

Force and Conversational States^{*}

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Abstract

This paper proposes that the force of an utterance is its communicative function. We draw on work in the social and biological sciences to argue that this function should be thought of in terms of how the utterance coordinates agents. Two agents coordinate roughly when they bring about a state of affairs which is better for each of them than the alternatives and no one of them could produce alone. We argue that if this is right, existing approaches to force in Speech Act Theory, Gricean Pragmatics and Dynamic Pragmatics are incomplete. Our positive account appeals to *conversational states*, which allow one to model the dynamics between discourse commitments (i.e. mutual assumptions made for the purpose of the interaction) and agents' actual commitments. We propose that this process is governed by various social mechanisms for coordination, social norms chief among them. Combined with a semantics where each sentence type (declarative, imperative, interrogative) updates mutual assumptions in distinct ways, we are able to formulate a more complete account of utterance force. We discuss how this model accommodates deception, mistrust and subordinating speech, as well as the underdetermination of utterance force by compositional semantics. The approach we sketch has a big empirical consequence: a theory of speech acts should primarily investigate the coordinating functions that utterances can serve, instead of beginning with attempts to systematize intuitions about which utterances count as, e.g. invitations and entreaties. This conflicts with the dominant project inherited from Austin and Searle, but promises to unify the subject with subsequent revolutions in the scientific study of language, biology and society.

1 Overview

Classical speech act theory (Austin 1962; Searle 1969; Searle & Vanderveken 1985) drew attention to a phenomenon neglected by previous philosophers of language: our everyday utterances have a variety of forces, that is, they are used to make commands, promises, assertions, etc. These theorists took force to arise from social conventions or constitutive rules governing the use of particular linguistic forms: uttering *Dance!*

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counts as a command in virtue of its linguistic form and a rule which dictates when utterances of that form count as commands. As surveyed in §2.1, this work did not explain force in convincing empirical or conceptual detail. Principally, it does not capture the indirect relationship between linguistic form and utterance force, but it also leaves force unanalyzed in certain important respects. Neo-Gricean approaches to force, like Bach & Harnish (1979: §2.5) and Cohen & Perrault (1979), make this relationship more indirect and focus on the speaker's communicative intention.¹ This allows one to distinguish, as we will, between **utterance force** and **sentential force** (Chierchia & McConnell-Ginet 2000). The former is the total force of an utterance, while the latter is the way a sentence's semantics constrains utterance force. As we will argue, this feature is crucial to a sophisticated linguistic model of speech acts. But neither of the above accounts have figured prominently in recent efforts to formulate such a model.

Much of the recent work on speech acts in linguistics, philosophy and artificial intelligence develops ideas from the discourse dynamics tradition, where speech acts are modeled in terms of how they change the context or 'score' of the conversation (Hamblin 1971; Stalnaker 1978; Lewis 1979; Gazdar 1981). These developments associate distinct sentence types (imperative, declarative, interrogative) with characteristic effects on what the agents in a discourse are mutually assuming for that exchange (Roberts 1996; Poesio & Traum 1997; Portner 2004; Farkas & Bruce 2010; Murray 2010b; Starr 2010; Murray & Starr 2012). Crucially, these particular effects are only taken to be *part* of an utterance's force (Stalnaker 1978: 86-7; Portner 2004: 237-8). This also allows one to distinguish sentential force and utterance force: the former is the characteristic way that a sentence type changes the context, while the latter consists of other unspecified changes. This clearly leaves open what a general theory of utterance force will look like and how one fills the gap between utterance force and sentential force. In this paper we extend models of communicative dynamics to explore these two open questions.

One might expect that there is not much exploration to be done: it seems simple enough to unify existing discourse dynamic approaches with the Neo-Gricean approach (Sbisá 2002). We consider such a unification here, but argue for a quite different approach. Unlike Speech Act Theorists or Neo-Griceans, we will *not* use the concept of utterance force to systematize our intuitive classifications of utterances, e.g. as assertions, commands, etc. Instead, we will use it to capture the communicative function(s) of an utterance (Millikan 1984, 2005): how the utterance can serve to coordinate us in our joint activities (see also Clark 1996). Speech Act Theory and Neo-Gricean analyses not only regard this as a perlocutionary effect external to the speech act itself, but offer theories of perlocution that are poorly suited to this process.² We propose that this shift in focus yields a more useful and explanatory conception of utterance force in three domains.

First, our account better integrates with the understanding of communication emerging in the biological and social sciences (e.g. Maynard Smith & Harper 2003; Scott-

¹ See also Cohen & Levesque (1985, 1990).

² See Marcu (2000) for an extensive discussion of just this point. The gist is that the key division assumed by Neo-Gricean and Speech Act Theoretic accounts conflicts in various ways with all of the experimental studies that focus on how conversations influence peoples' private commitments. These accounts assume that hearers form private commitments in two distinguishable steps. First, they recognize what effect the speaker intended to achieve with their utterance. Next, hearers decide whether to form corresponding private commitments. This picture suggests that the two effects should be at least somewhat distinguishable, but empirical studies suggest the opposite.

Phillips & Kirby 2013; Scott-Phillips 2008). That work has three key features, discussed at length in §3.1. It highlights the intrinsic conflict of interest in communication, it seeks to explain how communication can nonetheless emerge as a stable state of nature and focuses on the important role coordination plays in this process. We argue that a Neo-Gricean approach appeals to the wrong tools and is built on the wrong conception of communication to fit into a general account with these features. By contrast, our account built around them and recent insights on sentential force in linguistics. In particular, we show that social norms have a crucial role to play in explaining how communication can succeed despite conflicts of interest. Our more unified and naturalistic picture of speech acts is at least an interesting alternative to the complex *a priori* accounts found in the classic literature (e.g. Bach & Harnish 1979; Searle & Vanderveken 1985).

Second, our concept of utterance force offers a better account of various empirical phenomena. It will offer a better account of particular ways in which sentential and utterance force diverge. In particular, it will allow complex sentences like *I love you and don't you forget it* to have multiple utterance forces, each of which can diverge from its sentential force. We integrate this account with an independently motivated dynamic semantics for imperative, declarative and interrogative moods. The meaning of these moods can be straightforwardly specified in terms of how they update the conversational score, without assuming that this update wholly constitutes or determines the force of an utterance. That additional work is not done by interpreting intentions, as the Neo-Griceans propose. It is done by the social norms that are independently motivated by our more general discussion of communication in §3.

Finally, our concept of force is better-suited to the needs of recent work in social philosophy which highlights the ways language can be a tool of subordination, oppression and violence (e.g. Maitra & McGowan 2012). Often, subordination is effected by the way hearers construe an utterance without regard to the speaker's intention (Fricker 2007), and an audience can amplify a speaker's message in un-envisioned and catastrophic ways (Tirrell 2012). Further, it is insulting at best, and quite obviously false, to view oppressed people as opting in to a language game whose rules systematically abuse and further oppress them. On our account, oppressive norms give certain agents' limited control over their utterances and actions, and other agents' enhanced control and reach with their's. This approach predicts the oppressed have limited ability to opt out without opting out of society itself, and that the oppressors have a unique capacity to inflict verbal harm.

Our account of utterance force is comprised of two central proposals, one about the *nature* of utterance force and one about the *mechanisms* that generate it. We propose that the force of an utterance should be identified with the communicative function that utterance serves. We argue below that the communicative function of an utterance reaches beyond what it makes mutually assumed in a conversation. It concerns the actual private commitments that can result from changing these mutual assumptions.³ Agents cannot actually accomplish things in the world by mutually attending to the conversational score. That score has to have some force, or bearing, on their private commitments to provide reasons to act. Thus, the force of an utterance is not simply one of the components registered on what Lewis (1979) called the *conversational scoreboard*. We agree that each speech act includes a particular con-

³See Yalcin (2007:1008) for the kindred idea of *conversational tone* which we discuss in §2.2.

tribution to those mutual assumptions or scoreboard. But, we will argue, the force of that speech act goes further: it consists in how that mutual contribution bears on the agents' private commitments (§4), something which is not generally itself part of those mutual assumptions.⁴ While the mutual assumptions and scoreboard are transparent to the conversationalists, the agents' private commitments need not be. On this approach, force consists in the various ways a population of agents is using their mutual commitments or scoreboard to influence each other's private commitments. With this in mind, we introduce the concept of a **conversational state** which models both the mutual, transparent, commitments and the private individual commitments at play in a conversation. How does one fill the gap between the conventional meaning of a sentence and the force an utterance of it has? The conventional meaning makes an attitude mutual, and this act manages to influence the private commitments of the agents involved. We propose that social norms are the central *mechanism* governing this process, but grant that social conventions or rules are sometimes involved. More specifically, we take these norms to govern the relationship between public commitments and private commitments, and how they interact with important features of our social lives like reputation, power, relationship and activity type. It is thus crucial to have the basic distinction between social norms and conventions clear from the beginning. Indeed it is only recent work on these phenomena that makes it possible to see issues that are passed over in the founding texts of speech act theory.

Social conventions, like driving on one side of the road, are arbitrary ways of coordinating our interests, and can succeed only when our interests coincide (Lewis 1969; Bicchieri 2005). This has two crucial consequences. Social conventions must be explicitly formulated and taught to new members of the community, and in a population where self-interests are divergent in a given domain, conventions cannot emerge, e.g. people perversely desiring to cause wrecks would conspire against our driving conventions. Recall now, that we are assuming, with economists and biologists, that there is a general conflict of interest between speaker and hearer, and that this conspires against communication. Social conventions are of little use here. What is needed is a tool for transforming a situation where interests conflict to one where they coincide. This is precisely what **social norms** do according to Bicchieri (2005).⁵ They are self-fulfilling expectations about what particular kinds of agents are to do in particular kinds of situations, and these expectations are often reinforced with social penalties for non-conformity. Consider the practice in soccer of one team kicking the ball out of play when the opposing team appears to have a seriously injured player, and the opposing team returning possession after the player has received treatment. This is not a formal rule with formal sanctions for violation, but this practice is viable because there are costs associated with being called unsporting by other teams and spectators. Human society is suffused with social norms that have evolved to make coordination possible in the face of conflicting interests (Bicchieri 2005), and our linguistic interactions are no exception. It is crucial, however, to highlight that while social norms are an essential tool for social existence, the actual norms at work in a society are usu-

⁴Cohen & Levesque (1990) seem to operate with a similar notion of force, but they do not speak directly to this issue.

