

PRAGMATIC LICENSING OF REDUNDANT VPC'S

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Abstract: An initial investigation is made into a previously unanalyzed subclass of verb-particle constructions in which the action of the verb entails the result state conveyed by the particle. These *redundant* VPC's are shown to require a licensing mechanism beyond that available through focus, implicature or informativity alone but which may be found in conversational relevance as defined by van Rooy (2001) in terms of utility and speakers' strategy in asserting common ground.

0. Introduction.

This paper is an initial investigation into a particular sub-class of verb particle constructions (VPC's) which I shall refer to as *redundant VPC's*.¹ There is now considerable literature on VPC's, most of which focuses either on VPC syntax (*cf* den Dikken, 1995; Farrell, 2005; Guéron, 1987; Kayne, 1985; Svenonius, 1994; *inter alia*) or on VPC semantics (*cf* Bannard *et al*, 2003; Bannard, 2002; Bolinger, 1971; Dixon, 1982; Fraser, 1976; Giddings, 2001; *inter alia*). Following the predominant terminology, I shall classify *up* in (1a) a particle as opposed to the preposition in (1b).

- 1a. He ran up the flag.
- b. He ran up the hill.

This distinction is based on well-established tests such as the ability to invert the DP complement of a particle but not of a preposition as in *He ran the flag up.* versus **He ran the hill up.*; and the ability to prepose a prepositional phrase but not a particle phrase as in *Up the hill he ran.* versus **Up the flag he ran.* The meaning associated with the majority of VPC's is distinct from that associated with just the verb in the absence of the particle, as shown in (2).

- 2a. He shot down the plane.
- b. He shot the plane.

¹ This is the author's designation given the lack of any other known to be in use. In a Powerpoint presentation of 2002, Baldwin notes "particles can occur redundantly with achievement (e.g. *win out, find out*) and accomplishment (e.g. *cool down, heal up*) verbs". He does not, however, give any further elaboration or analysis of such VPC's as a distinct sub-class.

Thus (2a) necessarily entails that the plane came down as a result of being shot, while (2b) only entails that the plane was shot at. Much attention has been given to determining the degree to which the semantics of a VPC may be compositional or idiomatic (*cf* Patrick and Fletcher, 2006; Bannard *et al*, 2003; *inter alia*). However, little if any consideration has been given to VPC's in which the meaning (or at least a possible meaning) of the verb entails the meaning expressed by the VPC itself as found in (3).

- 3a. He opened a can. *vs* He opened up a can.
- b. He sent the letters. *vs* He sent the letters off.
- c. He picked a card. *vs* He picked out a card.

In each of these examples the action of the verb entails the result state conveyed by the particle, thus rendering the particle redundant. While it may be argued that contextual nuances might render subtle distinctions (*e.g.* saying *opened up* to indicate fully opened, as opposed to just saying *opened* which doesn't specify a degree of openness); there are many circumstances in which such redundant VPC's are used felicitously without any apparent semantic distinction to make using the verb by itself infelicitous. Furthermore, in these cases it is a contradiction to use the verb alone and then deny the result state conveyed by the particle as seen in (4).

- 4. ?? He sent the letters but he didn't send them off.

Thus using a redundant VPC would seem to be a flagrant violation of one or another of the Gricean maxims.

The question raised is then, what licenses the use of redundant VPC's? In pursuing an answer, I will construe the optionality of the particle to indicate that something of a pragmatic nature is at work underlyingly. In §1 some background on the nature and role of particles is provided. Also the preliminary results of some corpus analyses are given which show redundant VPC's as a construction to be pervasive as well as in some respects productive. Several related factors including conversational implicature, sentential focus and informativity are examined in §2 with the conclusion that both individually and collectively these factors are insufficient to account for the full range of contexts in which redundant VPC's are found. A more adequate and comprehensive analysis is explicated in §3. Adopting the notions of van Rooy (2001) regarding conversational relevance defined in terms of utility and speakers' strategy in asserting common ground, I show how the use of redundant VPC's is licensed by the need for speakers to influence

the beliefs and/or preferences of their interlocutors as revealed through Game Theory. Finally the conclusions of these investigations and some implications for further research are outlined in §4.

1. Nature and role of particles in redundant VPC's.

In the absence of any (known) previous treatment concerning redundant VPC's, some effort to minimally quantify the data is in order. Some measures of interest include the number of particles involved (presumably a subset of particles occurring in VPC's generally), the distribution of the particles, syntactic features such as transitivity and word order, semantic features especially of the particle, range of use in discourse, etc. Appendix I contains a list of 38 redundant VPC's compiled by searching the *Cambridge International Dictionary of Phrasal Verbs* via the *Cambridge Dictionaries Online* website (<http://www.dictionary.cambridge.org/>). This is by no means an exhaustive compilation but does appear to constitute a representative cross-section of redundant VPC's in English.

