Incremental Modification of Discourse Referents: the Case of Restricted Quantifiers*

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1. Abstract

We can't talk of all John's children unless it is known that John has children. Strong quantifiers (e.g. *every*) presuppose a non-empty domain of entities in the denotation of the common noun they combine with (Strawson 1952). The sentence in (1), for instance, requires that a domain of players be part of the common ground.

(1) Every player was exhausted.

The discourse in (2) satisfies the presuppositions of (1). It makes salient a suitable domain of players: the UMass team. In the context of (2), the sentence in (1) is naturally understood as quantifying over the UMass team.

(2) During the Lacrosse tournament, the photographer took a picture of the UMass team. Every player was exhausted. They...

This paper investigates the principles guiding readers in determining the properties of the presupposed domain of quantification on the basis of the previous discourse. Two principles are proposed. The Anaphoric Resolution Principle (ARP) favors using available discourse referents over setting up new ones. A written sentence completion study indicated that in discourses like (2), where a set-level discourse referent is salient, 98.2% of the within-discourse completions specified *they* as picking up a domain of quantification restricted by the discourse referent.

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The Non Contraction Penalty Principle (NCPP) proposes a hierarchy of modifications: adding properties to an existing discourse referent is cheaper than changing them. A written acceptability rating study using exceptive phrases to force a revision of the available discourse referents confirmed the predictions of the NCPP. Finally, it is suggested that presupposition satisfaction might be a late interpretive process. A third written acceptability rating study, while replicating the previous experiment, showed no significant difference between preposed and postposed exceptives forcing a revision of the available discourse referents. Initial self-paced reading experiments supported this conclusion by showing no on-line reading time penalty for violations of the NCPP.

2. Introduction: What Counts as a Revision of a Discourse Referent?

Determining what counts as a (costly) revision to a given analysis is a major goal of any processing theory. Within the psycholinguistic literature, a considerable amount of effort has been directed towards determining how speakers and listeners construct syntactic representations for sentences online and what happens when the input forces a representation to be revised. The question of how they assign a context-dependent interpretation to the input and what constitutes a revision in this area has received considerable less attention.

In the course of a conversation, certain entities, the so-called discourse referents, are under discussion. Usually, as the conversation unfolds, more and more properties of those entities become part of the common ground. The participants in the conversation have to constantly revise the properties of the available discourse referents and set up new ones. Yet, we don't know what counts as a revision of a discourse referent. This paper explores that issue by wondering about the principles that guide the processing of contextually restricted quantification.

2.1 The Phenomenon: Revising the Common Ground

Most of the previous literature on the semantic processing of sentences containing quantifiers has focused on the resolution of scope ambiguities in sentences contanining more than one quantifier. (Ioup (1975); Lehn (1978); Kurtzman and Mac-Donald (1993); Tunstall (1997); Villalta (2001)).[1] Little attention has been paid to the fact that quantification in natural language is contextually restricted, although restricted quantification in natural language is more the norm than the exception. Natural language quantifiers, be they determiners, adverbs, modal verbs or superlative morphemes –to name only a few– are usually contextually restricted. The following examples illustrate the point: the quantificational claims in (a) are naturally felt to be equivalent to the sentences in (b), where the claim is restricted by sentence internal material.

[1] An important exception is the work by Moxey and Sandford (see, for instance, Sandford et al. 1994; Moxey and Sandford 2000), which focuses on the relationship between types of quantifiers and discourse coherence mechanisms.

(3) a. Quantificational determiner: The dinner guests had rhubarb pie for dessert. Everyone developed a rash. (Roberts 1995:661)
b. Every dinner guest who ate rhubarb pie developed a rash.

(4) a. Adverb of Quantification: On sunny days, Ali worked in the garden. Jessie generally ran in the park. (Roberts 1995:661)
b. On sunny days, Jessie generally ran in the park.

(5) a. Modals: I hope to earn enough money next summer to purchase some plants for the garden. If so, I will definitely order some dwarf apple trees. I might buy a Reine des Violettes rose from that place in California, too. (Roberts 1995:662)
b. If I earn enough money, I might buy a Reine des Violettes rose from that place in California, too.

(6) a. Tense: Alice called Gertrude to dinner shortly after dusk. Gertrude gladly put aside her papers and left her desk. I didn't turn off the stove. (Roberts 1995:662)
b. When Alice called Gertrude, I didn't turn off the stove.

(7) a. *Only*: What did you do last night? Oh, I only watched the X-files. (von Fintel 1998)
b. The only thing I did last night was watching the X-files.

(8) a. Superlatives: Belgium is a fairly flat country. The highest mountain is not very high. (von Fintel 1998).
b. The highest mountain in Belgium is not very high.

Strong quantifiers, like *every* or *all*, are presupposition triggers. We cannot talk of all John's children unless we presuppose that John has children. Strong quantifiers presuppose a non-empty domain of entities in the denotation of the common noun they combine with.[2] The sentence in (9), for instance, requires that the common ground contain a domain of people, over which the quantifier will range. Suppose we are talking about the students in my class who played with my rabbit, then the sentence in (9) will say that they all developed a rash. Suppose that we are talking about the dinner guests that had rubharb pie for dessert, then (9) will be naturally understood as saying that all the dinner guests developed a rash.

(9) Everyone developed a rash.

[2] In the Aristotelian doctrine of the square of opposition, *all men are mortal* entails *some men are mortal*. Strawson (1952) famously voiced the concern that the inference should be treated as a presupposition:

> 'Suppose someone says 'All John's children are asleep'. Obviously he will not normally, or properly , say this, unless he believes that John has children (who are asleep). But suppose he is mistaken. Suppose John has no children. Then is it true or false that all John's children are asleep? Either answer would seem to be misleading. But we are not compelled to give either answer. We can, and normally should, say that, since John has no children, the question does not arise.' (Strawson, 1952:173-164)

In the previous examples, the discourse satisfies the domain presupposition. But consider again (3a), repeated below:

(10) The dinner guests had rhubarb pie for dessert. Everyone developed a rash (Roberts 1995:661)

The first sentence presupposes that a group of people, the dinner guests, is under discussion. The quantifier requires that a domain of people be under discussion. The first sentence, by requiring familiarity with a group of dinner guests, satisfies the presupposition triggered by the quantifier. Consequently, the quantification is contextually restricted to the group of dinner guests that had rhubarb pie for dessert.

Now consider the following sentence:

(11) Everyone developed a rash, except for the redheads.

The definite NP *the redheads* signals that a group of redheads is part of the entities under discussion. Besides, the sentence presupposes as a domain of quantification a group of people that does not include them. Let us incorporate (11) in the discourse about the dinner guests:

(12) The dinner guests had rhubarb pie for dessert. Everyone developed a rash, except for the redheads.