⁵While forms of life (Wittgenstein 1953) and social norms play large roles in work on language by Habermas (1998, 2000) our reliance on social norms is more specific. Viewing social norms as ways of making coordination possible where it otherwise wouldn't be is unique to Bicchieri (2005), and carves out the unique role we use them to play in our own theory of force.

ally suboptimal and oppressive, e.g. female footbinding in China (Bicchieri 2005:41). We believe this point is essential for capturing how language can be used as a tool of subordination, oppression and violence. It also provides useful insight into how norms work. They are not rationally calculated or democratically adopted, and may not even be rules we would accept if explicitly prompted. They dynamically emerge in response to existing contingencies in agents' psychological, social and physical environments. For example, they exploit unconscious psychological processes sensitive to basic social cues like reputation, relationship type (Fiske 1992) and schema/activity type (Schank & Abelson 1977; Levinson 1979), which frequently lie beyond humans' conscious reach. This allows agents to fluidly adapt their actions to their social environment without interpreting the intentions behind each other's actions or learning to act in accord with formal rules. In assuming that these are the mechanisms driving utterance force, we are proposing to treat utterance force as a kind of distributed *social significance*: it consists in individual commitments that form a broader social pattern — one which may or may not be laudable, and may or may not manifest the intentions of any one individual.⁶ This facilitates an integration with recent attempts to fit our linguistic behavior into a larger picture of social dynamics.⁷

2 Speech Acts and Utterance Force

Utterances have a somewhat mysterious and quite varied force over us. For example, some command us, some advise us, others inform us and yet others subordinate or elevate us. What exactly is this force and how does it arise from the linguistic and pragmatic features of an utterance? We will begin in §2.1 with the first attempts of the modern era to address this phenomenon, namely speech act theory and Neo-Gricean pragmatics. The chief advantage of the latter is that it allows for an indirect relationship between the form of a sentence and the force of its utterance. It does this by focusing on what the speaker intends to communicate with an utterance, while allowing that the semantics of sentences can constrain this. However, we will explain that this account does not allow one to characterize the communicative function of an utterance. That requires appealing to the private commitments that actually result from communication, while Neo-Gricean accounts focus exclusively on a process quite distant from the hearer's actual commitments: the state of mind a speaker intends to express and the hearer's recognition of this intention. In §2.2 we observe that the same is true of existing work in the discourse dynamics tradition. §3 will then argue that this limitation is problematic because our best accounts of communication require attending to the actual commitments that prompt and result from an utterance.

⁶This approach is inspired by the similar analysis of figurative and evocative language in Lepore & Stone (2014), where the interpretive effects of, say metaphor, are neither part of the conventional meaning of the words uttered nor part of what a speaker means by their utterance. It also bears some resemblance to Geis' (1995:33) *transactional significance*, which is embedded in a dynamic theory of speech acts.

⁷E.g. Brown & Levinson (1987); Langton (1993); Clark (1996); van Rooy (2004); Pinker *et al.* (2008); Skyrms (2010); Clark (2012); Maitra (2012); Tirrell (2012); Scott-Phillips *et al.* (2012); Asher & Lascarides (2013)

2.1 From Speech Act Theory to Neo-Gricean Analyses

In the seminal study of speech act theory, Austin (1962) alleged that previous work had focused only on the **locutionary act**: the act of saying something, e.g. uttering sounds that count as words in an order that counts as a sentence which counts as having a particular meaning. He proposed that speech acts also involve performing an **illocutionary act**: what one does *in* saying something, e.g. apologizing, betting, asserting. Only the illocutionary act has ‘force’ and it has force in virtue of social conventions:

“[W]e also perform illocutionary acts such as informing, ordering, warning, undertaking, etc., i.e. utterances which have a certain (conventional) force.”
(Austin 1962:108)

“We must notice that the illocutionary act is a conventional act: an act done as conforming to a convention. (Austin 1962:105)

On Austin’s (1962) approach, an utterance’s force consists of the effects it has in virtue of the social convention governing that type of utterance, e.g. the commitments a speaker produces by making a promise. Austin (1962) contrasts these effects with further by-products of a speech act. That is what he traced to the **perlocutionary act**: what one does *by* saying something, e.g. convincing, offending, alarming. The general analysis is depicted in Figure 1, though the key feature for us is the idea that force consists in the effects of social conventions that govern our utterances. On this

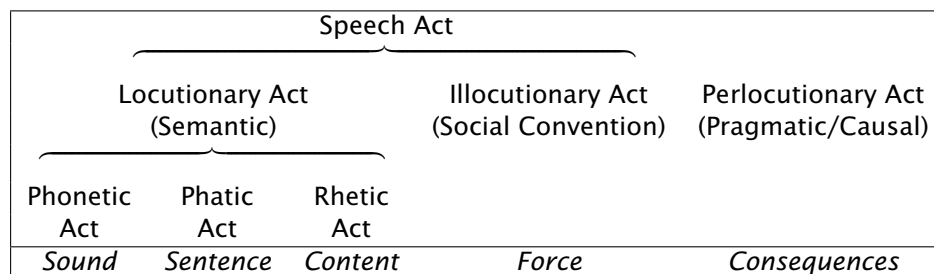


Figure 1: Austin (1962) Analysis of Speech Acts

theory, the nature of, and mechanism driving, utterance force is as follows:

Austin (1962) Theory

1. *Mechanism*: social conventions
2. *Utterance Force*: individual commitments brought about by utterances and social conventions

There are three major, interrelated issues for the Austinian analysis. Austin (1962) offers no theory of social conventions, and in the absence of this it is difficult to assess or apply the theory in much detail. For example, it says little about what about a particular utterance and its context invokes a particular social convention. This also makes it extremely difficult to distinguish the conventional effects that constitute force from the perlocutionary effects that do not. This is evident when Austin (1962:115-8) struggles to articulate the exact distinction. This issue is further compounded by

the fact that it is difficult to find the requisite social conventions for most utterances occurring outside the rigid confines of marriages, card games and the like (Strawson 1964). While it is easy to point to social conventions for promising, it is hard to find parallel conventions for, e.g. asserting, warning, suggesting, or informing. Whatever social mechanism regulates the latter utterances, it is disanalogous to the explicitly taught and enforced rules that regulate marriages and card games.

Searle (1969) and Searle & Vanderveken (1985) propose a view well-positioned to address these issues. They propose that force arises via constitutive rules (Rawls 1955), on the analogy with the rules of chess and baseball. These rules not only regulate the games they govern, they constitute those games: if you allow the knight to move in straight lines as well, you are playing a different game. Just as certain rules govern the use of a chess piece and the consequences of doing so, there are rules that govern the use of certain linguistic forms and the consequences of doing so. For example, Searle (1968) proposes that uttering 'I promise...', with the appropriate intentions, triggers such a rule which dictates that the speaker has made certain commitments. This requires Searle (1968) to reject the claim that force resides purely at the level of utterances: it arises at the level of particular linguistic forms and is part of the semantics of a language. In other words, Searle rejects Austin's distinction between illocutionary and locutionary acts. On this theory, the nature of, and mechanism driving, utterance

Speech Act					
Illocution (Semantic, Constitutive Rules)				Illocutionary Intent (Pragmatic)	Perlocutionary Act (Pragmatic/Causal)
Phonetic Act	Phatic Act	Propositional Act	Illocutionary Point		
<i>Sound</i>	<i>Sentence</i>	<i>Content</i>	<i>Force</i>	<i>Speaker Meaning</i>	<i>Consequences</i>

Figure 2: Searle (1968, 1969) Analysis of Speech Acts

force is as follows:

Searle (1969) Theory

1. *Mechanism*: constitutive rules, e.g. chess
2. *Utterance Force*: understood, intended commitments brought about by utterance and constitutive rules

One concern about this account is that most of the rules proposed for utterance force (Searle & Vanderveken 1985:§§3.2, 5.1) still contain primitive terms, like *illocutionary point*, which are dangerously close to the concept of utterance force itself (Siebel 2002). One is not told what an illocutionary point is, just that there are five of them and they roughly follow the metaphor of 'direction of fit'. Philosophically, this leaves room for a more revealing approach and empirically it makes the theory difficult to apply to particular linguistic data, especially outside the friendly confines of English. Related approaches like Stenius (1967) and Lewis (1975:172) do without these primitives, but all make a problematic assumption, which Levinson (1983:263)

dubs the Literal Force Hypothesis: a sentence's form determines the force an utterance of it has. Levinson (1983: §5.5) takes indirect speech acts to sink the Literal Force Hypothesis. But even setting these aside, it does not stand up to a cursory look at human language use.

One sentence can have quite varied utterance forces (Davidson 1979, Bach & Harnish 1979:130-1): *Run!* can serve to advise, command, suggest or even rally. Maintaining that each such difference is traceable to a distinct *linguistic form* is simply not plausible. There are far more utterance forces than potential linguistic indicators of force. Further, simply treating force variation as widespread ambiguity misses clear generalizations connecting sentence types and contextual features to utterance forces. For example, it would fail to capture the fact that in particular exchanges *Is it raining?* and *I wonder if it's raining* can both have the force of an inquiry, but that their forces could diverge if uttered in a different context.⁸ These generalizations are what our theory aims to predict.

Ironically, exactly the same empirical limitations result from denying that conventional meaning in any way constrains utterance force. For example, Davidson (1979) and Levinson (1983, 1979:30) assume that any sentence can have any utterance force, because conventional meaning does not at all constrain utterance force. The middle ground occupied by Neo-Gricean approaches like Bach & Harnish (1979) and Cohen & Levesque (1985) is appealing precisely for this reason. They see utterance force as part of what a speaker means by an utterance, rather than part of a sentence's meaning. A sentence's meaning constrains, but does not determine, what a speaker can mean by its utterance. This flexibility is perhaps the most desirable property a theory of utterance force can have. The Neo-Gricean approach spells out what a speaker means and communicates in terms of Gricean (1957) communicative intentions:

Communicative Intention Using a signal σ , X intends to bring about some particular effect in Y 's state of mind by means of Y recognizing X 's intention to do so.