1.1 *Distribution and syntactic features of redundant VPC's.*

Searches were conducted² using the following 11 particles *ahead, around, away, back, down, in, off, out, over, through, and up* which Bannard (2002) identifies as attested to occur in the *Wall Street Journal*. Examples of redundant VPC's were found for seven of these particles: 1 for *around*, 7 for *down*, 1 for *in*, 2 for *off*, 12 for *out*, 3 for *over*, and 11 for *up*. In addition 1 redundant VPC was found for *by*³. It is worth noting some statistical comparisons between the redundant VPC's and VPC's in general as reported by Bannard (2002). The distribution of redundant VPC's parallels that for VPC's generally in the *WSJ*. Three particles accounting for 75% of the redundant VPC's (*down, out and up*) are among the four particles (the fourth being *off*) comprising the greatest number of VPC tokens in the *WSJ*. Bannard (2002) also reports two-thirds of the particles in the *WSJ* to occur in transitive VPC's and the balance in intransitive VPC's. In comparison, 35 of the 38 redundant VPC's can be used transitively (15 exclusively so), and 23 can be used intransitively (3 exclusively so).

Following VPC's in general, the redundant VPC's exhibit an identical pattern with regard to other syntactic constraints such as linear word-order restrictions. Besides the inability to

² The results were then manually examined as the Cambridge site does not identify redundant VPC's as such.

³ Not attested by Bannard (2002) as a part of a VPC occurring in the *WSJ*.

prepose particle phrases illustrated in §0, Farrell (2005) identifies four other restrictions depicted in (5) with examples using redundant VPC's.

- 5a. *We sent the packages to the customers off.
- b. *They sat after the intermission down.
- c. *He finally screamed that something was wrong out.
- d. *She finished up it.

A particle cannot immediately follow a PP complement, an adjunct phrase, or a CP complement as shown in (5a-c), respectively. Finally, a particle cannot precede a DP when pronominalized and unstressed as in (5d).

1.2 Semantic features of redundant VPC's.

The redundant VPC's also exhibit the same semantic continuum from fully compositional to fully idiomatic as found in VPC's generally. Baldwin (2002) categorizes the aspectual contribution particles make to the event structure of a verb phrase based on whether the verb and particle each have a literal or metaphorical construal. The four combinations cited in Baldwin (2002) are repeated in Table 1 together with an additional redundant VPC example for each.

Verb	Particle	VPC Example	Redundant VPC
Literal	Literal	take mug out of box	cover over a hole
Metaphorical	Literal	fish out the ring	pass an opportunity by
Literal	Metaphorical	hand out the brochures	meet up with friends
Metaphorical	Metaphorical	pick out a name	pick out a name

(Table 1)

Giddings (2001) asserts that a basic function of particles in English is to turn atelic events into telic ones by adding an endpoint as illustrated by *she pulled my hair out*. This holds true for all but 7 of the redundant VPC's. Under the Vendlerian (1967) typology of event structures, with the exception of *lose out*, *finish up* and *find out* in which both the verb alone and the VPC are achievements (telic), 31 of the other verbs in the redundant VPC's are activities (atelic) turned into either achievements or accomplishments (telic) depending on whether the VPC is punctual or durative, respectively. In the case of *meet up*, *cover over*, *spin around* and *pass by* both the verb alone and the VPC are activities as the particle fails to convey the requisite endpoint to make the event of the VPC telic. The preponderance for redundant VPC's to be telic (as is also true of VPC's in general) suggests that providing focus on an end-state is a central aspect of their discourse function. This idea is examined more fully in §2.

1.3 Discourse context/usage of redundant VPC's.

Ascertaining the extent to which the discourse usage and/or context of redundant VPC's may be similar to or deviate from VPC's in general is potentially a formidable task. As a first step, web searches were conducted using Google on about a third of the redundant VPC's (including at least one token for each of the eight particles). As expected each search generated hundreds of thousands (or more) of hits – not all of which qualified as redundant VPC's for a variety of reasons. Some of the redundant VPC's have other non-redundant uses. For example when *pick out* is used to mean 'choose' it is redundant; however it is not when used to mean 'detect' or 'identify' as in *It took a specialist to pick out the patient's symptoms*. Other VPC's such as *shoot off* have additional, non-redundant, idiomatic meanings as in *He's shooting off his mouth again*. In still other cases the (intended) particle turned out to be a preposition as in *It rolled over the edge* or *It spun around the corner*. Despite these and other non-applicable results, the samples in (6) indicate the wide range of discourse usage for redundant VPC's.