The first sentence makes available a set of people, the dinner guests. The second sentence forces accommodation of a group of redheads and presupposes, as a domain, a group of people that excludes the redheads. Unlike the sentence in (3a), the previous discourse does not directly satisfy the presuppositions triggered by (11). We are given the dinner guests and we accommodate a group of redheads. We still need a domain of people that do not include the redheads. The quantification is naturally understood as ranging over the dinner guests, excluding the redheads, which suggests that readers easily revise the common ground: they are given the dinner guests and they can easily compute a derived domain consisting of the dinner guests minus an accommodated group of redheads. It seems that adding the property of excluding the redheads to the dinner guests to get a new discourse referent is an easily available operation.

Consider now the following discourse:

(13) The dinner guests had rhubarb pie for dessert. Everyone developed a rash, except for the dinner guests.

The second sentence requires a domain of people that excludes the dinner guests. The previous sentence makes the dinner guests available. The presupposition of the quantifier cannot be satisfied by the previous discourse. Neither can the property of not being the dinner guests be consistently added to the available discourse referent. A new discourse referent has to be set up, this time without the help of the available one.

In both (10) and (13) the common ground has to be revised for the presuppositions of the quantifier to be satisfied. In the first case it is enough to add a property to an available discourse referent to get the required one. In the second case a new discourse referent has to be set up. Are these two revisions equally costly? Intuitively speaking, it does not seem so. Only in (10) there seems to be no diffculty in satisfying the requirements of the quantifier.

2.2 The Claim

This paper explores which types of revisions to the common ground are costly. More generally, it explores the principles guiding readers in satisfying the presuppositions of the quantifiers on the basis of what they are given as part of the previous discourse. The central claim is that readers stick to the following two principles:

(14) Anaphoric Resolution Principle[3]:
Use available discourse referents to determine the properties of the quantificational domains, rather than accommodating new ones.

(15) Non Contraction Penalty Principle:
Adding properties to an available discourse referent is not costly, changing them is.

2.3 *The Central Results*

The following experimental evidence supports the principles. First, a written sentence completion study indicated that in discourses like (16), where a set-level discourse referent is salient 98.2% of the within-discourse completions specified *they* as picking up a domain of quantification restricted by the discourse referent, thus providing support for the ARP.

(16) During the Lacrosse tournament, the photographer took a picture of the UMass team. Every player was exhausted. They ...

Second, a written acceptability rating study (1 = fully acceptable, 5 = unacceptable) used exceptive phrases to test the predictions of the NCPP. Sentences (17a) and (17b) presuppose a domain of players that do not include any oldtimers. Adding the property of excluding the oldtimers to the salient discourse referent (the UMass team) suffices to satisfy the presupposition. (17a) and (17b) were judged as generally acceptable (see ratings), consistent with the ARP and the NCPP. Sentence (17c) presupposes a domain of players that is not the UMass team, and (17d) specifies this domain as being in the tournament (but not being the UMass team). (17c) requires the

[3] To the best of my knowledge, the first systematic discussion of a ranking of options when it comes to presupposition satisfaction is found in the work of Rob van der Sandt (Sandt 1992). See also Beaver (2001).

contextually given domain to be rejected, resulting in ratings of unacceptable. The explicit specification of domain in (17d) modestly improved acceptability ratings.

(17) During the Lacrosse tournament, the photographer took a picture of the UMass team.
a. Every player was exhausted, except for the oldtimers. (2.3)
b. Every player in that team was exhausted, except for the oldtimers. (2.4)
c. Every player was exhausted, except for the players on that team. (4.3)
d. Every player in the tournament was exhausted, except for the players on that team. (3.5)

Third, although the diffculty in interpreting (17c) might be due to a semantic garden path, resulting from interpreting the quantifier as ranging over the UMass team before interpreting the exceptive phrase, a written acceptability rating study, while replicating the previous experiment ((18a) vs. (18c)) showed no significant difference between preposed and postposed exceptives ((18a) vs. (18b)), arguing against the existence of a semantic garden-path. Initial self-paced reading experiments supported this conclusion by showing no on-line reading time penalty for violations of the NCPP. It is suggested that presupposition satisfaction might then be a late interpretive process.

(18) a. Every player was exhausted, except for the players on that team. (3.7)
b. Except for the players in that team, every player was exhausted. (3.6)
c. Every player was exhausted, except for the oldtimers. (2.1)

1.4 Organization

The paper is structured as follows. Section 3 lays out the basic assumptions of the paper. Section 4 reports some experimental results providing support for the ARP and Section 5 for the NCPP. Finally, Section 6 discusses preliminary evidence in favor of treating presupposition satisfaction as a late interpretive process.

3. The ARP and NCPP

First, the assumptions. I assume that language comprehension is a structured process accomplished by a variety of specialized subsystems (Frazier 1985, 1990, 1999). Syntactic and semantic processing are carried out by subsystems with distinct knowledge sources and distinct processing principles. In the case of the semantic module, I assume that the processor has access to grammatical information about the permissible interpretations of a phrase, including information about its presuppositions, and that it can also pull in information concerning world-knowledge and discourse structure. In particular, I assume (i) that it has access to the available discourse referents and (ii) that it can manipulate their properties to satisfy whatever presuppositional requirements are grammatically encoded.

I will also assume a simple, though widespread, model of the way discourse evolves. I will treat the common ground of a conversation as containing mutually shared

information about the entities under discussion. In particular, I will stick to the file change metaphor developed in Heim (1982).[4] We can view the common ground of speaker and hearer as a file, a sequence of file cards. There is a file card for each discourse entity under discussion. Each card contains the information about the discourse entity that both speaker and hearer agree on. A new sentence that is accepted by both speaker and hearer typically changes the file by either adding a new file card or updating the information on an old card. I will use the term 'discourse referent' (Karttunen 1976) to refer to those file cards.

File cards will be represented as n-tuples consisting of an index associated with a type subscript, and a property of individuals of that type. I will speak of file card n_τ to refer to the file card whose first member is the index n_τ.[5]

(19) $<1_{<e,t>}$, dinner-guests'>

For each file card, there is a set of individuals of the corresponding type satisfying all the properties in the n-tuple, the satisfaction set of that card. The satisfaction set of the card in (1a) consists of sets of dinner guests. Set level discourse referents, under this view, are not sets of individuals themselves, but properties of sets (sets of sets, if you want).

A brief excursus. It is important to convey the message that quantifiers cannot possibly be anaphoric to a set, somehow made salient by the previous context. Consider, as an illustration, the following sentences in an out of the blue context:

(20) a. Every dinner guest developed a rash.
b. He developed a rash.

The sentence in (20b) cannot be understood unless the context provides an individual, a male. Suppose something similar were to happen in (20a). Then the sentence couldn't be possibly understood unless the context provided a set. It would then make sense to think of set-level discourse referents as sets that the context makes somehow available. Suppose that this were indeed the case. Then, in order to understand (20a), we would have to be able to retrieve a particular set from the context. We would have to be

[4] Nothing important hinges on that decision. I could have chosen any of the major dynamic accounts on the market, either the Discourse Representation approach (Kamp and Reyle 1993) or Dynamic Predicate Logic (Groenendijk and Stokhof 1991). File cards are dispensed with in Heim (1982) chapter 3. Partly, using file cards conveys the idea that the discourse representation level is dispensable. That claim, though, is not at ease with the anaphoric view of quantifiers presented in Geurts and Sandt (1999), which makes crucial use of the discourse representation structure.