Communication is construed as the mutual recognition of this intention, not the achievement of intended effects. Neo-Griceans maintain that hearers *infer* the speaker's communicative intention, and so the key task in a theory of speech acts is to spell out how this inference goes. Bach & Harnish (1979: §2.5) hold that a given sentence mood is primitively constrained to producing only certain kinds of effects.⁹ This stipulation provides a mutual constraint that the hearer can exploit when inferring an interpretation. This account allows room for conventional utterances like *Hello* by simply saying that the speaker may intend to invoke a social convention. Perlocutionary effects like convincing the hearer are treated as intended consequences of the speech act itself, as Fig.3 illustrates.

On this approach, the force of an utterance consists merely in understanding the hearer's communicative intention.

⁸A loophole: Searle & Vanderveken (1985) might attempt to treat force underdetermination as context-dependence, on the model of *I* and *here*. Starr (2014) argues that this loophole is closed: there is no function from contextual features to utterance forces that identifies a standing contribution of force indicators that is parallel to the function from contexts to speakers in that context that serves as the character of *I*. This is because each component of force can vary, and on the Searle & Vanderveken (1985) analysis force just is the cluster of contextual features that 'determine' force. This makes it impossible to specify a function which *predicts* the force of an utterance from relevant contextual features.

⁹See the rather brief remarks on 'locutionary-compatibility' or 'L-compatibility' in Bach & Harnish (1979: 11,34,36,173).

Neo-Gricean Theory

1. *Mechanisms*: communicative intentions, inference; social conventions
2. *Utterance Force*: understanding intended commitments brought about by utterance and intention recognition

Speech Act					
Locutionary Act (Semantic)				Illocutionary Act (Pragmatic)	Perlocutionary Act (Pragmatic)
Phonetic Act	Phatic Act	Propositional Act	Sentence Type	Communicative Intention	Social Convention
<i>Sound</i>	<i>Sentence</i>	<i>Content</i>	<i>Force Potential</i>	<i>Communicated Force and Content</i>	<i>Intended Consequences</i>

Figure 3: Neo-Gricean Analysis (Bach & Harnish 1979; Cohen & Perrault 1979)

Many objections have been raised to the Neo-Gricean analysis, but we will focus here on three criticisms that have not been highlighted in previous literature. First, the account of how sentence meaning constrains utterance force is not entirely satisfying. It does not explain why declaratives are constrained to expressing beliefs, it merely stipulates that they are. This would be fine if it was an account of the conventional meaning of declarative mood, but it is not. The Neo-Gricean analysis assumes a simple truth-conditional semantics where the only way of encoding this connection is to build it in to the truth-conditions of the sentence itself. But this is obviously incorrect, as the truth of *Mars is red* says nothing about the speaker's beliefs. Our analysis in §4 and Murray & Starr (2012) addresses this by allowing meanings to be the dynamic procedures by which sentences affect mutual attitudes, rather than just the state of the world they depict. The second concern bears on mixed mood sentence, discussed extensively in Murray & Starr (2012). A sentence like *I'm making tortillas but don't expect to eat them all* simultaneously conveys information and a directive, but the inference of utterance force detailed by Bach & Harnish (1979) is limited in practice and principle to sentences of a single mood. Their actual theory only applies to sentence's of a single mood that express a unified attitude. Further, their pragmatic inference would have to operate sub-sententially to capture this phenomenon. The latter would blur perhaps the only clear boundary between semantics and pragmatics: that which is part of recursive composition and that which is not. Our third objection is more general: the notion of communication embodied by this approach is far too weak and incomplete to actually capture what we want to explain when we theorize about communication. Developing this point will require more care.

Our first contention will be that mutual recognition of the speaker's communicative intention is not enough to actually coordinate two agents. We will later (§3) argue that the coordination of agents is the key phenomenon to be explained in a naturalistic theory of communication. Towards the first contention, consider a scenario where Janis wants to get together with Jimi to play music and says *Meet me at Hotel Chelsea around 11*. Now suppose Jimi recognizes that Janis intends him to choose his actions accordingly, and this is clear to Janis. This is not enough to actually coordinate Janis and Jimi's actions. Merely recognizing that Janis intends him to choose his actions accordingly does not yet provide Jimi with a reason to actually choose his actions accordingly. But that is precisely what needs to happen to coordinate Janis and Jimi. Neo-Griceans don't say false things about this process, they say *nothing* about it. They dismiss it as a perlocutionary effect. We think this perfectly illustrates a rather general issue for Neo-Gricean analyses. Their theory of communicative intentions is tailored

to systematizing our intuitions about how to classify certain speech acts, but entirely ignores the central explanatory goal in a theory of communication: the explanation of how agents use signals to coordinate. We think that this methodology gives the wrong priority to our intuitive classifications. There is good reason to think that we should begin with a general, naturalistic investigation of communication, and once its capacity to coordinate agents has been explained we can return to the question of how that bears on our ordinary ways of describing utterances.

Now, we realize that it might sound tendentious to claim that using signals to coordinate is the central fact to be explained by a theory of communication. However, as mentioned in §1, it is the central assumption of naturalistic theories communication in the sciences, and deservedly so. We will present the evidence in favor of this idea, as well as addressing two very basic objections to it in §3. For now, we will turn to discussing work in the discourse dynamics tradition where we will make essentially the same point: the work in this tradition does not address the question of how language could actually coordinate two agents in a joint activity, and so is at most a partial theory of communication and utterance force.

2.2 Force and Discourse Dynamics

Ideas from classical speech act theory have been noticeably absent in more recent work by linguists and philosophers. Instead, that work has focused on discourse dynamics (Hamblin 1971; Stalnaker 1978; Lewis 1979). This approach offers detailed models of the mutual assumptions at play in conversation, and how utterances change those assumptions. In particular, each distinct sentence type is associated with a characteristic effect on what the agents in a discourse are mutually assuming for the purposes of that exchange (Roberts 1996; Portner 2004; Farkas & Bruce 2010; Murray 2010b; Starr 2010; Murray & Starr 2012). For example, declaratives provide information, interrogatives introduce issues and imperatives promote alternatives (Starr 2010; Murray & Starr 2012). Such an approach better reflects linguistic typology and so provides a better starting point for an empirically adequate approach to utterance force. This has large empirical payoffs when considering phenomena on which speech act theory provides little insight. Roberts (2003, 2005, 2012) reveals surprising and powerful connections between the questions under discussion in a discourse, discourse goals and the interpretation of ‘incomplete’ definites like *the guy*. Portner (2007) is able to explain several interesting interactions between deontic modals and imperatives, without assimilating one to the other. Murray (2011, 2010a,b, 2014) captures the distinctive contribution of evidentials as a distinctive kind of update with a broader application to other phenomena — not-at-issue assertion — where speech act theorists were compelled to posit a new primitive speech act ‘present’ (Faller 2002). More recently, Roelofsen & Farkas (2015) have used discourse dynamics to model the function of polarity particles like *Yes* and *No*. This sophisticated model can handle the complexities that arise from different polarity systems across languages and the variety of interrogatives and declaratives that license them, including the interaction of interrogatives with negation, disjunction and intonation. The fruits of this research program, with little comparative successes in speech act theory, has seen interest in speech act theory among linguists decline.

Some working in this tradition are explicit that the characteristic effect of a sentence type is only *part* of an utterance’s force (Stalnaker 1978:86-7; Portner 2004:237-8). But what more is there to utterance force and what phenomena does such a theory

explain? Some, like Gazdar (1981), assume that there is an answer to this question within the basic models offered and that it will allow us to systematize our ordinary categorizations of speech acts. There is virtually no work on this issue, but one idea is to integrate elements of the Neo-Gricean approach. In addition to having a constant effect on the mutual assumptions, the utterance of a sentence will also trigger a pragmatic inference that depends on particular details of the utterance. For example, a speaker *S*'s utterance of *Janis was a singer* to *H* counts as an assertion not only when it updates the mutual information with the proposition that Janis was a singer, but also when when (Bach & Harnish 1979:42):¹⁰

- (1) *S* intends *H* to recognize that:
 - a. *S* believes that Janis was a singer and
 - b. *S* intends *H* to form this same belief

On this model, the assertion will make the proposition that Janis was a singer mutually assumed, and prompt a pragmatic inference to arrive at something like (1) also being mutually assumed for the purposes of the exchange. This way of supplementing the discourse dynamics model inherits most of the problems highlighted for the Neo-Gricean account in §2.1.¹¹ Most importantly, it offers no account of why would this utterance would lead *H* to conform to *S*'s intention (1b) and actually form the belief that Janis was a singer. It also does not explain why this utterance would commit *S* to being sincere and actually believing that Janis was a singer. But this is precisely what one wants to explain if the force of an utterance is supposed to reflect the way it serves to coordinate speaker and hearer. Of course, one may not want to explain that — we return to this issue in §3.

The discussion above relies on a crucial fact that is sometimes ignored in work on discourse dynamics, e.g. (Farkas & Bruce 2010). Discourse dynamics says nothing about the individual commitments, or even the mutual beliefs, that result from an utterance. These approaches only track what the agents are mutually and *provisionally assuming* for the purposes of the exchange.¹² This understanding of the view is essential to make it sufficiently general and useful. In order for it to model the parallel discourse kinematics involved in speculation, pretense, sarcasm, cooperative suspension of disagreement and much else, it is essential to characterize utterances as changing mutual assumptions rather than the more committal attitudes of mutual belief, knowledge or desire (Stalnaker 2002). It is possible to converse with someone that has entirely different beliefs on a given subject matter, even if the two parties disagree entirely what the take-home message of the conversation is. However, it is precisely

¹⁰Additional qualifications ensure that the utterance is literal, communicative and that the intention in (1) is appropriately transparent and recognized in the right way (Bach & Harnish 1979:§1.6).

¹¹There's more room here for saying why, given the semantics of declaratives, belief or knowledge is associated with declarative mood. Declarative mood updates an informational acceptance-like attitude. However, problems lie in wait for speech acts like inquiries where the Neo-Gricean's attempt to analyze utterance force in terms of the speaker wanting information. Yet interrogatives update inquisitive attitudes like wondering, not conative attitudes like wanting (Hamblin 1973; Heim 1992; Lahiri 2002).