- 6a. The car occupants were incredibly lucky they actually wedged into the post. If the post had not been there they would have probably rolled over several times onto the busy road.⁴
- b. Rolling over onto my knees, I searched for injuries only to find a headache and a slashed elbow.⁵
- c. Following is a quick primer on the basics of picking out the right PC, from the name on the box to the amount of RAM inside.⁶
- d. Wendi - thought you might be interested... had surgery last Tuesday, healing so far is going well, the preparation for the operation tape (surgery healing program) was excellent so far so good on the healing up process.⁷
- e. In current designs, a metallic sink absorbs the heat generated by currents in the microchip and is cooled by mechanical fans. But as engineers squeeze more functionality out of smaller chips, they are finding that the fans cannot cool down the chips fast enough or are too big for the device.⁸

⁴ www.kiwiblog.co.nz/archives/008375.html

⁵ www.anchoragepress.com/archives/documentdf30.html

⁶ www.entrepreneur.com/mag/article/0,1539,288727,00.html

⁷ wendi.com/html/testimonials.html

⁸ www.newscientist.com/article.ns?id=dn4816

- f. When a liquid is cooled down, it can be taken past its melting point without a phase change occurring.⁹
- g. Please contact us before you send off any deposit to make sure that we still have availability. Always indicate your name, address, tel. # and wedding date with any deposit that you are sending.¹⁰
- h. Practically speaking it is advisable to send off your remaining balance while we are working on your gown. This way it will arrive in time and we can send off your gown without having to wait for your balance. We will not send any gowns without having received the full balance.¹¹
- i. Have you sent off your application form yet?¹²
- j. If it's space and a place to breathe then the North York Moors is a grand place to be - open your arms wide, breathe in the clear air, stretch as far as you can, survey the vast stretch of purple heathered moorland.¹³
- k. Breathe in the fresh Trentino air with us!¹⁴
- l. Actor and noted hemp enthusiast Woody Harrelson opened an oxygen bar in Hollywood a few years ago, where you pay a premium to breathe in the good stuff. Breathing pure oxygen creates an abundance of free radicals.¹⁵

Every common sentence type including declaratives (6e), interrogatives (6i), imperatives (6j), and exclamatives (6k) is represented. There are examples in both the active voice (6a) and passive voice (6f). Various gerundival forms exist including nominal phrases (6c), adjectival phrases (6d), and adverbial phrases (6b). In (6h) and (6l) redundant VPC's head infinitival complements. These searches further reveal that it is not uncommon to find the same verb used both alone and as part of a redundant VPC in the same sentence or context as found in (6d, 6e, 6g, 6h, 6j and 6l). The numerous discourse contexts in which redundant VPC's appear are also one way of gauging their productivity. Another indicator of productivity is the extent to which additional redundant VPC's are generated by combining a given particle with synonyms of the verb. For instance *out* readily combines with synonyms of *shout/scream* such as *call*, *cry*, *holler*,

⁹ www.ucalgary.ca/~kuldrew/cryo_course/cryo_chap9_2.html

¹⁰ www.fairyfashion.de/ordering.html

¹¹ www.fairyfashion.de/ordering.html

¹² www.learnenglish.org.uk/grammar/archive/phrasal_verbs_send.html

¹³ travelaccommodation.co.uk/

¹⁴ www.trentino.to/home/spezialangebot.html?_lang=en&_mnuid=268262

¹⁵ www.livescience.com/humanbiology/060418_bad_oxygen.html

roar, yell, etc. or with synonyms of *leak/ooze/spurt* such as *burst, drip, gush, stream, spew, etc.* to also form redundant VPC's. Thus, while admittedly cursory at best, there is indication that redundant VPC's are not any more limited in their range of use or productivity than VPC's generally.

To summarize, while redundant VPC's involve a subset of the particles found in VPC's generally, both pattern identically in nearly every other regard including distribution by particle, transitivity ratio, word-order constraints, semantic compositionality, telicity, range of discourse contexts and productivity. The single distinguishing factor is precisely what characterizes a redundant VPC: the action denoted by the verb entails the result state conveyed by the particle.

2. Contributing factors in licensing redundant VPC's.

In light of the wide array of discourse contexts in which redundant VPC's are found, it is reasonable to expect more than a single mechanism to have a role in accounting for their felicitous use. Moreover, the lack of any marked construal associated with typical uses of redundant VCP's together with the syntactic/semantic optionality of the particle indicate the relevant licensing factors to be pragmatic in nature. From a strictly Gricean perspective, being intentionally redundant is irrational (or at least not fully coöperative) by violating the maxim of quantity: 1) make your contribution as informative as required 2) do not make your contribution more informative than is required. Perhaps then some combination of factors such as conversational implicature, sentential focus, or informativity which have been shown to license other forms of redundancy can account for the felicitous use of redundant VCP's.