[5] For ease of exposition, I will represent second order predicates by means of English expressions, linked by hyphens with a prime superscript. I hope it will be obvious which second order properties can be defined by using first order ones. For instance, the property *dinner-guests'* is meant to be a property of sets all whose members are characterized by the property of being a dinner guest. Kamp and Reyle (1993: 310) use the sum operator 'Σ'. The operator defines a set-level discourse referent out of a set of individual-level discourse referents. In their terms, 'Σx [x: dinner guest (x)]' names a set-level discourse referent all whose members are dinner guests.

able to somehow make available a representation of that particular set. Since sets are determined extensionally, we would have to be able to retrieve a representation of that particular set consisting of representations of the members of that set. And that cannot possibly the case. We can understand (20a) perfectly well without having in mind a particular set of dinner guests. We can understand it without knowing who the dinner guests were. All we need to know to feel that the sentence is appropriate is that there is a set under discussion, all whose members are dinner guests.[6] End of the excursus.

Back to our example. Take (9), repeated below:

(21) The dinner guests had rhubarb pie for dessert. Everyone developed a rash (Roberts 1995:661)

The first sentence presupposes that the dinner guests are under discussion. There must then be a card in the file with the property of being a set of dinner guests. The first sentence updates that card by entering the information that the members of the set had rubharb pie for dessert:

(22) $<1_{<e,t>}$, dinner-guests'> → $<1_{<e,t>}$, dinner-guests', had-rubharb-pie'>

The satisfaction set of the card above is a set of sets whose members are dinner guests who had rubharb pie for dessert.

Now the quantifier in the last sentence in (21) presupposes a discourse referent whose properties must entail the property of being a set of people. If you prefer, it requires that all the members of its satisfaction set be sets of people. In our common ground there is a file card that contains the property of consisting of dinner guests. That is indeed enough to satisfy the presupposition. Then the quantificational claim is understood as ranging over a set of dinner guests who had rubharb pie for dessert.

Under this view, quantifiers are anaphoric expressions. The idea that quantifiers are anaphors is explored in DRT terms in Geurts and Sandt (1999)[7]. Quantifiers require a certain set-level discourse antecedent. I will assume from now on that the interpretation of quantifiers depends on a contextual parameter, an index, represented by a natural number. The first argument of the quantifier imposes a condition on that index. A sentence containing a quantifier with index $n_{<e,t>}$ presupposes that all members of the sets in the satisfaction set of the file card $n_{<e,t>}$ are in the extension of the first argument of the quantifier. Whenever the presupposition is satisfied, the domain of quantification will have all the properties of its discourse antecedent. The sentence in (23a) requires that the satisfaction set of the file card $1_{<e,t>}$ consist of sets of people. Our file card $1_{<e,t>}$ satisfies that requirement. The quantifier is understood as ranging over a set of dinner guests who had rhubard pie for dessert.

[6] For the difference between deictic pronouns and contextually restricted domains, see the discussion, along the previous lines, in Schwarzschild (2002).

[7] The idea that in fact all presuppositions are anaphors originates with work by Rob van der Sandt Sandt (1992). See also Geurts (1999)

(23) a. Every$_{1<e,t>}$one developed a rash.
b. <1$_{<e,t>}$, dinner-guests', had-rubharb-pie'>

Following Heim (1982), I will assume that the context of utterance alone can trigger addition of file cards, as in the following example:

(24) (Walking into the clasroom) Everyone is so quiet. What's wrong? (von Fintel 1998)

The quantifier presupposes a discourse referent with the property of consisting of people. Somehow contextual salience must suffice to introduce that file card. Similarly, sometimes, the previous discourse does somehow license the introduction of new cards without explicit mention of any new entity, as in the following example:

(25) Mary went to the mall. Every store was closed.

The quantifier in the second sentence requires a domain of stores. The explicit mention of the mall, in conjunction with our world knowledge allows us to establish a bridge (Clark and Haviland 1977; Clark 1977) and introduce a file card with that property. I will treat this case the same as the cases where there is an explicit mention of the discourse referent and won't have anything substantial to say about it.

These are all the assumptions I am going to make. Now, when a subject encounters a quantificational sentence, under the previous assumptions, she must determine the properties of the domain of quantification by linking the quantifier to a discourse antecedent. The rest of the paper presents support for the view that the semantic processing module contains two principles guiding subjects in doing so. The first principle, the Anaphoric Resolution Principle (ARP) tells the subject to use an existing discourse antecedent. It penalizes setting up a new discourse referent to satisfy the presuppositions of the quantifier. Given the previous assumptions, I will formulate the ARP as follows:

(26) Anaphoric Resolution Principle: index quantifiers to already available discourse referents.

The ARP favors determining the properties of the domain of quantification on the basis of a familiar discourse antecedent and penalizes determining the domain of quantification on the basis of accommodated discourse antecedents.

We still do not know what to do if the properties of the available discourse antecedents do not satisfy the requirements of the first argument of the quantifier. The Non Contraction Penalty Principle states a hierarchy of modifications. It claims that adding properties to an available discourse referent while maintaing consistency (contracting its satisfaction set) is not a costly operation. Thus, if the available discourse

referents cannot directly satisfy the presuppositions of the quantifier, the ARP can still be obeyed by adding consistent properties to them.

(27) Non Contraction Penalty Principle: adding properties to an available discourse referent while maintaing consistency is not costly.

Next, I present the experimental evidence. I will start by reporting the results of a written questionnaire study designed to test the predictions of the ARP

4. Evidence for the ARP: Experiment 1

We have seen examples where the domain of a quantifier in subject position is anaphorically related to a familiar discourse antecedent, as predicted by the ARP:

(28) The dinner guests had rhubarb pie for dessert. Everyone developed a rash (Roberts 1995:661)

The following examples illustrate the same behavior:

(29) A herd of elephants was visible in the rear window. Two/all sick elephants were lying somewhere in the middle. (Deemter 1992)

(30) When we arrived in the village, several houses were abandoned. (Deemter 1992)

(31) My desk is a mess. Many papers are covered with cigar-ash. (Deemter 1992)

In this section I report the results of a written sentence completion study designed to test whether, in fact, in two sentence texts where no overt topic change obtains, if the first sentence makes a domain of quantification salient, a quantifier in the subject position of the second is interpreted as ranging over it.

4.1 Method

4.1.1 Subjects

Twenty five undergraduate students from the University of Massachusetts completed the questionnaire as an optional part after a half hour self-paced reading experiment for which they received course credit.

4.1.2 Materials

Six two-sentence texts, followed by *they*, indicating a possible continuation. All materials appear in Appendix A. The following is an example:

(32) Mary went to the mall. Every store was closed. They...