¹²There are many definitions of these mutual assumptions, or common ground (Clark 1996:Ch.4). We prefer defining them as assumptions that are rationally transparent to all the agents involved: not only is each agent assuming *p*, they are justified in assuming that everyone is assuming *p*, in assuming that everyone is assuming that everyone is assuming *p* and so on (Lewis 1969). Note that this characterization does not assume that agents are aware of their justification or have reasoned through it themselves.

this justified assumption which prevents discourse dynamic models from capturing the communicative function of an utterance.

We think it is instructive here to consider the notion of conversational tone discussed by Yalcin (2007:1008):

Conversational Tone An attitude is the conversational tone of a group of interlocutors just in case it is common knowledge in the group that everyone is to strike this attitude towards the propositions which are common ground.

It is rather natural to consider applying this idea to the analysis of utterance force. While an actor and a real policeman's utterance of *You're under arrest* to another actor update the mutual assumptions in exactly the same way, they involve different conversational tones. Utterance force, then, is a discourse-level phenomenon whereby *all* of the mutual assumptions are mutually known to bear some relation to the private commitments of the conversationalists. Fictional discourse could be captured by mutual knowledge that neither the speaker nor hearer are committed to the mutual assumptions. By contrast, scientific discourse might be captured by mutual knowledge that both speaker and hearer are indeed committed to the mutual assumptions. It is worth noting that this account may not vindicate the intricate variety tracked by our ordinary categorizations of utterances into, e.g. suggestions, hints and warnings. But we agree that should not be the empirical focus in the study of speech acts. A more serious concern arises when considering the mechanisms by which this common knowledge is supposed to arise. The common knowledge cannot itself be communicated by speech acts, i.e. explicitly taught, to someone that does not yet possess it. By hypothesis, such hearers would not know what attitude to strike to the propositions made common ground by such instruction. Further, when one thinks about the wide variety of conversational tones that correlate with very nuanced social circumstances, e.g. close friends vs. new acquaintances vs. authority figures, it becomes difficult to even think of conversational tone as managed by 'common knowledge'. Common knowledge is information that the agents may not be actively entertaining, but would agree to if prompted. The large literature in behavioral economics suggests that the principles guiding our social behaviors do not have this feature, indeed most subjects reject the principles when prompted with them (Cialdini *et al.* 1991; Bicchieri 2005:Ch.2). Further, in a single discourse, this principle seems to apply differentially to different parts of an utterance. A complex imperative like *Take off your shoes and try the tacos!* could be used as a sign at the entrance to a party to direct speakers to take off their shoes, but merely suggest trying the tacos. Similarly, it is extremely well-established that the social identity of an individual within a discourse radically shapes the uptake of their (attempted) contributions to the common ground (Labov 1972; Brown & Levinson 1987; Fricker 2007; Clark 1996; Hulstijn 2003; Hulstijn & Maudet 2006). While the idea of conversational tone has much in common with the approach we will develop, it differs on all of these crucial points.

3 Norms and the Communicative Function of Speech Acts

In §4 we will propose that the force of an utterance should be identified with its communicative function, which is in turn understood partly in terms of coordination. This section will articulate and defend this link between coordination and communication,

as well as saying how the communicative function of an utterance emerges from understanding this link. The first step will be to present Lewis' (1969: Ch.4) simple account of communication as coordination, and contrast it with the Neo-Gricean model. The chief explanatory advantage of the Lewisian model here is that it explains how communication can be a self-sustaining method of coordinating our actions. We then explain how this feature of communication is the central property that biologists have sought to explain in their work on communication. But this work in biology also highlights ways in which Lewis' approach is far too simple. The best way of moving past this simple model appeals to the communicative function of signals. We will argue that this allows one to address a number of problems for the Lewisian view, including deception, without defining communication immediately in terms of intentions. While this appeal to function does explain how deception can cohere with viewing communication as coordination, it does not explain how communication can persist in interactions which are not *prima facie* coordination games. The importance of this fact is illustrated powerfully in recent work on subordinating and altruistic speech. In these interactions, there is enough conflict of interest to make coordination of immediate self-interests impossible. It is here that we will draw on and articulate more carefully the idea of a social norm, which transforms what would be a game of conflict into a game of coordination. §4 will apply the idea of communicative function developed in this section to the study of utterance force.

3.1 Coordination and Communicative Function

The idea that communication involves coordination was central to Lewis' (1969: Ch.4) analysis of communication, signaling games and convention. There, Lewis considers the Sexton of Old North Church hanging one lantern in the belfry to communicate that Redcoats are coming by land to Paul Revere. Communication occurs only when Paul Revere actually responds to that lantern signal by appropriately warning the countryside (Lewis 1969: 124). It is only when Revere interprets the lantern in this way, assuming it is truthfully issued by the Sexton, that their joint actions will bring about a mutually preferred state of affairs: an appropriately defended countryside. In other words, communication only occurs when the production and response to the signal coordinates the agents actions.¹³

Lewisian Communication (Lewis 1969: 124)

X communicated with Y using signal σ if and only if:

1. Y 's responded to σ by doing R ,
2. X produced σ by doing C and
3. C and R solved a coordination problem for X and Y .

Solving a coordination problem is a technical notion from game theory:

Solving a Coordination Problem (Lewis 1969: 14)

C and R solve a coordination problem for X and Y , if and only if:

¹³Lewis (1975) later allowed communication to also coordinate beliefs. One can imagine extending this approach to other mental states.

-
1. X could not have become better off by doing something other than C or from Y doing something other than R ,
 2. Y could not have become better off by doing something other than R or from X doing something other than C

In the example above, C is the Sexton producing one lantern in the belfry after observing the Redcoats preparing a land invasion and R is Revere appropriately warning the countryside. No way of changing just the action executed by the Sexton or Revere would make the Sexton better off, and no way of changing just the action executed by Revere or the Sexton would make Revere better off. This game-theoretic understanding of coordination is one useful way to sharpen the intuitive notion of coordination, and will be assumed from here on. This is not, however, the definition of communication we will ultimately endorse. Yet it is instructive to see how it differs from the Neo-Gricean approach.

The Lewisian account maintains that communication itself provides the hearer with a reason for action: if communication has occurred, Revere must plan to appropriately inform the countryside. But the Neo-Gricean model does not provide such a reason: if communication has occurred, Revere would simply need to *understand* which action the Sexton intended Revere to perform, and Revere need not actually plan to perform that action. The Lewisian objects that the Neo-Gricean model of communication is useless for explaining how agents use signals to get things done, and useless for explaining the surprising stability of this capacity: why does communicating in a given way persist once it has been established? For that purpose, the Neo-Gricean would have to focus on the cases where the speaker and hearer actually satisfy the relevant intentions and explain why — but that is precisely what Neo-Griceans do not offer a theory of. In reply, the Neo-Gricean might suggest that Lewis' model construes hearers as automatons controlled by the speakers' signals. This objection is not quite right, but foreshadows a real issue. Lewis' model allows that the hearer's response is rationally mediated and may not be a direct causal product of the speaker's signal. Indeed, the hearer may sometimes fail to respond in the way needed for coordination to result. Those instances do not count as communication, but they may be a common occurrence in the signaling system. Lewis' model does treat such instances as undeserving of systematic explanation. Lies and deception may be the cases where this matters. If one does want a systematic explanation of these cases, coordination seems only indirectly relevant and the speaker's intention seems more important. This concern is an important one, but we wish to set it aside until §3.1.1. Instead, we want to amplify the merits of Lewis' approach by looking at work on animal communication. This work shows that the property Lewis focused on was indeed the crucial one for understanding the natural phenomenon of communication. However, this work will also illustrate that the Lewisian picture is far too simple.

As Gillam (2011) and Maynard Smith & Harper (2003) survey, animals crucially rely on communication to achieve the most basic functions of habitation, nutrition and reproduction. Male túngara frogs attract female conspecifics with a mating call that consists of low-pitched chucks and high-pitched wails (Ryan 1985). In doing so, the male exposes himself to predation: his calls not only attract females, but the predatory fringe-lipped bat. In fact, the female túngara and bat use the signal in *the same way*: they both respond to more low-pitched chucks and they use their general echolocation skills to find the signal's source — an irony not lost on ethologists. The male

is communicating with the female frog, but is not communicating with the bat. This is not an intuition about how to apply the ordinary word *communication*. These two processes have different properties and different explanations. The male frog's call does not persist in the species because of its effects on bats, but because of the effects it has on other frogs (Maynard Smith & Harper 2003). So, the fact that these signals occur in the species is explained by their effects on frogs and *not* their effects on bats. This account of communication can be more precisely characterized as follows:

Adaptationist Communication (Maynard Smith & Harper 2003:3)

X communicated with Y using signal σ if and only if:

1. σ affected the behavior of Y ,
2. The production of σ by X evolved because of that effect on Y
3. σ is effective because Y 's response to it also evolved.

Now note two key commonalities between this approach and Lewis'. Both accounts aim to explain why a pattern of interactive behavior *persists* in a given population, and they propose to explain it in terms of the signal's actual cause and consequences, i.e. the actual way the signal is produced and its actual effects on the receiver's actions or intentions. This commonality is telling, as it articulates a clear explanatory goal for a theory of communication and specifies the natural properties that are to be involved in such explanations. And yet the definitions seem rather different in two other respects: the Adaptationist model applies only to genetically controlled communication that influences behavior, and it does directly mention coordination. Exploring this difference will be revealing.

The Adaptationist perspective can be generalized by replacing evolutionary selection with the teleological notion of a *function* (Millikan 1984) and appealing to the more general idea of a signal causing 'a reaction'.