2.1 Conversational implicature licensing redundant VPC's.

Conversational implicature is rooted in the Gricean principle that *ceteris paribus* speakers expend as little effort as possible to express what they want to say and therefore use the simplest form available (Grice, 1975). A classic example is the *pale red* versus *pink* distinction first observed by Householder (1971). The phrase *pale red* is decidedly marked due to the fact that English has the single term *pink* meaning 'pale red'. Consequently a speaker uttering *pale red* conversationally implicates that using *pink* instead would be infelicitous. Logically then such an implicature mechanism should be able to license using a redundant VPC on the condition that omitting the redundant particle would be infelicitous. In reconsidering the 38 examples in

Appendix I, two circumstances could plausibly meet this condition. The first involves VPC's comprised of verbs like *open*, *clean* or *wash* with which a partial degree of completeness may be felicitously associated with the action. In these cases inclusion of the particle *up* can convey the action to be fully complete as opposed to only partially complete. The second involves VPC's like *breathe in* or *swing out* in which the inclusion of the particle may serve to distinguish between two (or more) end states equally felicitous with the verb. Thus to say *He swung the bat out.* is arguably redundant given the relative implausibility of swinging a bat *in*. Conversely, a sign indicating *Door swings out.* is not redundant as it is equally plausible that a door might swing *in*. Neither of these circumstances, however, is sufficient to account for all uses of redundant VPC's. In particular implicature cannot license VPC's in which the action of the verb lacks felicitous association with a partial degree of completeness (*e.g. He shot his gun.* cannot be construed to mean 'he didn't shoot it fully off').

2.2 Sentential focus licensing redundant VPC's.

Sentential focus for purposes herein is inclusive of any focus defined within the domain of the sentence. Gundel and Fretheim (2001) subsume the various forms with which focus may be associated (*e.g. phrasal, constituent, particle, etc.*) under two categories: referential and relational. Referential focus includes that associated with any material (whether given or new) called to an addressee's attention. In typically evoking alternatives, this form of focus is also referred to as contrastive focus. The licensing of redundant VPC's in which the particle identifies one end state in contrast to another was addressed in §2.1 in the context of conversational implicature. Relational focus includes that associated with anything predicated of the topic of the utterance. In typically reflecting information status (*e.g. topic shift/update*) this form of focus is also referred to as informational focus.

An informational focus mechanism should be able to license using a redundant VPC on the condition that the redundant particle felicitously conveys information predicated of the topic. As described in §1.2, there is a preponderance for VPC's, including redundant ones, to be telic precisely to the extent the particle identifies an end state for the action denoted by the verb. The sample provided in (6h), repeated in (7) below, illustrates a context in which the end state of the verb conveyed by the redundant particle is predicated of the topic and so inclusion of the particle is licensed via association with focus.

7. Practically speaking it is advisable to send off your remaining balance while we are working on your gown. This way it will arrive in time and we can send off your gown without having to wait for your balance. We will not send any gowns without having received the full balance.

In (7) the topic of the first sentence (a cleft structure) may arguably be paraphrased as ‘the sending of the balance’ which is predicated to be ‘advisable while we are working on your gown’. In the VPC *send off* the particle conveys the result state in which the verb’s complement (*i.e.* object DP) is ‘on it’s way’. By inclusion of this particle, even though redundant, the result state is also predicated of the topic – that is, the balance be ‘on it’s way’ (while we are working on your gown). Similarly in the following coordinated sentence, the result state conveyed by *off* (‘on it’s way’) is also predicated of the gown in the topic of the second conjunct, ‘sending the gown’ (without having to wait for your balance). In both instances inclusion of the particle is licensed via association with focus.

Licensing of redundant VPC’s by informational focus falls short, however, in contexts such as (6c), repeated in (8) below, in which the result state conveyed by the particle is not predicated of the topic.

8. Following is a quick primer on the basics of picking out the right PC, from the name on the box to the amount of RAM inside.

In (8) the topic of the sentence is the ‘primer’. As the result state conveyed by the particle *out* is information not predicated of this topic, inclusion of the particle cannot be licensed via association with focus. Consequently, as with implicature, licensing via focus is also insufficient to account for all uses of redundant VPC’s.

2.3 Informativity licensing redundant VPC’s.

Informativity refers to the notion that modification of an argument is licensed only when it is *informative* in the discourse context. Goldberg & Ackerman (2001) argue that informativity is a general pragmatic requirement directly following from general conversational principles. They illustrate the requirement for adjectives to be informative with the examples in (9) taken from their examples (54).