The six experimental items were mixed with eight fillers of the same form (two sentence texts also with a possible continuation but containing no quantifiers.)

4.2 Procedure

Participants were presented with a four-page questionnaire. The top of the first page instructed them on the task. The subjects were told to read the texts, all of the form of (32), and write a possible continuation for each of them. They were also told to read a second set of instructions at the end of the questionnaire, once they were finished with the continuations. The second set of instructions asked them to go over the continuations they had already written and determine what the pronoun *they* referred to. In order to do so, they were asked to read a second copy of the texts, followed by three possible values for *they*. Two of them corresponded to an interpretation of *they* as anaphoric to the domain of quantification of the previous sentence. Under this interpretation, *they* is shorthand for a definite description ('the stores that...'). I am going to refer to those interpretations as 'e-type' readings. The first e-type reading option corresponded to the domain of quantification as restricted by the discourse antecedent. In the example below, the first option was 'the stores in the mall'. The second e-type reading corresponded to a domain of quantification not restricted by the previous antecedent. In the example at stake, the second option was 'the stores somewhere else'. The third reading was meant to capture the case where *they* referred to an accommodated plural individual, unrelated to the domain of quantification of the previous sentence.

(33) a. The stores in the mall.
b. The stores somewhere else.
c. Something or somebody else.

I am making the assumption that the presence of the mall as a discourse referent plus general world knowledge principle licenses the introduction of the set of stores in the mall as a discourse referent that can, on its turn, satisfy the presuppositions associated with the quantifier. If the ARP is right, we expect the quantifier to be indexed to that discourse referent. That means that we expect, among the e-type readings of the pronoun, a massive number of 'the stores in the mall' answers.

4.3 Results

Table 1 presents the results. 98.2% of the within-discourse completions specified the stores in the mall as the domain of quantification of the sentence, confirming the predictions of the ARP.

Experiment 1 confirms the preferred interpretation for the kind of discourse at stake. Assuming that the previous discourse makes a set of stores in the mall available, the quantifier is interpreted with respect to that domain, rather than with respect with an unrelated one.

Now we need to know what happens when a revision of the common ground is forced. The Non Contracting Penalty Principle predicts that adding a property to an

already available discourse referent to satisfy the ARP does not count as a costy revision. A written acceptability rating study was designed to test the predictions of the NCPP.

Item #	Referential	E-type: unrestricted	E-type: restricted
1	10	0	15
2	5	1	19
3	9	0	16
4	8	0	17
5	5	1	19
6	7	0	18

Table 1: Experiment 1. Total number of answers per item.

5. Evidence for the Non Contracting Penalty Principle

In this section I report the results of a written questionnaire study designed to test the Non Contracting Penalty Principle. The experiment makes crucial use of sentence level exceptive phrases. I start by bringing them into the discussion.

5.1 Free Exceptives

Consider the following examples of free exceptives (the term is due to Jack Hoeksema (Hoeksema 1987, 1990)), taken from von Fintel (1994):

(34) a. Except for Jim, no one really liked the soup.
b. Except for Jane, my relatives are all total bores.
c. Except for the assistant profesors, most faculty members liked the dean.

In work by Hoeksema, exceptive phrases subtract entities from the domain of quantifiers.[8] The sentence in (34a), minus its exceptive phrase is interpreted as claiming that no one in a contextually fixed domain A really liked the soup. The exceptive subtracts Jim from the set A. In symbols, where the contextual restriction is given as an implicit argument of the determiner:

(35) λexcept for B, Q (A) (N') (C)ω = $\lambda Q\omega$ (($\lambda A\omega \cap \lambda N'\omega$) – $\lambda B\omega$) ($\lambda C\omega$)

Here I want to assume that free exceptives impose extra conditions on the presupposed domain. The sentence in (36a) presupposes that the discourse referent $1_{<e,t>}$ has the property of being a set of people. The sentences in (36b) and (36c) presuppose

[8] Kai von Fintel (1994) makes a semantic distinction between free exceptives and other types, like 'but' phrases (*Every student but John . . .*). Whenever I use the term 'exceptive phrase', I mean to refer to free exceptives.

that the discourse referent $1_{<e,t>}$ has the property of being a set of people that does not include Jim.

(36) a. $No_{1<e,t>}$ one really liked the soup.
b. Except for Jim, $no_{1<e,t>}$ one really liked the soup.
c. $No_{1<e,t>}$ one really liked the soup, except for Jim.

5.2 Experiment 2

Experiment 2 makes use of free exceptives to test the Non Contraction Principle Penalty. Consider again the following texts:

(37) During the Lacrosse tournament, the photographer took a picture of the UMass team.
a. $Every_{1<e,t>}$ player was exhausted, except for the oldtimers.
b. $Every_{1<e,t>}$ player in that team was exhausted, except for the oldtimers.
c. $Every_{1<e,t>}$ player was exhausted, except for the players on that team.
d. $Every_{1<e,t>}$ player in the tournament was exhausted, except for the players on that team.

The first sentence brings the UMass team into the common ground. Assume the file contains the following card:

(38) $<1_{<e,t>}$, UMass-team'>

The quantificational sentences have in common that they all require a file card with the property of being a set of players. They differ in some other properties of the domain. The sentence in (42a) presupposes a domain of players that does not contain a group of oldtimers. The sentence in (42b) presupposes a group of players, the UMass team, excluding a group of oldtimers. The sentence in (42c) presupposes a group of players that does not include the UMass team. Finally, the sentence in (42d) presupposes a domain of players, the domain of players in the tournament, excluding the UMass team. The type of required file cards is illustrated below:

(39) a. $<\ 1_{<e,t>}$, players', exclude-the-oldtimers'>
b. $<\ 1_{<e,t>}$, players-UMass', exclude-the-oldtimers'>
c. $<1_{<e,t>}$, players', exclude-the-UMass-team'>
d. $<1_{<e,t>}$, players-in-the-tournament', exclude-the-UMass-team'>

The ARP favors using existing discourse referents. Assume that the only discourse referent in the common ground is the UMass team. That discourse referent, by itself, is not enough to satisfy the presuppositions of the sentences. However, it easy to get one that will satisfy the presuppositions. A group consisting of the oldtimers can be accommodated and the property of excluding the oldtimers added to the available discourse referent. Since being the UMass team entails being a set of players, the presuppositions of (42a) and (42b) can be satisfied while obeying the ARP.

(40) $<1_{<e,t>}$, UMass-team'$>$ → $<2_{<e,t>}$, UMass-team', exclude-the-oldtimers'$>$

This situation contrasts with what happens with (42c) and (42d). Those sentences require a file card with the properties of being a set of players and excluding the UMass team. While in the previous two cases the requirement imposed by the exceptive phrase could be consistently added to the available file card, the property of excluding the UMass team cannot. We would end up with a file card with the property of being the UMass team and the property of excluding the UMass team. The ARP has to be violated.

The ARP and NCPP predict that (42a) and (42b) should be judged as generally acceptable, whereas (42a) and (42b) should not. In order to test the predictions, the following experiment was designed.