Functional Communication (Scott-Phillips & Kirby 2013:430-1)

X communicated with Y using signal σ if and only if:

1. σ caused a reaction in Y ,
2. The function of producing σ is to cause that effect,
3. The function of Y 's reaction is to be caused by σ

This definition eliminates superficial differences between Lewis' account and the Adaptationist one, and in doing so highlights the key one. The Lewisian account and the Functional account explain the persistence of communication in very different ways. Lewis (1969:42) explains persistence in terms of individual rationality: coordination persists because the agents expect it to make them better off. As soon as this expectation is disrupted, so too will communication. But this is clearly implausible for the túngara frog: a single male could chuck and wine his whole life without a response, and yet his signal could persist in the species. As long as females respond often enough to enough of the calls of enough of the males, then this form of interaction will persist. While this call persists because it achieves coordination often enough, it is possible, depending on the population statistics and dynamics, that this coordination is in the statistical minority among uses of the signal. In such a scenario, Lewis (1969) predicts that communication will cease. Where Lewis (1969) requires frequent coordination to

persist, the functional approach requires only enough coordination for the signal to keep its function or purpose. Millikan (1984) characterizes the function of a signal in a way that makes perfect sense of this:¹⁴

Function of a Signal (Millikan 1984, 2005)

The function of σ in a population P is what σ does for the agents in P which explains why they reproduce it.

Millikan (2005) grants that coordination is the typical communicative function of signals, even though signals or behaviors may be used in other domains for other ends that confer them with a different function.

3.1.1 Defeating Deception

With these details in place, it becomes clear why Lewis' theory of communication is too simple. The Neo-Gricean was right to be concerned with lying, but their concern was misplaced. One does not really need to invoke intentions to explain deception, only agents acting out of narrow self-interest. Lying might be deception that involves reasoning about other minds, but it's still a simple form of self-interested behavior whose persistence does not demand explanation. But the fact that lying occurs frequently in any population that communicates cannot be explained by Lewis' account. The existence of liars should make communication grind to a halt, and yet we know from our everyday experience that human society is surprisingly resilient in this respect. While our general interactions cannot be described as coordination games, some of them can be and the mere existence of successful coordination in these cases provides sufficient insulation from deception. How could this be?

The difference between Lewis and the biologists is not surprising, since game-theoretic analyses of biology are not executed in the rationalist tradition embodied by Lewis and Grice. Maynard Smith & Price (1973) introduced the idea of an *evolutionarily stable strategy*: a strategy such that, if all the members of a population adopt it, then no mutant strategy could invade the population under the influence of natural selection. This explains persistence of a behavior or trait without requiring rationality to maintain it. Recently, work on human communication has taken note of the promise here and begun its own turn from rationalist pragmatics. van Rooy (2004), drawing on Parikh (1991, 2000), is a special landmark here, where classic manner implicatures are explained using the tools of evolutionary game theory rather than the classical rationalist game theory that Lewis employed. The key question to ask when applying these models to human language use is how social interaction and culture can operate in ways reminiscent of reproduction and genes, and how individual psychology conditions those interactions. As we will propose in the next section, social norms can be understood as an evolved cultural tool for making coordination possible in the face of conflicting interests. These norms govern our interactions in ways that make successful coordination possible while insulating us from deception, but they do so unconsciously and sub-personally. Many of the norms that govern our interactions are not principles we would endorse if asked about. They are heuristics of social cognition that we absorb from our social environment without being explicitly formulated or

¹⁴It is important to note that Millikan (1984, 2005) offers a sophisticated theory of reproduction whereby the original does not completely determine the reproduction. This is crucial for language where *A and B* could be a reproduction of *A*, *B* and *C and D*, and inherit its function from *and*, *A* and *B*.

taught (Cialdini *et al.* 1991). The coordination that these norms make possible endows our utterances with a communicative function, which will be the focus of §4.

3.2 Social Norms and Coordination

Bicchieri (2005:x) succinctly contrasts social norms, as she analyzes them, from other familiar and related concepts:

Descriptive norms such as fashions and fads, for example, arise in contexts in which people desire to coordinate with (or imitate) others and prefer to do what others do on the condition that they expect a sufficient number of people to act in a certain way. A ‘sufficient number’ may be just one person, as in the case of a celebrity we want to imitate, or the number may vary from person to person, depending on how cautious one is in assessing the threshold at which to take action. Conventions are descriptive norms that have endured the test of time. If one’s main objective is to coordinate with others, and the right mutual expectations are present, people will follow whatever convention is in place. Social norms, on the contrary, are not there to solve a coordination problem. The kinds of situations to which social norms most often apply are those in which there is a tension between individual and collective gains. Pro-social norms of fairness, reciprocity, cooperation, and the like exist precisely because it might not be in the individuals immediate self-interest to behave in a socially beneficial way.

Recall the soccer norm mentioned in §1. This is not a formal rule with formal sanctions for violation. This practice is not a coordinating convention followed due to precedent (Lewis 1969): there is no alternative pair of actions that would produce an equally good outcome for both parties. Furthermore, unlike a convention, e.g. driving on one side of the road, either team could defect from it and become better off, at least in the short-term (on occasion, some do). So it is not immediate coincidence of self-interest which sustains this practice — there is a conflict of immediate self-interest. This practice is sustained, like other social norms, because each agent *A* prefers to conform to the practice given that conditions (i) and (ii) obtain, and those conditions do obtain (Bicchieri 2005:11):¹⁵

- (i) *A* expects others to conform and
- (ii) *A* either believes that others expect *A* to conform or that others prefer *A* to conform and will informally sanction non-conformity (shame, disgust, etc.).

It is crucial to clarify, as Bicchieri (2005:3) does, that this is a rational reconstruction of what a social norm is, but is consistent with a psychological implementation that is sub-personal, unconscious and economically approximates the concept defined by the rational reconstruction.

¹⁵Slightly more precisely: a behavioral rule *R* is a social norm just in case almost everybody knows that *R* exists and prefers to conform to *R* on the condition that (a) almost everybody believes that almost everybody conforms to *R* and either (b) almost everybody believes that almost everybody expects almost everybody to conform to *R* or (b') almost everybody believes that almost everybody expects almost everybody to conform to *R*, prefers them to conform to *R* and may sanction those that don't (Bicchieri 2005:11).

In general, our communicative exchanges cannot be described as simple coordination games. Our interests are too mixed: the speaker may want to show how much they know while the hearer may need some information to complete an urgent task, the speaker may want the hearer to believe some information which will cause them to act in a way that is beneficial to the hearer, and so on. It is here that social norms play a key and inadequately appreciated role in communication. While Austin focus on social conventions and Searle focused on constitutive rules, these social tools are of no use in mixed-motive games. If we can't coordinate, then we can't establish social conventions and could not agree on constitutive rules because our practical ends are at odds. Likewise, good Griceans could understand what each other meant, but would have no reason to express their states of mind to each other. However, a body of social norms — self-fulfilling expectations about what agents like us to in particular circumstances — operating in the shadows of our unconscious minds do just the trick. The Maxims of Quantity and Manner (Grice 1975) are likely examples of such norms, since they allow coordination in the fact of conflicting interests (van Rooy 2003). But, *contra* Grice (1975), we do not follow them because we are rational. Instead, we follow them because they are part of our cultural inheritance that has been shaped by our practical needs as social animals.

Many socio-biologists believe human interaction in general is governed by large-scale norms that are particular to the relation-types of the agents involved (Fiske 1992). For example, some interactions naturally evoke an understanding that one agent is a subordinate of the other, and is thereby expected to weight their self-interests less than the dominant's. Yet others are understood to be communal, in which case it is crucial not to make efforts to equalize costs since that is indicative of mistrust. Since norms are also sensitive to the circumstances of the interaction, they are not only sensitive to who is interacting, but what kind of task they are engaging in. Work in social psychology on scripts, schema and activity types (Schank & Abelson 1977; Levinson 1979; Bicchieri 2005: Ch.2) illustrate that classifying some interaction as being of some familiar type automatically triggers self-fulfilling expectations about how that interaction will unfold. Just think of your elliptical utterances and interactions when ordering food, or saying 'here' to a teammate while playing basketball (Levinson 1979). Just as research in artificial intelligence (Schank & Abelson 1977) struggled and failed to articulate these practices in terms of precise rules, the true utility of these norms are that we can follow them and coordinate without explicitly representing or teaching precise rules of interaction. The question, then, is whether there are distinctive norms that pertain to our communicative interactions.

While Williamson (1996), Sellars (1956), Brandom (1994) and Kukla & Lance (2009) have emphasized the importance of characterizing language use in normative terms, they do not construe the role of normative ideas as we have here. Williamson (1996) proposes that knowledge is the norm of assertion, but to even assess this we have to do a bit of groundwork. For us, assertion, if it plays any role in a theory of communication, is the communicative function some class of utterances serve. One function utterances sometimes serve is to convey information from speaker to receiver. To speak of the norm of assertion is therefore to speak of how some self-fulfilling expectations transforms the mixed-motive game of information transmission into a coordination game. This invites the question of what conflict such a norm solves and how the unconscious heuristics of social cognition support that solution. The conflict of information sharing is clear enough: speakers may prefer to misinform certain hearers and hearers may

prefer to ignore certain information. How do humans solve this problem? The emerging consensus is that our social memory and systems of reputation and authority are the crucial mechanism here Scott-Phillips (2011, 2015). As long as these projections of authority and reputation somewhat reliably track a speaker's trustworthiness and competence, trusting their contributions and expecting them to be sincere will keep deception at bay, and allow information to flow. This speaker norm can only operate with a parallel hearer norm: reputable authorities can only sustainably share information when there are proportionately vigilant, receptive and curious hearers. From this perspective, knowledge is not the actual norm of assertion, but the ideal norm that we would follow if we were not using the heuristics of social cognition to communicate. To study the actual norms of human communication is to understand what social problem they are solving and how established mechanisms of social cognition can solve it.

