Many and Diverse Cases: Q-Adjectives and Conjunction

Overview. This paper provides an account for patterns of conjunction of the adjectives of quantity (Q-adjectives) *many* and *few* with ordinary gradable adjectives, as in (1), and explores its consequences for the semantics of Q-adjectives and the elements they combine with.

(1) a. Prof. Smith’s many and important contributions to imaging science…
b. The trees in the grove were many and tall
c. The lights in the room were few and dim

The Broader Issue. The ‘quantifiers’ *many*, *few*, *much* and *little* have long been recognized to exhibit morphological and distributional parallels to gradable adjectives, leading to proposals that they also have adjectival semantics, i.e. (gradable) predicates of individuals (Milsark 1977 among others). On the other hand, Kayne (2005) proposes that these terms are in fact modifiers of an unpronounced noun NUMBER or AMOUNT, such that *few people* has the structure *few NUMBER people*, an analysis that captures its similarity to *a small number of people*. Along the same lines, Schwarzschild (2006) proposes that Q-adjectives, like ‘partitive’ measure phrases (*2 feet in 2 feet of cable*), occur in the specifier position of a functional head Mon, whose role is to introduce the dimension that the measure phrase or Q-adjective modifies, with the requirement that the dimension be ‘monotonic’ relative to the substance noun (in that any proper sub-part of the entity described by the substance noun has a lesser degree of the dimension than does the totality). In the case of *many/few*, that dimension is *number* (cardinality). Thus on this view, Q-adjectives are predicates of degrees (formalized as scalar intervals), not individuals.

The construction exemplified in (1) yields insight into this issue. Initially, the existence of these conjunctions appears compatible with the predicate-of-individuals analysis, and incompatible with the predicate-of-degrees view, given the typical restriction of coordination to elements of the same semantic type. But examination of constraints on this construction demonstrates that it is in fact best explained by the latter account, and that it supports the existence of a phonologically null degree-introducing element in the semantic representation.

Constraints on Conjunction. The first crucial observation is that only gradable adjectives are allowable in conjunction with Q-adjectives, as seen in the contrasts in (2) and (3):

(2) a. The fans were many and loud  (3) a. The stains on the shirt were few and small
    b. ??The fans were many and American  b. ??The stains on the shirt were few and green

The gradability restriction can be overridden if a non-gradable adjective is coerced into a gradable interpretation. Thus we might say of someone that his sins were *many and black*, where *black* has on a gradable interpretation, roughly *severe* (cf. *his sins are blacker than mine*).

These facts already imply that Q-adjectives are not of the same semantic type as gradable adjectives (contra the predicate-of-individuals view), since the latter can readily be conjoined with their non-gradable counterparts (*the stains on the shirt were small and green*).

Secondly, the dimension introduced by the gradable adjective must be linked in some way to the dimension of number associated with *many/few*. In (1)-(3), this relationship could be considered multiplicative. In (3a), stains that are *few and small* are less in total area than stains that are few in number but average-sized or large; in (1a), contributions that are *many and important* represent a greater degree of total importance than those that are *many but trivial*; etc.

The example in (4) shows a different sort of relationship, namely one of correlation: The number of good restaurants is inversely proportional to how far between they are.

(4) In Topeka, good restaurants are few and far between
But when no relationship can be established, the result is peculiar, as in (5), there being no obvious relationship between the number of senators supporting a proposal and their height.
The senators supporting the proposal were many and tall. This restriction, too, can be overridden; for example (5) improves considerably if we imagine a situation in which the number of votes a senator gets is proportional to his height.

The Proposal. Drawing on the preceding observations, the central proposal of this paper is that Q-adjective + gradable adjective conjunctions are predicates of degrees of a compound dimension formed on the basis of number (the dimension associated with many/few) and a dimension consistent with the gradable adjective. For example, in (3a), few and small can be viewed as predicative of a degree of the dimension number × size (i.e. area).

Formally, following Schwarzschild (2006), (3a) can be given the logical form in (6):

(6) \( \exists \text{DIM: } \text{MON(DIM, the stains)} & \text{(few & small)(DIM)} \)

To paraphrase, ‘there exists a dimension which is monotonic on the part-whole relationship of the stains, and whose measure is few and small.’ Here, the function MON (introduced by the functional head Mon) does not encode a specific dimension, but instead merely asserts the existence of a dimension that is ‘monotonic’ in the relevant sense; the specific dimension is ‘filled in’ on interpretation. In this example, the dimension whose extent can be measured as few and small is number × size (i.e. area), which is monotonic. The other examples in (1)-(3) above can likewise be interpreted as involving a compound dimension formed on the basis of number:

(7) many and tall trees number × height (=tree mass)
much and important contributions number × importance (=total importance)
few and dim lights number × intensity (=total light output)

I show that examples such as (5) can be addressed with a similar analysis, in this case involving modification of a degree on a single scale that measures two correlated dimensions.

The restrictions discussed above are now clear. Only gradable adjectives may be conjoined with Q-adjectives, because gradability is necessary to introduce a dimension that can combine with number to produce the required compound monotonic dimension. Secondly, if a relationship between number and the dimension in question cannot be established, the result is odd (because we are unable to infer an appropriate compound dimension).

Crucially, the analysis in (6) requires that in few and small, small be predicated not of the stains themselves, but of their size. While this seems at odds with the standard view of gradable adjectives as predicatives of individuals, examples such as (8) show the existence of a secondary interpretation where gradable adjectives modify a dimension associated with an individual:

(8) a. Despite the small size of the stains, they were so visible that I couldn’t wear the shirt.

b. John’s tall height made him a natural for the basketball team

Here we see overtly the option that is realized covertly in conjunctions with Q-adjectives.

Conclusion. The patterns of conjunction discussed here are accounted for by an analysis of Q-adjectives as predicates of degrees of the dimension number, in that they may conjoin with ordinary adjectives only to the extent that the resulting conjunction can be interpreted as a predicate of a compound degree formed on the basis of number. A consequence is that there must be some other element in the semantic representation that introduces the dimension that serves as argument, along the lines of Schwarzschild’s (2006) Mon. I explore further implications for the semantics of numerical expressions and of gradable adjectives.