5.2.1 Method

5.2.1.1 Subjects

Fifty-two undergraduate students from the University of Massachusetts at Amherst participated in the study, sometimes as part of a forty-minute experiment that included another written questionnaire. They all received course credit for their participation.

5.2.1.2 Materials

Sixteen two sentence texts in the following four forms:

(41) During the Lacrosse tournament, the photographer took a picture of the UMass team.
   a. C1: Every$_{1<e,t>}$ player was exhausted, except for the oldtimers.
   b. C2: Every$_{1<e,t>}$ player in that team was exhausted, except for the oldtimers.
   c. C3: Every$_{1<e,t>}$ player was exhausted, except for the players on that team.
   d. C4: Every$_{1<e,t>}$ player in the tournament was exhausted, except for the players on that team.

Sixteen fillers were used. Half of them were difficult: four created garden-paths by using lexically ambiguous items[9] and the other four forced to abandone very salient topical antecedents. The rest were natural discourses. The experimental items are listed in Appendix B.

5.2.2 Procedure

Participants were presented with an eight-page written questionnaire. The top of the first page instructed them on the task. The subjects were asked to read through the texts and give them a score in a five-point scale ranging from 1 'natural/easy' to 5

[9] A couple of examples: "John always kept his glasses very clean so that everybody felt comfortable drinking with them.", "Molly bought a new book. She started reading it right away to finish it before Molly."

'awkward/difficult' according to their first impression. The instructions also gave them a couple of examples, none of which was of the form of the experimental items.

Four counterbalanced forms of the questionnaire were created. The four forms were randomized just once.

5.2.3 Results

Table 2 summarizes the results of Experiment 2. C1 and C2 were significantly easier than C3 and C4. While there is no difference between C1 and C2. C4 was judged significantly easier than C3. A 2 x 2 ANOVA was conducted with factors decreasing vs. nondecreasing (Conditions 1 and 2 vs. Conditions 3 and 4). The effects of each factor and the interaction were significant (decreasing vs. nondecreasing, $F1(1,51) = 170.91$, $p < .001$; $F2(1,15) = 315.22$, $p < .001$; implicit vs. explicit restrictor, $F1(1,51) = 27.41$, $p < .001$; $F2(1,15) = 7.98$, $p = .01$; interaction, $F1(1,51) = 32.78$, $p < .001$; $F2(1,15) = 21.21$, $p < .001$)

C1	C2	C3	C4
2.4	2.3	4.3	3.5

Table 2: Experiment 2. Means by subjects.

5.2.4 Discussion

The predictions of the ARP and NCPP are borne out. Adding the property of excluding the oldtimers to the salient discourse referent (the UMass team) suffices to satisfy the presuppositions of C1 and C2. Consequently, these two conditions were judged as generally acceptable. C3 presupposes a domain of players that is not the UMass team and C4 specifies this domain as being in the tournament (but not being the UMass team). C3 forces a violation of the ARP. It requires the contextually given domain to be rejected, resulting in ratings of unacceptable. The explicit specification of domain in C4 modestly improved acceptability ratings.

The improved ratings for C4 can be due to the fact that, although the NCPP is violated, readers can still calculate the properties of the new discourse referent on the basis of the old one. C4 requires a domain of players in the tournament that excludes the UMass team. Taking the UMass team, the complement set of the UMass team relative to the players in the tournament can be computed.[10] That discourse referent will suffice to satisfy the presupposition.

[10] Work by Moxey and Sadford (Moxey and Sadford 2000) has shown that monotone decreasing (strong) quantifiers like *few of the* give rise to what they call 'comp-set' completions. Consider two sentence discourses like the ones below:

(i) a. A few of the football fans were at the match. They . . .
b. Few of the football fans were at the match. They . . .

In (ia), subjects naturally take 'they' to denote the football fans that were at the match. In (ib), Moxey and Sandford show that slightly half of the time, the pronoun denotes the football fans that weren't

I have already said that any processing theory has two major goals: (i) determining the timing of the analysis and (ii) determining what happens when the analysis has to be revised. The ARP and NCPP jointly determine what counts as a revision of a discourse referent. A second question that the processing of restricted quantification poses has to do with the timing of the analysis.

When does the processor commit itself to the contextually relevant properties of the domain of quantification? Answering when the processor has already interpreted a quantificational claim as ranging over a contextually restricted domain will give us a clue about when it can pull in contextual information. There is ample evidence of immediate interaction between the context and the input representations in the case of other types of context sensitive expressions, such as definite descriptions,[11] but we do not know whether in the general case this pattern obtains with all types of quantifiers.

Although this paper is mainly concerned with the mechanisms of revision, in the next section I will present some experimental results that concern the timing of the commitment to the contextually relevant properties of the domain of quantification. Notice that, in principle, the difficulty in interpreting C3 in the previous experiment might be due to a semantic garden path, resulting from interpreting the quantifier as ranging over the UMass team before interpreting the exceptive phrase. A written acceptability judgement study was designed to test that hypothesis. I turn to it next.

6. Late Satisfaction

Consider again the materials used in Experiment 2:

(42) During the Lacrosse tournament, the photographer took a picture of the UMass team.
   a. C1: Every$_{1<e,t>}$ player was exhausted, except for the oldtimers.
   b. C2: Every$_{1<e,t>}$ player in that team was exhausted, except for the oldtimers.
   c. C3: Every$_{1<e,t>}$ player was exhausted, except for the players on that team.
   d. C4: Every$_{1<e,t>}$ player in the tournament was exhausted, except for the players on that team.

The results from Experiment 2 indicated that C3 is the hardest of all four conditions. I am attributing the difficulty to a costly revision of the common ground, a violation of the ARP and NCPP. Yet, an alternative explanation has it that the difficulty in interpreting C3 might be due to a semantic garden path, resulting from interpreting the quantifier as ranging over the UMass team before interpreting the exceptive phrase, which explicitly excludes that domain. Under this view, as soon as the processor

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at the match (comp-set completion). Few of the football fans presuppose that the football fans are under discussion. After processing the quantificational claim is processed, the file must contain the set of football fans that were not at the match, the antecedent of they. The link between these cases and the reason why C4 is easier remains to be made explicit.

[11] See Crain and Steedman (1985); Altmann and Steedman (1988); Grodner (2002); Chambers et al. (2002)

encounters a quantifier, it makes a commitment about the contextually relevant properties of its domain. Presupposition satisfaction would then be an early interpretive process, intertwined with the semantic processing proper.[12]

As preliminary support for the garden path explanation, I would like to bring into the arena the intuitions reported in Frazier (1999). Consider the following sentences:

(43) a. Julie arrived at the mall. Every shopper was furiously cursing.
b. Julie arrived at the mall. Every shopper was furiously cursing all over Amherst because of the crowded sidewalk sales. (Frazier, 1999: 110)

The truth is that Amherst doesn't have a mall. Intuitions suggest that the quantifier every shopper is interpreted as ranging over shoppers in the mall in (43a). In (43b), they suggest that the locative all over Amherst forces a costly revision of the initial commitment.