Talk of authority and assertion immediately brings to mind an issue which might initially seem like a problem for thinking about communication in terms of coordination: subordinating speech and uptake of speech. How can slurring or verbally oppressing someone be viewed as coordination? In response to this question, it is crucial to clarify that while some social norms produce a joint good — a more fair game in the soccer example above — from a scenario where acting out of immediate self-interest would not, this is not true for all social norms, e.g. footbinding in China (Bicchieri 2005:41). Social norms work by discounting the self-interests of an agent or group of agents in order to promote the interests of a collective or some other individuals. While this can lead to self-sacrifice for a social good, it can also lead straight to oppression where one group of individuals systematically benefits from the sacrifices of another. Norms of this more malevolent kind are behind the uptake of utterances of 'Whites only' in the 1960s segregated South, and the Jim Crow laws that enforced them. They illustrate just how drastically social norms can warp our social reality and what counts as coordination (McGowan 2012, this volume). In a society where norms of oppression are operative, the oppressed respond in a way that is not in their narrow self-interest, but is in the end in their self-interest given the sanctions that will be exacted upon them for non-conformity. The phenomenon of *illocutionary disablement* or *silencing* in feminist work on speech acts reflects the norms at play on the production side of communication (Fricker 2007; Langton & West 1999; MacKinnon 1993; Langton 1993:315). There, a speaker is unable to achieve a particular communicative end because hearers *mistakenly* deprive that speaker of the requisite authority. For example, a widespread belief among males that women's utterances of *no* in response to sexual advances are not to be trusted, along with authority concentrated among male speakers, will deprive women of the authority needed to successfully reject their advances by uttering *no*.

One point emphasized in this work is that speech which invokes a norm, thereby supports or sometimes creates that norm (McGowan 2012, this volume; Maitra 2012). Often this happens despite the norm being outside the conscious reach of the speaker and largely because of the way hearers construe the utterance. This kind of phenomena is yet another example where a Neo-Gricean perspective, focused exclusively on speaker's intentions, provides little insight. To see this, consider an example of subordinating speech where the speaker was oblivious of the means by which they achieved their end. In the 2015 Republican primary, Donald Trump said, in an interview with *Rolling Stone*, the following about Carly Fiorina: *Look at that face! Would anyone vote for that? Can you imagine that, the face of our next president?* This comment ap-

appropriately drew criticism, since it appears to assume that for a woman candidate, appearance is relevant to one's qualification for a job (Trump did not make similar comments about male candidates). This utterance subordinates women by relying on, and thereby sustaining, the expectation that a woman's appearance is the salient dimension along which to assess her value — the frequency with which he praises his wife and daughter's beauty compared to the infrequency with which he praises any of their other traits supports this explanation.¹⁶ Is it a consolation that Trump did not intend this act of subordination? This much was clear from his exchange with Fiorina in a primary debate. Fiorina said *I think women all over this country heard very clearly what Mr. Trump said*, and Trump replied *I think she's got a beautiful face and she's a beautiful woman*. If Trump was just a devious and conscious misogynist, he would not have replied this way. He would have actually said something that spoke to Fiorina's subtle but clear rejoinder.

There are two distinctive linguistic features of this example. First, the relevant social mechanisms for achieving subordination were not within reach of the speaker's intentions. Second, the utterance's reliance on a gender norm not only produced subordination but strengthened others capacity to subordinate by bringing the norm to salience (McGowan 2012, this volume; Maitra 2012). It is clear that one could explain these features in terms of norms and low-level social cognition, but far from clear that a Neo-Gricean perspective can say anything interesting about such cases. While the Neo-Gricean slant of contemporary philosophy of language might therefore lead some to ignore cases like this — Hornsby (2000) and Tirrell (2012) make this case — we hope to have shown in §3.1 that the stronger naturalistic commitments of philosophy of language pull in the other direction.¹⁷

While it is initially difficult to see how subordinating speech can fit into a picture where communication is thought of in terms of coordination, Bicchieri's (2005) revolutionary analysis of social norms shows how this model can actually implement many of the foundational insights emerging from that literature. Indeed, it provides a different way of making precise the reliance on social conventions in Austinian approaches, constitutive rules in Searlean or scorekeeping approaches or constitutive inferences in inferential role approaches. As suggested above, none of these mechanisms are quite at home in the domain where social norms operate. Further, this approach is better equipped to implement the insights of this work than the Neo-Gricean framework that focuses on communicative intentions and their recognition. We now turn to spelling out in more detail how this picture of social norms and the communicative function of speech acts can speak to the distinction between sentential and utterance force that figured so prominently in §2.

4 Modeling Utterance Force: conversational states and norms

The key idea from §3 is that that different utterances have different communicative functions, and these different functions should be thought of in terms of how they coordinate agents private commitments. In this section we use this idea to return another thread from §2: what is utterance force and how is it constrained by the semantics of sentential mood? We will propose that part of the communicative function of every

¹⁶Starr is indebted to conversations with Lucia Munguia about this example.

¹⁷Lepore & Stone (2014) argue similarly against Neo-Gricean approaches to metaphor, irony and sarcasm.

utterance is to affect the mutual assumptions of the conversationalists. This is the semantic contribution of mood, i.e. sentential force. The communicative function of various utterances diverge in how this mutual contribution is supposed to bear on the agent's private commitments. This is the force of an utterance. To formally model this element of discourse dynamics, we introduce conversational states. Like previous models, conversational states capture the kinematics of mutual assumptions. But unlike previous accounts, it also tracks the individual commitments of the conversationalists. In doing so, we can precisely specify not just sentential force, but utterance force. This allows us to capture how social norms mediate the relationship between the two. We will begin first (§4.1) with our model of how sentence mood updates the mutual assumptions of a conversation. In §4.2 we introduce conversational states and use them to analyze utterance force, highlighting the fact that this analysis, unlike the Neo-Gricean one, can allow for one complex utterance to have multiple forces.

4.1 Mutual Assumptions and Dynamic Meaning

Recent work on discourse dynamics and speech acts begins with the idea that each major sentence type has a characteristic effect on what's mutually assumed in a conversation (Roberts 1996; Portner 2004; Farkas & Bruce 2010; Murray 2010b; Starr 2010; Murray & Starr 2012). Following Sadock & Zwicky (1985) and König & Siemund (2007), we assume there are three major sentence types/moods in natural language:

- (2) a. Dale ate pie. (*Declarative*)
 b. $\triangleright D$
- (3) a. Did Dale eat pie? (*Interrogative*)
 b. $?D$
- (4) a. Dale, eat pie! (*Imperative*)
 b. $!D$

This work assumes that declaratives change the mutual information assumed in the conversation — the *common ground* — and interrogatives change the mutual questions guiding the conversation — the *questions under discussion*. Portner (2004) adds that imperatives change the 'To Do List', a record of which properties each conversationalist is committed to making true for the purposes of the conversation. On these accounts, it would be natural to model the mutual assumptions in a conversation A_C as a triple consisting of the mutually assumed information I_C (a set of possible worlds; Stalnaker 1978), the mutually adopted questions Q_C (a set of sets of possible worlds; Hamblin 1973) and the mutual To Do List T_C (a function from individuals to sets of properties; Portner 2004).¹⁸ One can then model the characteristic effect of each sentence type with a particular change to the corresponding element of $\langle I_C, Q_C, T_C \rangle$ (Portner 2004, this volume). We follow roughly this approach, with some crucial differences.¹⁹ One crucial difference is that we will assume that these effects are built in to the semantics

¹⁸A 'property' is the standard meaning of a predicate: a function from individuals to functions from worlds to truth-values.

¹⁹These differences are discussed in more detail in Starr (2013); Murray & Starr (2012). Some are aesthetic and some are substantive, but we will not belabor these issues here.

of sentence mood, a view we argue for at length in Murray & Starr (2012). Other accounts attempt to pragmatically infer them (Portner 2004) or treat them as non-compositional ‘discourse rules’ reminiscent of Stenius (1967).

The basic idea of our model is that declaratives update information (eliminate worlds), interrogatives introduce issues (alternative propositions) and imperatives introduce preferences for one alternative proposition over its negation. Fig. 4 depicts these three basic operations.²⁰ This idea is formally implemented by modeling the

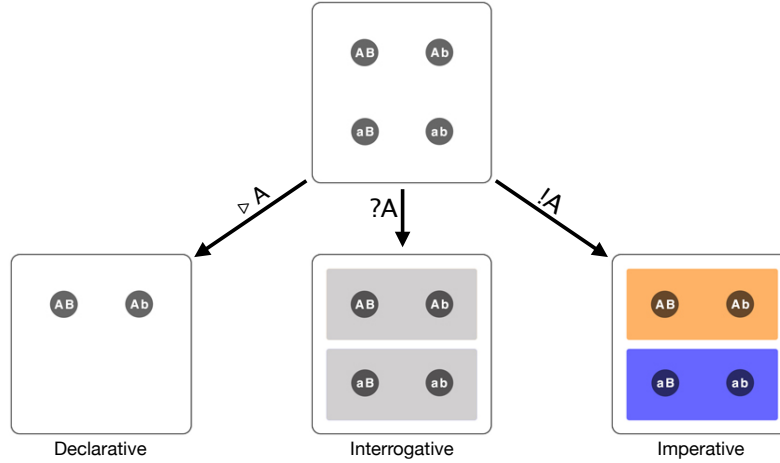


Figure 4: How Moods Update Mutual Assumptions

mutual assumptions in a conversation $A_C := \{r_0, \dots, r_n\}$ as a **preference state**: a set of preference relations r over propositions ($p \subseteq W$). Each r can simultaneously model (a) assuming the information that p ($\text{dom } r \cup \text{ran } r \subseteq p$); (b) questioning whether p ($\langle p, \emptyset \rangle, \langle \bar{p}, \emptyset \rangle \in r$); and (c) a preference for p over not- p ($\langle p, \bar{p} \rangle \in r$) (Starr 2013; Murray & Starr 2012). In simple cases, only a single preference relation will be in play: $A_C = \{r\}$. The capacity to put alternative competing preference relations into play is used in the analysis of disjunction, imperatives and modals (Starr 2013; Murray & Starr 2012; Starr 2016) — it is also useful for characterizing an agent who is merely considering ϕ rather than accepting it. The basic idea is a twist on alternative semantics for disjunction (e.g. Simons 2005), namely that they can introduce alternative competing informational and perspectives of what the conversational information, preferences and issues are. Below, this will be useful for modeling the idea that some speech acts merely involve the hearer *taking into consideration* information, issues or preferences proffered by the speaker. But, setting aside these complications, a simple declarative $\triangleright A$ will provide information by eliminating $\neg A$ -worlds from the propositions in r , a simple interrogative $?A$ will introduce alternatives (propositions) by ranking both the A -worlds and the $\neg A$ -worlds over the empty set, and a simple imperative $!A$ will introduce a preference by ranking the A -worlds over the $\neg A$ -worlds. While this specifies the core semantic contribution of sentential mood, one more resource is necessary for

²⁰In the diagram, the points are worlds and the letters indicate which atomics are true at that world, with a capital letter indicating truth and a lowercase indicating falsity. Warm colors indicate the preferred alternative, while that colors complimenting cold color indicates the dispreferred alternative.

fully capturing the meaning of mood.

