said, there are cases where two versions of the self can have slightly misaligned interests.⁵ Ainslie (2001), for example, extensively studies and models conflict of interest within the self over time, using game theory to capture this conflict. Likewise, future discounting of utility in economics, used ubiquitously in models of choice, assumes different versions of the self will have different preferences.

This is not a problem for the analysis here. Although we focused on common interest games, many researchers in the Lewisian tradition explore conventions under partial conflict of interest. We could add or subtract payoffs to the games presented in section 2, so that the two players have different preferences for which equilibrium they reach. In the Tori case, maybe each version of the Tori would prefer the other one do the chores. In this case, we’d use a game like the one in figure 2, but where each agent has a preference for the outcome where the other does the job.

Another feature of individual conventions is that they, by definition, occur over time, and thus are best modelled by sequential games. The signaling game is such a game since players take turns choosing actions. The two other games can be rewritten in sequence where one player chooses first and the other second. This is no problem for the view proposed here—group conventions often involve sequential actions as well. But it does mean individual conventions may, again, have somewhat different typical properties than group conventions. For example, which individual conventions end up

⁵Thanks to an anonymous reviewer for this point.

emerging may be shaped by their sequential nature (i.e., maybe we tend to see general patterns that push off undesirable tasks).⁶

One reason individual conventions are of interest has to do with the mutual influence between group and individual convention. In **E2**, Matthew drew on group conventions to develop an individual communication convention. This is common. Influence may go the other way as well—if there are good reasons individuals pick particular personal conventions, these may feed into larger group patterns. If Netlogo is easier to learn right now for me, my convention may later help determine a group convention at my workplace. In this way, thinking about individual conventions—which are easy or hard to adopt and why—may help illuminate how group conventions work.

Before concluding, I will briefly address whether other prominent accounts have room for individual conventions. Millikan (2005) has a permissive account where conventions are patterns of behavior reproduced by precedent (rather than because of payoff benefits). If I use a knife rather than a fork to slice bread, and my children reproduce this behavior, this is not a convention because the reproduction depends on the fact that the knife works better. If I say “gesundheit” when someone sneezes, though, and they reproduce this pattern on the basis of my precedent, it is a convention. It seems fairly clear that individuals can have conventions of this sort just as well as groups. In many cases individuals try a behavior and continue to reproduce it because of precedent, even when that behavior is not specially successful.

Gilbert (1992) defines convention as a “a jointly accepted principle of action, a group fiat with respect to how one is to act in certain situations” (377). According to Gilbert, conventions are inherently normative since they are things a group has accepted ought to be done. Thus if we as a group accept sending thank-you notes as a fiat, it is a convention (and a norm) whether or not we actually do it. It certainly seems that an individual could accept a principle of action for herself in the right way, and even that an individual might accept such a principle and fail to act on it, but hard to think of this as a “group fiat”. Furthermore while individual conventions might sometimes be normative, in the examples I have given there is little or no normativity

⁶Relatedly Ainslie (2001), in modeling bargaining with the self, grapples extensively with this sequential nature of individual decision making.

present.⁷ It might be inconvenient for Ryan or Banin to alter their patterns of behavior, but certainly it would not be a moral violation. Thus if one accepts Gilbert’s account, with inherent normativity, as the best one, many of the cases I want to label as individual conventions will not count.

To summarize, I have argued here that many individual patterns of behavior should count as conventions under the Lewisian tradition. While previous accounts have focused on groups, individuals similarly use arbitrary, repeated behaviors to solve coordination games with themselves over time. One might want to exclude these from a definition of convention on the very grounds that they do not happen in a group. But it seems more natural to include them, and explore what interesting phenomena emerge in the interactions between individual and group convention.

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⁷Whether individual conventions can be norms depends on one’s understanding of norms. Certainly individuals might be morally angry with their past selves for failing to adhere to an individual convention, for example.

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