Frazier reports similar intuitions in the following case:

(44) a. John went to the mall.
b. Every shopper was complaining who had been shoved at the crowded bargain table.
c. Some shopper was complaining who had been shoved at the crowded bargain table.

The first sentence makes the set of things in the mall a salient domain of quantification. The quantifier *every shopper* is taking again to range over shoppers in the mall. The extraposed relative clause forces a more restricted domain. The clause forces the quantifier to range over shoppers at the crowded bargain table. Garden-path effects obtain, unlike the case with *some*. The contrast is used to argue that quantificational DPs (unlike possibly indefinites) initiate an immediate search for a restrictor clause.

Similar effects are reported with definite descriptions. The first sentence in the text in (45a) makes the set of individuals in Wisconsin a salient domain of quantification. As a result, the definite description *the Governor* is reported to prefer to pick up the governor of Wisconsin. That contrasts with the text in (45b), where the first sentence conveys the idea that the speaker is not talking about Wisconsin and the definite description prefers to pick up the Governor in the location of the speaker.

(45) a. Last week I went to Wisconsin. The Governor encourages travel to his state. (Frazier 1999:111)

[12] The term presupposition satisfaction is taken from the literature on two stage discourse representation models (Geurts 1999) that distinguishes between a first stage when presuppositions are computed and a second stage when they are checked against the discourse representation. As Geurts (1999) points out, two stage DRT models do not propose that presupposition satisfaction must be a late interpretive process that obligatorily follows the semantic computation, even when the current implementations seem to suggest so.

b. Last week I went to Wisconsin. The Governor discourages travel to that state. (Frazier 1999:111)

It is plausible, in view of these intuitions, that the attested difficulty in interpreting C3 reflects a garden path. Even when the explanation could not carry over as is to the difficulty in interpreting C4, we should still entertain it. There could be an unrelated reason for why C4 is harder than C1 and C2. Moreover, by pursuing the garden path hypothesis, we will surely learn something about the timing of presupposition satisfaction.

Suppose there is a real garden path in C3. Then, the argument goes, we expect to find two effects. First, we expect the garden path to disappear when the disambiguating region is processed early. Preposing the exceptive phrase should make the garden path disappear. Consequently, (46) should be easier than (47).

(46) Mary went to the mall. Except for the stores in the mall, every store was closed.
(47) Mary went to the mall. Every store was closed, except for the stores in the mall.

Second, we also expect the disambiguating region, the exceptive phrase region, to be associated with a major processing load, to be reflected in slower reading times.

A written acceptability judgement questionnaire was designed to test the prediction that preposing the exceptive phrase should make the garden path disappear. I report it next. I will then present some initial self-paced reading studies that failed to show any reading time effects around the exceptive phrase.

6.1. Experiment 3

6.1.1 Method

6.1.1.1 *Subjects*
Twenty-four undergraduates from the University of Massachussetts at Amherst, none of which participated in Experiment 2, participated in the experiment voluntarily. No extra credit was given.

6.1.1.2 Materials
The sixteen experimental sentences used in Experiment 2 were used in three forms. The second and third conditions were the same as the third and first conditions of Experiment 2, respectively. The first condition is a version of condition 3 in which the exceptive phrase was preposed. The following is a sample:

(48) a. C1: Mary went to the mall. Except for the stores in the mall, every store was closed.
b. C2: Mary went to the mall. Every store was closed, except for the stores in the mall.
c. C3: Mary went to the mall. Every store was closed, except for the record stores.

6.1.2. Procedure

Participants were presented with an eight-page questionnaire. The top of the first page instructed them on the task. They were asked to read through the texts and assign them a score in a five-point scale ranging from 1 ('natural/easy') to 5 ('awkward/difficult') according to their first impression of the sentence. Two examples were given as part of the instructions. The questionnaires were counterbalanced. Each form contained sixteen fillers. Eight of them used the adverbial quantifier always and exceptive phrases with unless. The rest used plural anaphoric pronouns. The questionnaires were randomized once.

6.1.3. Results

Table 3 gives the means by subject. The data were analyzed using t-tests [with a Bonferroni correction]. There was no significant difference between C1 and C2 ($t < 1.0$). However, C3 was easier than C1 ($t1(23) = 8.122$, $p < .001$; $t2(15) = 11.432$, $p < .001$) and that C2 ($t1(23) = 8.048$, $p < .001$; $t2(15) = 9.499$, $p < .001$).

C1	C2	C3
3.6	3.6	2.1

Table 3: Experiment 3. Means by subject

6.1.4. Discussion

The difference between C1 and C2, on the one hand, and C3, on the other, replicates the results of Experiment 2. Setting up a new set-level discourse referent, in violation of the ARP and NCPP is costly. If the reason why C3 in Experiment 2 was hard were because of a real garden-path, we would expect a difference in acceptability between C1 and C2. The prediction is not borne out, though, suggesting that presupposition satisfaction is a late interpretive process. It seems that the presuppositions that the common ground must satisfy already include the requirements of the exceptive phrase.

I have assumed that if there were a garden path in C3, we should expect a major processing load in the disambiguating region, which should be reflected in slow reading times. Next, I report the results of an initial self-paced reading study. Experiment 4 tested the materials of Experiment 2 and failed to find any reading time effects in postposed exceptives, when compared to preposed ones. Since it was part of a larger group of experiments, none of which managed to show largely significant effects. I don't want to take the results, on their own, as contributing anything substantially new on the issue of whether there is a garden path in C3 or not. However, if we look at them in view of the results of Experiment 3, I think they might be suggestive enough of the absence of a garden path.

6.2. Experiment 4

6.2.1. Method

6.2.1.1. Subjects
Forty-eight undergraduate students from the University of Massachusetts at Amherst participated in the experiment. They received extra course credit for their participation.

6.2.1.2 Materials
The materials from Experiment 2 were embedded in larger paragraphs. The whole list of materials is given in Appendix D. The experiment was part of a larger self-paced reading study using paragraphs.

6.2.2. Procedure

Participants read the texts on a computer screen.The self-paced reading method was used. To complete the task, participants used a response console that had a left and a right trigger. The paragraphs were presented in several regions. The discourses from Experiment 2 were presented in three regions: the first presentation region corresponded to the context, and the other two corresponded to the main clause and exceptive-phrase. Either of the two triggers could be pulled to make a phrase appear on the screen. Participants were asked to pull a trigger as soon as they had read through the phrase that had appeared on the screen. The texts were not presented cumulatively. Each time the trigger was pulled, the preceding text disappeared. Half of the items were followed by two comprehension questions with two possible answers, once the whole text was read. The word *question* flashed on the screen for 500 ms. and a question followed by two possible answers appear. An answer could be chosen by pulling the corresponding right or left trigger. Half of the questions presented the correct answers on the right and half of them on the left. If the subject chose a wrong answer, the word *error* flashed on the screen before the next question or experimental item.