In our previous work (Murray & Starr 2012; Murray 2010b), we also motivated keeping track of the propositions that are at-issue, or under discussion, in the conversation. This allows us to model scenarios in which the conversationalists are mutually considering a certain proposition without mutually assuming that it is true. This is a key component of Murray's (2010b) analysis of evidentials and not-at-issue assertion. Further, we take the felicity of propositional anaphors such as *That*, *Yes* and *No* to be evidence that the retrieved proposition is in D . But, for now, we will simply say that these **propositions under discussion** D form an ordered list of propositions $\langle A_0, \dots, A_n \rangle$.²¹ While this element of the model is crucial for a number of semantic and pragmatic phenomena, it will not feature essentially in what follows. The general idea here is what's important: conversationalists track the mutual information, issues and preferences encoded in A_C , as well as the propositions to which the agents are attending D .²²

Work on discourse dynamics has been divided about the nature of linguistic meaning. Advocates of **dynamic semantics** have maintained that the update effect of a sentence on A_C is its compositional meaning (Heim 1982; Groenendijk & Stokhof 1991; Groenendijk *et al.* 1996). Advocates of a static semantics instead maintain that the update effect of a sentence on A_C is either a pragmatic effect (Stalnaker 1978; Portner 2004), or a clause-level convention that is distinct from a sentence's compositional meaning (Portner 2012; Roberts 2012). Our previous work (Murray & Starr 2012; Murray 2010b, 2014; Starr 2010, 2013) offers arguments in favor of the dynamic approach, and so we will assume it here. We will, however, take some care in later sections to consider whether one has to embrace the dynamic semantics in order to accept our analysis of utterance force. In the present setting, assuming that sentence meanings are dynamic comes to this: they specify how, given an arbitrary starting A_C and D , a given sentence ϕ will change A_C and D .

Formally, a sentence meaning $[\phi]$ is a function from one $\langle A_C, D \rangle$ to another. Using the notation of update semantics (Groenendijk *et al.* 1996; Veltman 1996), we will write $\langle A_C, D \rangle[\phi]$ to indicate the result of updating $\langle A_C, D \rangle$ with ϕ . The applications and system described here will be limited to a simplified logical language. A sentence is built by taking an atomic propositional phrase A, B, C, A_0, \dots and marking it for mood: $\triangleright A$ (declarative), $!A$ (imperative) and $?A$ (interrogative). We specify the exact meanings of these sentences in Murray & Starr (2012); Starr (2010), but the pictures will suffice for our purposes here. To say that the meaning of ϕ is an update function on the mutual assumptions is to say that all communicative utterances of that sentence have the communicative function of updating the mutual assumptions in that way. This is

²¹ D is reminiscent of Farkas & Bruce's (2010: 86) *Table* of a conversation, but there are important differences. Farkas & Bruce (2010: 86) use the *Table* as a sort of 'buffer zone' to model the contributions of all matrix clauses, which can then be shifted to the common ground or rejected. Our D is limited to propositions, and we allow non-matrix clauses, for example the complements of propositional attitude verbs and the scope of evidential operators, to add propositions to D . Furthermore, we do not assume that the goal of adding a proposition to D is to eventually add it to the common ground, and we do not assume that a proposition can only get in to the common ground via that table, crucially for Murray (2010b). The *Table* of Farkas & Bruce (2010: 86) therefore plays a rather different theoretical role, and future work is needed to see how to integrate these two frameworks and the complimentary data they cover.

²²In a more comprehensive formulation we would actually allow for one D for each $r \in A_C$. This would allow disjunctions to introduce two competing lists of at-issue propositions. Since we treat *Yes* and *No* as propositional anaphors that pick up on propositions in D , this makes importantly different predictions for the answers licensed by $?A \vee ?B$ and $?(A \vee B)$.

our semantic account of sentential mood. Our pragmatic account of utterance force requires saying how an utterance may serve the function of making certain private individual commitments. As discussed in §2.1, this division of semantic and pragmatic labor is essential to explain how sentence mood constrains, but does not determine the force of an utterance. But as discussed in §2.2 existing discourse dynamic models are not able to capture utterance force because they are, by their nature, constrained to modeling the mutual assumptions at play in discourse. Our notion of a conversational state will relax this constraint, while preserving the insights of previous work.

4.2 Conversational States: a model of utterance force

While a sentence updates the mutual assumptions $\langle A_C, D \rangle$, this does not capture the communicative function of an utterance. Following §3.1, we assume that one can capture utterance force by specifying how the utterance aims to bear on the agents' private commitments. To track this dimension our formal model of a conversation needs to be expanded beyond $\langle A_C, D \rangle$ to capture the dynamics of private commitments. Towards this, we proposed the concept of a **conversational state** $c = \langle A_S, \langle A_C, D \rangle, A_H \rangle$, depicted in Figure 5. Formally, A_S and A_H have the same structure as A_C : they are all ‘preference

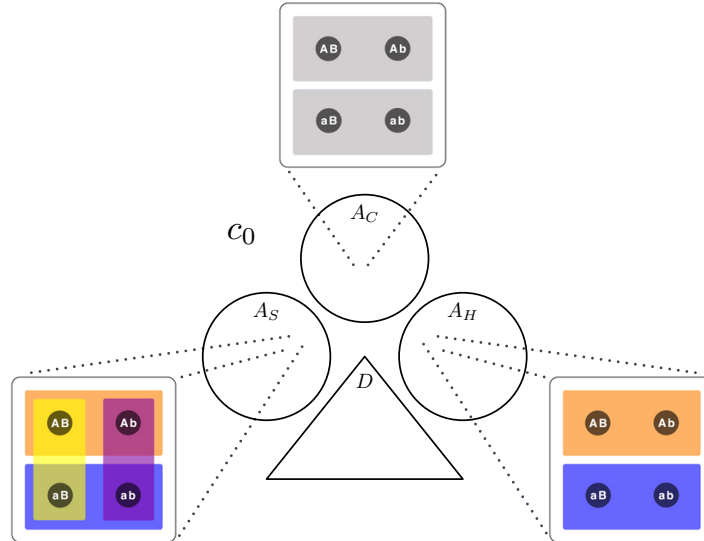


Figure 5: A conversational state c_0

states’ in the sense defined in §4.1. However, they have a crucially different application. A_S models the speaker’s private commitments, i.e. the information, questions and preferences to which they are genuinely committed. So unlike Hamblin (1971)’s *commitment slates*, A_S and A_H track each participants *private* commitments. This difference is essential to distinguish the semantic effects an utterance has on the mutual commitments from the pragmatic effects it aims to have on private commitments.

In our model, a speech act has two essential components: **sentential force**, a semantically determined update effect on $\langle A_C, D \rangle$ and **utterance force**, a non-semantically de-

terminated effect on A_S and/or A_H . Figure 6 depicts this schematically. This formalism

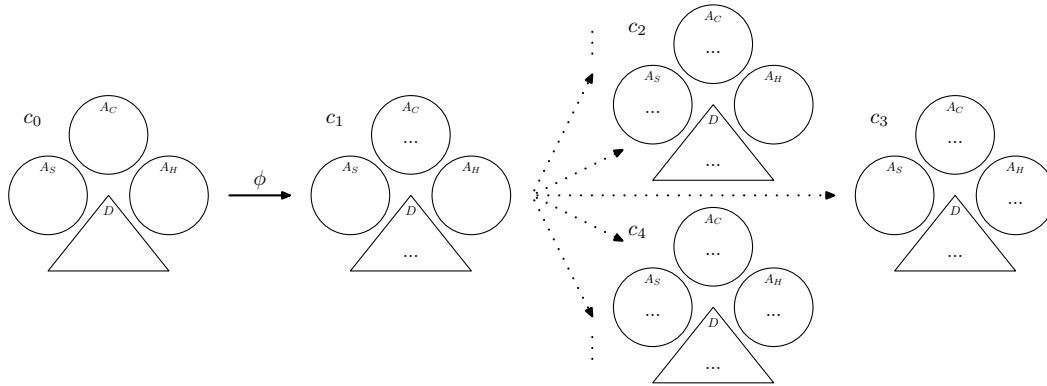


Figure 6: Semantic contribution and possible forces

allows one to systematically investigate the relationship between these two processes. The semantic effect of a simple declarative sentence $\triangleright p$ is depicted in Figure 7: it adds the proposition that p to A_C and also draws attention to that proposition, thus adding it to D . The communicative function of such an update can vary widely and may theo-

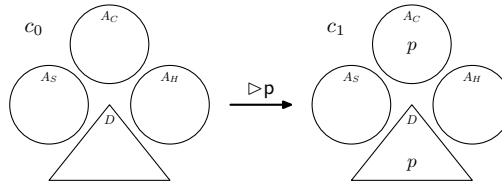


Figure 7: Semantics for a declarative sentence

retically involve arriving at any of the states after c_1 depicted in Figure 8. These states