- 9a. #Pat found some liquid water.
- b. #The freezer contained some cold ice.

They proceed to show how context can rescue such instances of redundant modification with the example in (10) taken from their example (55).

10. The cold ice felt good on the swelling.

The difference in (10) is that the adjective *cold* informs the addressee of the precise property of ice which is relevant in this context. The informativity of *cold* in this context licenses its use.

An informativity mechanism should then be able to license the use of a redundant VPC on the condition that the redundant particle is felicitously informative in the context. The sample provided in (6f), repeated in (11) below, depicts an event in which the end state of the verb conveyed by the particle is contextually informative and so inclusion of the particle is licensed via informativity.

11. When a liquid is cooled down, it can be taken past its melting point without a phase change occurring.

In (11) a ‘lower temperature’ is the end state conveyed by the particle *down* which informs the addressee of the precise property of a liquid needed in this context so ‘it can be taken past its melting point without a phase change occurring’.

Yet licensing redundant VPC’s by informativity comes up short in contexts such as (6a), repeated in (12) below, in which the result state conveyed by the particle is not contextually informative.

12. The car occupants were incredibly lucky they actually wedged into the post. If the post had not been there they would have probably rolled over several times onto the busy road.

In (12) the result state conveyed by the particle *over* is not any more informative in this context than the verb *rolled* itself. Thus inclusion of the particle cannot be licensed via informativity. Consequently, as with implicature and focus, licensing via informativity is also insufficient to account for all uses of redundant VPC’s.

In summary conversational implicature, informational focus and informativity are related factors which individually are able to license redundant VPC’s in certain restricted contexts. Licensing via implicature is the most restrictive in applying only to particles serving to distinguish among alternative end states. Licensing via focus is less restrictive in applying to any particles conveying information predicated of the topic. Licensing via informativity is the least restrictive in applying to any particles that are contextually informative. Nevertheless, collectively these mechanisms are still insufficient to account for the full range of contexts in

which redundant VPC's are found. What is needed is a mechanism that is more comprehensive while being less restrictive, although not so much so as to lack any demonstrable utility.

3. Redundant VPC's: a speaker strategy for aligning preferences via common ground

The licensing mechanisms discussed in §2 share the same perspective on redundant VPC's. The inclusion of an apparently redundant particle makes the speaker's contribution more informative than required, thereby violating the Gricean maxim of quantity. Each of them then attempts to resolve the violation by finding some further means by which the particle can be uniquely informative, but with restrictions that inevitably exclude some redundant VPC's. I propose that the solution to this dilemma lies not in coercing the particle to be non-redundant, but in justifying the particle as *conversationally relevant* in the van Rooyan sense of this term. In this way adhering to the maxim of relation (be relevant) makes the use of the particle 'meaningful' beyond its conventional contribution.

3.1 The van Rooyan notion of relevance in communicative acts

Following van Rooy (2003) language can be viewed as a multi-purpose instrument used in multi-agent situations in which the participants come with their own goals and preferences. Underlying the Gricean maxims is a *coöperative principle* which implicitly assumes the goals and preferences of interlocutors to be fully aligned. In reality they may coincide only in special cases. Language is most frequently used as an instrument to influence the behavior of others to the speaker's own advantage which, according to van Rooy, suggests that strategic considerations play a much more important role in language use than recognized by Grice. Understanding strategic decision making requires a theory of rational behavior like Game Theory according to which agents choose their actions by trying to maximize their expected payoffs as determined by their beliefs and preferences. In applying Game Theory to language, the relevance of a communicative act can be quantified in terms of *utility* defined as the difference between the expected payoff before and after the act. Under this approach to the relevance of speech acts Game Theory shows how assertion of common ground, even at the cost of being redundant, can still be a useful speaker strategy for influencing the addressee in order to align their beliefs and preferences.

3.2 Relevance in mixed-motive games.

Game Theory is a theory of decision making in which the agents or *players* interact in games of strategic form.¹⁶ These are *mixed-motive* games as the players' preferences for the outcome are neither identical nor diametrically opposed. Mixed-motive games may be played as either games of perfect information or as games of imperfect information (Bayesian games). Beliefs and preferences are common knowledge in games of perfect information, but not in games of imperfect information. The theory is based on the assumption that each player takes into account the knowledge and expectation of the other players.