The sixteen items were counterbalanced and randomized separately for each participant.

6.2.3 Results.

Table 4 presents the reading times corresponding to the exceptive region. A 2 x 2 ANOVA was conducted with factors nondecreasing vs. decreasing (Conditions 1 and 2 vs. Conditions 3 and 4). The effects of each factor and the interaction were non significant (decreasing vs. nondecreasing, $F1(1,47) = 9356268$, $p = 65.48$; $F2(1,15) = 3220230.25$, $p = 17.87$; implicit vs. explicit restrictor, $F1(1,51) = 21675$, $p = .19$; $F2(1,15) = 7482.25$, $p = .44$; interaction, $F1(1,51) = 8910.75$, $p =.10$; $F2(1,15) =256$, $p=.01$)

C1	C2	C3	C4
1655	1663	1200	1235

Table 4: Experiment 4. Average reading times in ms. (Means over subjects)

6.2.4 *Discussion*

The difference between the reading times corresponding to the disambiguating region in C1 and C2 is non significant. There is also no significant interaction between the two experimental factors (subtracting the whole or part of the intended domain and having or not an overt restrictor). The absence of any reading time effect is compatible with the results of Experiment 2, which showed that processing the disambiguating region earlier does not help, and casts doubts on the garden path explanation.

6.3 Summing-Up

In this section I have presented evidence against a garden-path based explanation for the diffculty interpreting sentences containing exceptive phrases that are incompatible with the contextually salient domains, as attested in Experiment 2. Experiment 3 showed that preposing the exceptive phrase does not help, counter to what we would expect under the garden-path explanation. Experiments 4 failed to find any reading time effect in the region corresponding to the exceptive phrase. The results suggest that presupposition satisfaction might be a late interpretive process.

7. Concluding Remarks

To sum-up, this paper has presented empirical support for two semantic processing principles, the ARP and NCPP, repeated below:

(51) Anaphoric Resolution Principle: index quantifiers to already available discourse referents.
(52) Non Contraction Penalty Principle: adding properties to an available discourse referent while maintaing consistency is not costly, changing them is.

I started by acknowledging that determining what counts as a (costly) revision to a given analysis is indeed a major goal of any processing theory. The most important contribution of the paper, in my view, is answering that question with respect to the established properties of the common ground.

The ARP could be subsumed within Rob van der Sandt's theory of accommodation (which gives preference to the satisfaction of presuppositions with respect to the available discourse material over accommodation (Sandt 1992)). This paper has shown that, in conjunction with the NCPP, it determines a hierarchy of revisions to the common ground. While the ARP can be satisfied at no cost by adding consistent

properties to the available setlevel discourse referents, changing the properties of the available discourse referent counts as a violation of the ARP.

Yet, we still don't know whether all changes to the discourse referent's properties are equally costly. Experiment 2 showed that the cost predicted by the ARP and NCPP is reduced when there is an obvious way to compute the properties of a new discourse referent, like computing the complement of a given set relative to another. Work by Moxey and Sandford (Moxey and Sandford (2000)) has shown that processing sentences with monotone decreasing (strong) quantifiers like *few of the Ns*, which presuppose a domain of Ns and claim that few of them have a certain property, allow for setting up the Ns that do not have that property (the complement of the Ns relative to that property) as a discourse referent. The link between these cases and the effect attested in Experiment 2 remains to be made explicit.

Finally, the results reported in the last section showed that the properties of exceptive phrases seem to be taken into account when checking the common ground to satify the presuppositions of quantificational sentences. It could be otherwise. The common ground could be checked as soon as the first argument of the quantifier is processed. The results reported suggest that presupposition satisfaction might be a late interpretive process, but we don't know how general the pattern is. We surely need further empirical support.

Appendix A: Experiment 1

1. Mary went to the mall. Every store was closed. They . . .
2. Sarah went to the Student Union food court. Every snack bar was closed. They . . .
3. John went to Amherst. Every bookstore was closed. They . . .
4. Jenny went to Northampton. Every restaurant was closed. They . . .
5. Maria vacationed in New Hampshire last summer. Evert hotel was expensive. They . . .
6. During the Lacrosse tournament, the photographer took a picture of the UMass team. Every player was exhausted. They...

Appendix B: Experiment 2

1. Mary went to the mall. / Every store was closed, except for the ones in the mall. / Every store in the Valley was closed, except for the ones in the mall. / Every store was closed, except for the record stores. / Every store in the mall was closed, except for the record stores.

2. Sarah went to the Student Union food court./Every snack bar was closed, except for the ones in the food court. /Every snack bar on campus was closed, except for the ones in the food court./ Every snack bar was closed, except for the vegan ones. / Every snack bar there was closed, except for the vegan ones.

3. John drove to Amherst. Every bookstore was closed, except for the ones in Amherst. / Every bookstore in the Valley was closed, except for the ones in Amherst./ Every bookstore was closed, except for the ones selling used books. / Every bookstore in Amherst was closed, except for the ones selling used books.

4. Jenny went to Northampton./ Every restaurant was closed, except for the ones in Northampton. / Every restaurant in the Valley was closed, except for the ones in Northampton. /Every restaurant was closed, except for the ones selling junk food./ Every restaurant in Northampton was closed, except for the ones selling junk food.

5. Maria vacationed in New Hampshire last summer. Every hotel was expensive, except for the ones in New Hampshire. / Every hotel in New England was expensive, except for the ones in New Hampshire/. Every hotel was expensive, except for the old ones./ Every hotel in New Hampshire was expensive, except for the old ones.

6. Peter went to West Springfield. Every car dealer was closed, except for the ones in West Springfield./ Every car dealer in Western Massachusetts was closed, except for the ones in West Springfield./ Every car dealer was closed, except for the ones selling BMWs./ Every car dealer there was closed, except for the ones selling BMWs.

7. Mary went to Springfield. Every store was closed, except for the ones in Springfield. / Every store in the Valley was closed, except for the ones in Springfield. / Every store was closed, except for the record stores. / Every store in Springfield was closed, except for the bookstores.

8. Seth went to the big chain video store. Every movie had subtitles, except for the ones at the big chain video store. / Every movie available in Amherst had subtitles, except for the ones at the big chain video store. / Every movie had subtitles, except for the new releases./ Every movie there had subtitles, except for the new releases.

9. Sarah bought a pack of videotapes. Every videotape was broken, except for the ones in the pack she bought./ Every videotape in the store was broken, except for the ones in the pack she bought../ Every videotape was broken, except for the top two. / Every videotape in that pack was broken, except for the top two.

10. During the World Cup, the journalist interviewed the Korean soccer team. Every player was happy, except for the ones in the Korean soccer team./ Every player in the World Cup was happy, except for the ones in the Korean soccer team. Every player was happy, except for the oldtimers../ Every player on that team was happy, except for the oldtimers.