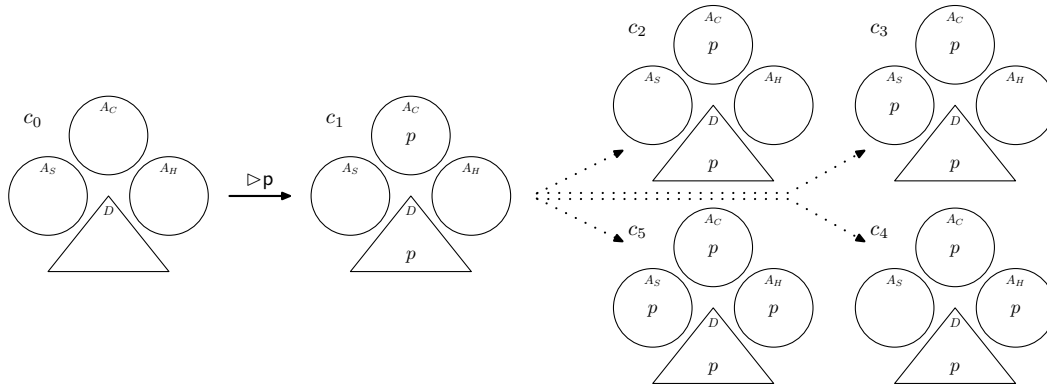


Figure 8: Possible forces of an utterance of a declarative

differ from c_1 only by the speaker or hearer accepting or rejecting the change induced

by the sentence in the mutual assumptions.²³ On our approach, difference forces correspond to the stable, i.e. coordinating, ways agents can use public commitments to express and influence their private commitments. For a given utterance of a sentence ϕ , this can be done by considering all conversational states where ϕ has had its semantic effect, and that effect has also been accepted in A_S and A_H . One must then ask whether these configurations are stable states, i.e. repeatable coordinations. Consider, for example, states $c_2 - c_5$. State c_2 represents an utterance where neither speaker nor hearer come to be committed to the information carried by the declarative. Are there circumstances where this outcome would be of sufficient value to the agents that they would attempt to replicate successful utterances in the past that brought about c_2 ? This is a big question, but we can only speculate that some dimensions of saving face, humor, sarcasm and pretense fit this mold.²⁴ The state c_4 represents an utterance where the speaker has not committed to the information, but the hearer has. This utterance is a lie. While states like c_4 can come to exist, they will never serve a communicative function and will never therefore count as an ‘utterance force’ — lies are not the kinds of things which both speaker and hearer collaboratively reproduce because they worked in the past. Other theories like Searle (1969) and Bach & Harnish (1979) don’t classify lies as a possible utterance force, but they do not say exactly why. Our story about utterance force as communicative function captures this elegantly.

State c_3 could be used to capture an utterance where a speaker sincerely makes certain information mutual, not with the aim to influence a clearly incredulous hearer, but to enter it into the ‘social memory’ that they have put this information out there. Due to the role of reputation in human communication, it seems likely that such a conversational move could achieve coordination of a sort and thereby acquire a communicative function. By contrast c_5 takes little imagination. It captures something like what we call assertion, and its communicative function is the transmission of information in a way that is sensitive to social power.

This brief illustration shows how our model allows one to distinguish the possible forces of different utterances by articulating different conversational states, and investigating the coordination function those states might serve. To show that a particular utterance has given utterance force requires much more than we’ve done here. It not only involves showing how an utterance could coordinate the agents, it requires showing that utterances with that function are reproduced in the population of language users. This is a rather expansive project which will have to draw on techniques from social psychology and behavioral economics. It will also involve specifying in detail the social norms that are responsible for bringing about these conversational states. We cannot even begin to carry out this project here. But we can illustrate it further by working a couple of examples and contrasting it with Neo-Gricean analyses.

²³There may be yet further conversational states where the speaker or hearer merely considers rather than rejects or accepts the change induced in the mutual assumptions. This can be modeled in our formalism by taking the preference state modeling the agent’s private commitments $A_X = \{r\}$ and forming the union of that with the result of updating with $\triangleright p$: $\{r\} \cup \{r\}[\triangleright p]$. Intuitively this captures the idea that the information that p is competing to be among X ’s beliefs.

²⁴It is worth highlighting that our model only captures the content, and not the affective or phenomenological impact of an utterance. We regard it as an interesting open question whether these are the kinds of effects that count as solutions to coordination problems.

4.3 Application: declarative and imperative utterances

Consider an utterance of *Cooper likes jelly donuts* by Norma, the waitress and owner of the Double R Diner where Cooper frequently dines. She utters this declarative sentence to Shelly who has just taken a maple donut to Cooper.

- (5) a. *Norma*: Cooper likes jelly donuts.
- b. *Shelly*: Oh, I see.

This utterance has assertive force since it aims to coordinate the actions and beliefs of two agents by having their beliefs match. This is a persistent and common process, and can be straightforwardly explained in terms social norms activated by Shelly and Norma's relationship type (employee-boss), joint activity (serving customers) and common ground (Shelly just gave Cooper a maple donut). These norms will involve self-fulfilling expectations the conversationalists form about how they should respond to this utterance in these circumstances.

(6) *Genesis of Assertive Force*

- a. *Semantics*: *S* made the information that Cooper likes jelly donuts mutually assumed.
- b. *Speaker Expectation*: It's expected that *S* is privately committed to the information *S* has made mutual.
- c. *Hearer Expectation*: It's expected that *H* privately commits to information that is made mutual before them by an authority.

(7) *Goal of Assertive Act*

- a. *S* is privately committed to the information that *S* made mutual
- b. *H* is privately committed to the information that *S* made mutual

An assertion would still have been performed if Shelly responded *No, Cooper's gotten sick of those*. In this case, the assertion simply fails to achieve part of its purpose: Shelly would not be privately committed to the content of Norma's assertion. Indeed, depending on the exact nature of their social relationship, Norma, with acknowledgment, might also give up her commitment to it. In either case there is a similar story to tell: utterances and social context conspire to generate particular expectations, and the agents act so as to conform to these expectations. There is much work left to be done here to fully specify the content of the operative norms, and to understand their psychological underpinnings. But as a sketch, this provides a direction for such further enquiry to pursue.

An imperative utterance by Norma to Shelly in the same circumstances of *Get a jelly donut!* would have a communicative function that one might call a *command*. It is expected that Shelly will privately adopt the preference this sentence makes mutual, and it is expected that this preference reflects Norma's own practical ends. This would coordinate Norma and Shelley's interests in achieving their joint activity. Wherever there are practical authorities, there will be communicative exchanges like these. But as authority is relaxed, interactions like these become more nuanced. The fact that doing something for someone often incurs a cost to one's perceived autonomy/authority can incentivize the inclusion of politeness particles in the signal to balance this cost. These

mechanisms of face-maintenance are well-studied and nicely amenable to the style of analysis sketched here (Goffman 1959; Brown & Levinson 1987; Clark 2012).

Note that on this approach a hybrid utterance like *I'll get Cooper some fresh cherry pie, but don't tell him it's coming* and *Take off your shoes and try a taco!* can be smoothly analyzed. Norms specify whether an agent is committed to a particular change to the mutual assumptions. These speech acts involve two such changes. In the first case this means that one can have a single norm apply to both changes despite the fact that they induce different kinds of changes. In the second case, this means that the two changes can be subjected to different norms, one which calls for uptake by the hearer and another that merely aims to activate their deliberation about a given action. This flexibility is a crucial advantage of the account articulated here over the Neo-Gricean and Conversational Tone analyses.

Not all communicative exchanges rely on authority. Consider the same imperative sentence *Get a jelly donut!* inscribed on a little sign placed on the bar where patrons eat. These utterances do not impose a preference from a place of authority. It works by merely activating the hearer's imagination of getting a jelly donut, which may activate their own latent desires for a jelly donut. If they did not succeed in doing so often enough, they would not be such a persistent form of advertisement: they would be replaced by utterances that worked better. This example highlights not only that social norms are not essential for generating utterance force, but that the generation of utterance force relies on rather low-level psychological facts about how humans work. The fact that imagining *X* may activate actual beliefs or desires about *X*, and the fact that one is more likely to act on desires that are immediately activated are central to understanding this utterance. This highlights how many exciting advances in psychology have immediate bearing on the study of language use. Indeed, it suggests that the experimental methods used to make those advances will be indispensable in the study of utterance force as well.

5 Conclusion: a new analysis of speech acts

On our view, the conventional meaning of a sentence constrains the force of an utterance by encoding a procedure for updating the mutual assumptions. But the particular force of an utterance concerns how that utterance fits into the agent's social lives. To give an analysis of utterance force, one must show how an utterance resulting in particular private commitments or psychological states could achieve coordination. Further, to be of interest, one must show that this is a stable and reproduced way of coordinating. While the semantics only determines what the words do to our mutual assumptions, this update crucially constrains which private commitments can result from the utterance. In these explanations of utterance force, we have downplayed the role of social conventions, constitutive rules and communicative intentions. But we do not mean to say that these mechanisms are not crucial tools for understanding language use. In interactions like marriages and promises, it is likely social conventions that coordinate us rather than social norms — and in many cases it may be a surprisingly vast array of norms and conventions. Further, we agree that there is good evidence for thinking that communicative intentions are involved in establishing novel ways of manipulating our mutual attitudes (Scott-Phillips *et al.* 2012) and thus expanding the range of our semantic conventions. However, we aim to have cast light on the most

elusive but perhaps this most efficacious mechanism of coordination relevant to language use: social norms. It is only with recent contributions like Bicchieri (2005) to our understanding of norms, conventions and the like, that we are able to see which tools are best-suited to a theory of speech acts.

In conclusion it may be helpful to explicitly set our view against those that we began with. We are able to join Austin (1962) and Searle (1969) in saying that the force of an utterance is tied to the kind of social act it constitutes. We were also able to join Searle (1968) in holding that conventional meaning is not force-neutral. But our new way of capturing these insights allowed us to reconcile them with the contemporary methodology of semantics and pragmatics, as well as the focus on conflict and stability in the social sciences. Like Neo-Griceans, we have adopted a theory where the semantics of a sentence constrains, but does not determine the force of a speech act. However, we have grounded that theory in a radically different theory of communication. This theory of communication focuses on how language enables coordination that allows us to do things together in the real world that we would otherwise be unable to do. By contrast, the Neo-Gricean theory focuses only on mutually entertaining certain contents — leaving it entirely open *why* agents would do that and how they do it in the face of conflicting interests. Where they focus on understanding each other's communicative intentions, we focus on the coordination-driven stability of certain utterance types. The Neo-Gricean theory ably systematizes the daunting complexity of our ordinary thought and talk about speech acts, but our theory has left that project to the side. We seek to explain how certain patterns of verbal interaction are valuable, and how they persist in seemingly hostile conditions. Perhaps we will find that the latter approach vindicates common sense, but that issue of reduction is not central to the study of speech acts.

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