3.2.1 Strategic games of perfect information.

A strategic game of perfect information is represented as a model $\langle N, (A_i), (U_i) \rangle$ of interactive decision making in which each player $i \in N$ simultaneously chooses a plan of action $a \in A$ depending on that player's preferences U_i while being uniformed at the time of choosing of the other players' choices. The following matrices depict two sample games.¹⁷

Game 1:	<table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td style="width: 30px;"></td> <td style="width: 30px;">c</td> <td style="width: 30px;">d</td> </tr> <tr> <td>a</td> <td>4,2</td> <td>0,0</td> </tr> <tr> <td>b</td> <td>0,4</td> <td>2,2</td> </tr> </table>		c	d	a	4,2	0,0	b	0,4	2,2
	c	d								
a	4,2	0,0								
b	0,4	2,2								

Game 2:	<table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td style="width: 30px;"></td> <td style="width: 30px;">c</td> <td style="width: 30px;">d</td> </tr> <tr> <td>a</td> <td>4,0</td> <td>0,2</td> </tr> <tr> <td>b</td> <td>0,2</td> <td>2,4</td> </tr> </table>		c	d	a	4,0	0,2	b	0,2	2,4
	c	d								
a	4,0	0,2								
b	0,2	2,4								

In both games $N = \{1,2\}$ where $A_1 = \{a,b\}$ is the row player and $A_2 = \{c,d\}$ is the column player. In each of these games it is optimal for player 1 to play a when player 2 plays c , but b when 2 plays d . What also must be taken into account is the common knowledge that player 2 strictly prefers c to d in the first game, but in the second game player 2 strictly prefers d to c .

Given that the actions chosen by the players depends on their preferences, it is well established in Game Theory that that they will each play their part of a *Nash equilibrium*. In strategic games the Nash equilibrium is a profile $a^* \in A (= \times_i A_i)$ of actions with the property that for every player $i \in N$ it holds that

$$U_i(a^*_{-i}, a^*_i) \geq U_i(a^*_{-i}, a_i) \text{ for all } a_i \in A_i$$

where profile $(a_{-i}, b) = (a_1, \dots, a_{i-1}, b, a_{i+1}, \dots, a_n)$. So for a^* to be a Nash equilibrium it must be the case that no action of player i can yield an outcome which is preferred over that generated by

¹⁶ This is in contrast to Decision Theory which is a theory of individual decision making in games of pure coördination or strict opposition.

¹⁷ These examples are the same as in van Rooy (2001).

choosing a^* , given that every other player j chooses his equilibrium action a_j . In other words, no player can profitably deviate given the actions of the other players.

While Game 1 and Game 2 have exactly one Nash equilibrium each, the two equilibria are not the same. In the first game the Nash equilibrium is the profile (a,c) , but in the second it is (b,d) . Thus, as noted by van Rooy (2001), knowledge of the preferences of *one* player can be crucial to determining for *both* players which action to choose. Communication is not critical in games with only one Nash equilibrium as each player is clear about what to do. However in games with more Nash equilibria, as shown in Game 3¹⁸, communication can be useful.

Game 3:

	c	d
a	1,2	0,1
b	0,1	2,3

Even though profile (a,c) is a Nash equilibrium in Game 3, both players would gain by playing the other one (b,d) . That is to say, communication can result in the choice of a profile optimal for all players when looked upon as individual decision makers. This type of solution is referred to as *Pareto optimal*.

3.2.2 Strategic games of imperfect information

In the sample games discussed so far every player knows the game s/he is playing (*i.e.* what the state of nature is) as well as the payoffs of the profiles of all the other players. In contrast to these, strategic games of imperfect information are ones in which players do not know the state of nature, what game s/he is playing. The ingredients of such Bayesian games are the same with the addition of a set of worlds Ω and a probability distribution over these worlds. In these games the payoffs of the profiles are referred to as *expected utilities*. As an illustration van Rooy (2001) offers the following scenario. Suppose that Game 1 is being played in w_1 while Game 2 is played in w_2 . Although the players do not know what the actual world is, it is commonly known to them that both worlds are equally likely to be played: $P(w_1) = P(w_2) = 1/2$. In this situation it is the *expected* payoffs and not the actual payoffs of either game that matter. For instance, using the payoffs of profiles (b,d) in w_1 and w_2 , the expected payoffs are $(1/2 \times 2 + 1/2 \times 2, 1/2 \times 2 + 1/2 \times 4) = (2,3)$.

¹⁸ Found in van Rooy (2001).

Using the same calculation for the remaining profiles generates a new Game 4¹⁹ as represented in the following matrix.

Game 4:

	c	d
a	4,1	0,1
b	0,3	2,3

In this case the expected utilities could be reduced to a single matrix because the same probability function is assumed for both players. There are some important differences between Game 4 and the games being played in either w_1 or w_2 . Not only are the payoffs different than in the original games, but the expected plays are different too because there are now two Nash equilibria instead of only one.