11. During the Lacrosse tournament, the photographer took a picture of the Umass team. Every player was exhausted, except for the ones on the Umass team. / Every player in the tournament was exhausted, except for the ones in the Umass Lacrosse team./ Every player was exhausted, except for the youngest ones. / Every player in that team was exhausted, except for the youngest ones.

12. Jeff visited the Sociology Department. Every faculty office was a mess, except for the ones in the Sociology Department. / Every faculty office in the Social Science building was a mess, except for the ones in the Sociology Department. / Every faculty office was a mess, except for the Assistant Professors' offices. / Every faculty office in the Sociology Department was a mess, except for the Assistant Professors' offices.

13. Brenda attended the undergrad commencement at UMass. Every student was drunk, except for the ones in the undergrad commencement. / Every student on campus was drunk, except for the ones in the undergrad commencement./ Every student was drunk, except for the ones in the front rows./ Every student in the commencement was drunk, except for the ones in the front rows.

14. Jenny attended the Town Board meeting. Everybody was against the smoking ban, except for the people at the Town Board. / Everybody in Amherst was against the smoking ban, except for the people at the Town Board. / Everybody was against the smoking ban, except for the old people./ Everybody at the Town Board meeting was against the smoking ban, except for the old people.

15. Monica lives in a condo. Every apartment is infested with bugs, except for the apartments in her condo./ Every apartment in North Amherst is infested with bugs, except for the apartments in her condo. / Every apartment is infested with bugs, except for the new ones. /Every apartment in that condo is infested with bugs, except for the new ones.

16. Jerry brought in a bag of apples. Every apple was rotten, except for the ones in the bag she brought./ Every apple in my place was rotten, except for the ones in the bag she brought./ Every apple was rotten, except for the small ones./ Every apple in the bag was rotten, except for the small ones.

Appendix C: Experiment 4

1. Last Sunday was a horrible rainy day. We spent the whole day at home, playing games, watching TV and eating junk food. In the end, we all got so bored that we decided to go out, despite the weather. John and Shawn went to the video store. The movie theater was crowded. Mary went to the mall. Every store was closed, except for the ones in the mall.

2. Sarah and I are taking a linguistics class. It is usually very interesting, but yesterday the instructor got into very difficult issues. We couldn't understand a word. To make things worse the class ran late and we had to miss our introductory Spanish class. We hadn't even had lunch! When the class was finally over, each of us decided to have some snack somewhere. Sarah went to the Student Union food court. Every snack bar was closed, except for the ones in the food court.

3. John and Peter are UMass alumni. After so many years, they finally came back to the Valley last weekend. They stayed at the Northampton Hotel and Saturday they spent the whole day together, telling each other funny stories about their days at UMass. On Sunday, they each decided to do some shopping. Peter went to the Holyoke Mall. He bought a nice coat for his kid. John drove to Amherst. Every bookstore was closed, except for the ones in Amherst.

4. Jenny and her sister Wendy visited their aunt at Pelham last Sunday.They spent the whole evening playing bridge. At 12:30 in the morning, they decided it had been enough and that they needed some food. Wendy went to Springfield to visit her boyfriend. They are very close. Jenny went to Northampton. Every restaurant was closed, except for the ones in Northampton.

5. Maria and her aunt Dolly live in San Francisco. They are both originally from Vermont and they both really love New England. Every single day Dolly tells everybody about the beauty of the foliage and the nice peaceful winters. She would really love to spend her vacation in New England.

6. Peter and Sally are car collectors. They have five nice old BMWs in their barn. Every weekend, rain or shine, they go out for a nice ride in the Berkshires. Sometimes they even take pictures. Last Sunday they had a problem with their oldest car. It made very strange noises. The next Monday Peter went to West Springfield. Every car dealer was closed, except for the ones in West Springfield.

7. Mary and Joe rented a cottage in the woods, near Springfield. They are really fond of cooking and taking pictures so they wanted to spendthe whole weekend preparing nice dishes and maybe taking some good pictures of the sunset. They planned everything in advance, but just when they wanted to try their Indian specialty, they found out thatthey left their curry powder at home. Mary went to Springfield. Every store was closed, except for the ones in Springfield.

8. Sarah and her friend Seth recently started a movie club. They plan to meet with some of their friends every Friday to go to the movies or rent something. The first week of the month Mary decides what to watch and then, the next week is Seth's turn. Last Friday Seth went to the big chain video store. Every movie had subtitles, except for the onesat the big chain video store.

9. Jeff and Sarah really love watching "The Sopranos". They record each episode and watch it over and over. They have bought all kinds of collector items. They even know some parts by heart and enjoy reciting the dialogues. Yesterday, they ran out of videotapes. Sarah bought apack of them. Every videotape was broken, except for the ones in thepack she bought.

10. A special CNN team consisting of a journalist and a couple of technicians travelled to Korea to cover all the exciting events that were taking place there. They attended a cooking contests and interviewed

several well-known French chefs. During the World Cup, the journalist interviewed the Korean soccer team. Every player was happy, except for the ones in the Korean soccer team.

11. The Boston Globe sent a photographer and a journalist to Springfield. There were two major events to cover: the First Happy Valley FrisbeeCompetition and the Lacrosse tournament. During the Frisbee Competition, the journalist interviewed the president of the federation, a very nice eighty-year old dressed in very casual clothes. During the Lacrosse tournament, the photographer took a picture of the UMass team. Every player was exhausted, except for the ones on the UMassteam.

12. Jeff and Eloise drove to Rutgers University last week. They each had been offered a position there. He is a sociologist and she is a well-known logician. They don't like New Jersey, but they wanted to visitthe campus anyway. They wanted to know what the working conditionswere like. They both toured the whole campus and then they split up. Eloise visited the Math department. She met very nice people there. Jeff visited the Sociology Department. Every faculty office was a mess, except for the ones in the Sociology Department.

13. Brenda and John are proud UMass alumni. They wanted their kids to be accepted at UMass, because they have very nice memories of their college days, when they first met. They also like the area. Since theylive close to Amherst, being at UMass would be very convenient for their kids. Last year they spent a day on campus. Brenda attended the undergrad commencement at UMass. Every student was drunk, except for the ones in the undergrad commencement.

14. Neither Jenny nor Bob really knew what a Town Board meeting waslike. They are not very social people. Most of their spare time is devotedto keeping their old house in good shape and they do not socializ ea lot. However, after reconsidering their social skills, they recently thought it would be a good idea to get involved in any community activity. Bob didn't even know what to do.

15. Monica and Sarah are always talking about what it would feel like tolive in a nice large new house. They are neighbours. Sarah lives in a nice small flat, with three other very noisy roomates that love to get drunk every weekend. Monica lives in a condo. Every apartment is infested with bugs, except for the apartments in her condo.

16. Last Thanksgiving, Jerry and I wanted to cook for our friends. We planned everything well in advance. I wanted to prepare the dessertand Jeff was in charge of a huge turkey that we had managed to buy very cheap. We even bought several books to be sure everything wouldbe fine. While I was preparing the dessert, Jerry brought in a bag of apples. Every apple was rotten, except for the ones in the bag she brought.

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