"Mixed Predicates" are, in fact, Atom Predicates.
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In this paper, I examine mixed predicates and collective predicates. Under the traditional three way distinction of predicates, a mixed predicate can be both a collective predicate and a distributive predicate, because a plural noun in a mixed-predicate sentence is ambiguous between a distributive reading and a collective reading. In this paper, however, I argue that mixed predicates are atomic predicates, whereas collective predicates are set predicates at least in Japanese, adopting Winter's (2001) analysis of set/atom predicates. Support for my proposal comes from distributive and collective readings in the Japanese Floating Quantifier Construction (henceforth, JFQC).

When a mixed-predicate JFQC has a floating quantifier (FQ) with a classifier to denote a set of groups, the numeral associated with the classifier can be one, as in (1). This means that the mixed predicate takes a group as its argument. Furthermore, when the numeral is two or above, the JFQC has only a distributive reading, as in (2). This follows the traditional observation that the mixed-predicate JFQC can have only a distributive reading. When a collective-predicate JFQC has a FQ with a classifier to denote a set of groups, the numeral associated with the classifier can also be one, as in (3), like a mixed predicate. However, when the numeral associated with the classifier is two or above, the JFQC can have both a distributive reading and a collective reading, as in (4). This is a sharp contrast with a JFQC with a mixed predicate in (2).

(1) Gakusei-ga   gakkai-de   **hito-kumi**   ronbun-o   happyoshi-ta. [mixed pred.]
    student- NOM   conference-at   **one-CL(group)**   paper-ACC   present-PAST
    "One group of students presented a paper at a conference."

(2) Gakusei-ga   gakkai-de   **san-kumi**   ronbun-o   happyoshi-ta. [mixed pred.]
    student- NOM   conference-at   t**hree-CL(group)**   paper-ACC   present-PAST
    "Three groups of students presented a paper at a conference." (distributive ok, collective*)

(3) Gakusei-ga   gakkai-de   **hito-kumi**   icchidanketsushi-ta. [collective pred.]
    student-NOM   conference-at   **one-CL(group)**   unite-PAST
    "One group of students united at a conference."

(4) Gakusei-ga   gakkai-de   **san-kumi**   icchidanketsushi-ta. [collective pred.]
    student- NOM   conference-at   **three-CL(group)**   unite-PAST
    "Three groups of students presented a paper at a conference." (distributive ok, collective ok)

Link (1983) and Landman (1989,1996) face a problem with the data in (2) and (4). A problem of Link's analysis and Landman's analysis is that both analyses assume that a mixed predicate can be a collective predicate. To be specific, under Link's (1983) analysis, a mixed predicate is lexically a collective predicate. Under Landman's (1989,1996) analysis, a mixed predicate is ambiguous between a collective predicate and a distributive predicate. We have a distributive reading if a mixed predicate, which is a basic atom predicate, is pluralized and the pluralized mixed predicate is predicated of a sum of individual atoms in the same manner as a distributive predicate. If a mixed predicate is predicated of an atomic group, we have a collective reading in the same manner as a collective predicate. However, under both analyses, a collective predicate is a subset of a mixed predicate in its meaning. As long as this relation holds, the interpretation of the JFQC with a mixed predicate should be the same as or include that of the JFQC with a collective predicate. Thus, the interpretation allowed in a collective predicate JFQC should also be allowed in a mixed-predicate JFQC. However, in fact, this is not true as shown in (2) and (4).

In this paper, I argue that, adopting Winter's (2001) analysis, mixed predicates such as *ronbun-o happyosuru* "present a paper" are atom predicates, which range over atomic individuals, whereas collective predicates such as *icchidanketetsu* "unite" are set predicates, which range over sets. Thus, the denotations of mixed predicates are lexically different from those of collective predicates in my proposal.

In my discussion, I assume Kobuchi-Philip's (2003) analysis of the JFQC. In her analysis, the classifier composes with the verb, and they constitute a complex predicate. The numeral shows the number of entities which hold the properties of the classifier and the verb, and which are construed with a FQ.

As for (2), a "mixed predicate", which is an atom predicate under my analysis, denotes a set of group atoms. When it composes with a classifier –*kumi*, the complex predicate consisting of the "mixed predicate" and the classifier is also an atom predicate. Thus, each group atom has the properties denoted by the complex predicate. This leads to a distributive reading. On the other hand, following Winter (2001), a collective reading is obtained when a set predicate takes a set as its argument. However, the mixed-predicate cannot have a set as an element. Thus, a "mixed-predicate" JFQC cannot have a collective reading.

On the other hand, a "collective predicate", which is a set predicate, denotes a set of sets in its lexical meaning. After it combines with a classifier –*kumi*, the complex predicate is also a set predicate. Thus, it can denote a set of sets of atoms or a set of sets of sets of atoms, as shown in (5) and (6). This is because, as discussed by Landman (1989), the process of group formation iterates.

(5)   {{m', j', s'}, {b', d'}, {f', g'}}   (6)   { {{m', j', s'}, {b', d'}, {f', g'}} }

Thus, a set predicate can apply distributively to each set of atoms or collectively to a set of sets of atoms. This yields both a distributive reading and a collective reading, as shown in (4).

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