3.3 Using redundant VPC's in negotiating common ground.

In the Bayesian Game 4 it is still being assumed that preferences and beliefs of each player in each world are common knowledge. To more closely model actual language use, however, this assumption must be put aside. To illustrate van Rooy (2001) offers the following scenario. Suppose player 1 knows the state of nature is that w_1 is the actual world, represented as $P_1(w_1)=1$. Player 2 does not know what the state of nature is. Player 2 believes that either w_1 or w_2 might be the actual state, and thinks w_2 is more likely the case than w_1 , represented as $P_2(w_1) < P_2(w_2)$. As before, Game 1 is played in w_1 and Game 2 in w_2 . In this situation player 2 considers it better to play his part of the Nash equilibrium in w_2 , profile (b,d) , because this is also the Nash equilibrium in the Bayesian game. Given that player 1 knows what the actual world is as well as player 2's probability function, the prediction is that he too will play his part of the Nash equilibrium in w_2 . This would, however, be unfortunate for him because he knows w_1 is the actual world and prefers the Nash equilibrium profile of the game in w_1 be played. A better (*i.e.* more useful) strategy for player 1 would be to influence player 2 to play the Nash equilibrium in w_1 by putting it in the common ground that w_1 is the actual state of affairs. This illustrates how asserting the common ground in mixed-motive games becomes relevant.

Game Theory even makes it possible to measure the usefulness to player 1 of asserting the common ground to influence player 2. The relevance of the assertion for player 1 is the

¹⁹ Found in van Rooy (2001).

difference between his expected payoff in the game where both players know that w_1 is the actual state of affairs and his expected payoff in the original game (*i.e.* the game played according to the original probability functions). The strategic use of common ground underlying this notion of relevance can be generalized to all kinds of assertions. *Per* van Rooy (2001), let C be the content of an assertion. Then the relevance for speaker i to assert C can be determined as

$$UV_i(C) = EU_i(a^n/G_c) - EU_i(a^n/G)$$

In this formula a^n/G denotes the Nash equilibrium profile of game G where G itself is a Bayesian game of the form $\langle N, \Omega, (A_i), (P_i), (U_i) \rangle$. The expected utility for agent 1 of profile a , represented as $EU_1(a)$, is defined by $\sum_{w \in \Omega} P_1(w) \times U_1(a, w)$ where U_1 is a function from profiles and worlds to numbers. Finally, G_c is the same game as G except that in this new game it is common knowledge that C is the case (*i.e.* the probability function of both agents are, and are known to be, conditionalized by C).

In redundant VPC's the result state conveyed by the particle is information which can be strategically useful for a speaker to assert as common ground in an effort to influence an addressee. As an extension of the arguments put forth by van Rooy (2001) this utility equates to making the inclusion of the particle, despite being logically redundant, nevertheless licensed by virtue of being conversationally relevant.

4. Conclusion.

This initial investigation has shown that a previously unexamined subset of VPC's, redundant VPC's, are distinguished from VPC's in general by the inclusion of a particle which conveys a result state entailed by the verb. Apart from this feature and the fact that redundant VPC's involve fewer particles, both otherwise pattern identically in nearly every way including distribution by particle, transitivity ratio, word-order constraints, semantic compositionality, telicity, range of discourse contexts and productivity.

Superficially, the fact that this subset of VPC's contains an apparently redundant particle appears to make the speaker's contribution more informative than required, thereby violating the Gricean maxim of quantity. In pursuing what could license the use of redundant VPC's, the optionality of the particle was taken to indicate something of a pragmatic nature to be at work. Conversational implicature, informational focus and informativity are factors which individually

were found to license redundant VPC's in certain restricted contexts. However, collectively these mechanisms proved insufficient to account for the full range of contexts in which redundant VPC's are found.

A more comprehensive mechanism was found by adopting the notions of van Rooy (2001) regarding conversational relevance as defined in terms of utility and revealed through Game Theory. The use of redundant VPC's was shown to be licensed by the strategic need for speakers to assert the common ground as a means of influencing the beliefs and/or preferences of their interlocutors.

The results of this preliminary investigation have interesting implications for other recalcitrant linguistic data, in particular data involving redundancy. Various prepositions, such as *onto*, can be used redundantly as in *Hold onto the rail*.²⁰ Serial verb constructions in languages like Vietnamese sometimes contain two redundant verbs. Certain expressions, especially polite ones, in many languages also have redundant elements. While not discounting the importance of syntax or semantics, the perspective of pragmatics and particularly that of speakers' strategic use of language can shed new light on our understanding of the role of redundancy in language.

²⁰ *Onto* is not a particle here as it fails to invert, **Hold the rail onto*.

Appendix I
Sample Redundant VPC's

I. Intransitive

Meet up
Fall down
Lose out

II. Transitive

Stand up[†]
Wake up[†]
Open up[†]
Finish up
Clean up
Pile up
Stack up
Heal up[†]/over[†]
Speed up
Wash up[†]/down
Sit down[†]
Slow down[†]
Cool down[†]
Strip down[†]
Calm down[†]
Seek out
Find out
Pick out
Shout out[†]
Scream out[†]
Blurt out
Swing out
Rinse out
Leak out[†]
Ooze out[†]
Spurt out[†]
Roll over[†]
Cover over
Send off
Shoot off[†]
Spin around[†]
Breathe in
Pass by[†]

[†]May be used intransitively as well, while still remaining a redundant VPC.

References

- Baldwin, Timothy (2002). The semantics of verb-particles: A basic literature review. Microsoft PowerPoint presentation. Available at <http://mwe.stanford.edu/>.
- Bannard, Colin. (2002). Statistical Techniques for Automatically Inferring the Semantics of Verb-Particle Constructions. LinGO Working Paper No. 2002-06.
- Bannard, Colin *et al* (2003). A statistical approach to the semantics of verb-particles. In *Proceedings of the ACL Workshop on Multiword Expressions: Analysis, Acquisition and Treatment*. pp. 65-72.
- Bolinger, D. (1971). *The Phrasal Verb in English*. Harvard University Press: Cambridge, MA.
- den Dikken, Marcel (1995). *Particles: On the syntax of verb-particle, triadic and causative constructions*. Oxford University Press.
- Dixon, R. M. W. (1982). The grammar of English phrasal verbs. *Australian Journal of Linguistics* 2:1-42.
- Farrell, Patrick (2005). English verb-preposition constructions: Constituency and order. In *Language* 81:1 pp. 96-137.
- Fraser, B. (1976). *The Verb-Particle Combination in English*. The Hague: Mouton.
- Giddings, C. (2001). What it means to be DOWN and OUT: The semantics of particles in English. In *Reading Working Papers in Linguistics*, 5: 155-173.
- Goldberg, Adele, and Farrell Ackerman (2001). The pragmatics of obligatory adjuncts. In *Language* 77:4 pp.798-814.
- Grice, H. P. (1975). Logic and Conversation. In P. Cole and J. Morgan (eds.). *Syntax and Semantics*, Vol 3: Speech Acts. pp. 41-58. New York, NY: Academic Press.
- Guéron, J. (1987). Clause union and the verb-particle construction in English. *North Eastern Linguistics Society Annual Meeting* 17.
- Gundel, Janet and Fretheim, Torsten (2001). Topic and focus. In L.Horn and G.Ward (eds.) *Handbook of Pragmatic Theory*. Oxford: Blackwell.
- Horn, Lawrence. (1984). Toward a new taxonomy for pragmatic inference: Q-based and R-based implicature. In D. Schiffrin (ed.) *GURT '84: Meaning, form and use in context*. pp.11-42. Washington, D.C.: Georgetown University Press.
- Horn, Lawrence. (2003). Implicature. In L. Horn and G. Ward (eds.) *Handbook of Pragmatics*. pp. 3-28. Oxford: Blackwell Publishers.
- Householder, F.W.(1971). *Linguistic Speculations*. London: Cambridge University Press.
- Kayne, R. (1985). Principles of particle constructions. In J. Guéron, et al. (eds.), *Grammatical Representation*. Foris: Dordrecht.

- McCawley, James. (1977). Conversational implicature and the lexicon. In P. Cole (ed.) *Syntax and Semantics*, Vol 9: Pragmatics. pp.245-259. New York, NY: Academic Press.
- Patrick, J. and Fletcher, J (2006). Differentiating types of verb particle constructions. In *Proceedings of the Tenth Australian International Conference on Speech, Science and Technology*. pp.163-170.
- Svenonius, Peter. (1994). Adpositions, particles and the arguments they introduce. To appear in *Argument Structure*. Amsterdam: John Benjamins.
- van Rooy, Robert. (2001). Relevance of communicative acts. *Proceedings of the 8th Conference on Theoretical Aspects of Rationality and Knowledge*. pp.83-96. San Francisco, CA: Morgan Kaufmann Publishers Inc.
- van Rooy, Robert. (2003). Being polite is a handicap: Towards a game theoretical analysis of polite linguistic behavior. In M. Tennenholtz (ed.) *Proceedings of TARK 9*. pp.45-58.
- van Rooy, Robert (2003). Quality and quantity of information exchange. In *Journal of Logic, Language and Information* 12. pp.423-451.
- Vendler, Z. (1967). Verbs and times. In Z. Vendler, *Linguistics in Philosophy*. Ithaca, NY: Cornell University Publications.