Indeterminate phrase quantification and apparent inverse scope with universal modals in Japanese

Abstract. It is assumed that universal quantifiers, unlike existential ones, do not create semantic effects such that a scope it is taking is wider than what it actually is. It is also assumed that Japanese is a rigid scope language. This paper points out that in Japanese, under a universal modal context a universal quantifier appears to take a wider scope relative to an existential quantifier that precedes it. We argue that this apparent inverse scope reading is not induced by the operation QR, but by some semantic effects, created by the combination of distributivity of the universal quantifier dono N-mo and the universal modals. Our analysis can be seen as an analogy to Fox & Sauerland’s (1996) “illusive scope” of universal quantifiers with generic tense. We cast some doubt on their analysis that a generic tense induces the scope illusion. Instead, we argue that it is (implicit) universal modals that bring about the illusion.

1. Data: Inverse scope reading in Japanese

Japanese is known to exhibit scope rigidity in a sentence that contains multiple quantifiers (Kuno 1973, Hoji 1985, among many others; Hayashishita 2000, Miyagawa 2011 for possible scope flexibility). Scrambling is one way to yield scope ambiguity.

(1) a. Dareka-ga daremo-o suisen-sita.
   someone-NOM everyone-ACC recommend-Past
   ‘Someone recommended everyone.’
   \(\exists \forall \quad \forall \exists\)

b. Daremo-o dareka-ga ti suisen-sita.
   everyone-ACC someone-NOM recommend-Past
   ‘Someone recommended everyone.’
   \(\exists \forall \quad \forall \exists\)

This paper points out that sentences in a universal modal context without scrambling, such as (3-4), show the seeming inverse scope reading (for example, 8 out of 8 Tokyo Japanese speakers rated (3a) as acceptable), while the counterpart without a universal modal does not yield the reading as in (2).

What would the inverse scope reading with universal modal mean? Typically, I explained to my informants like this:

Suppose that in a classroom the teacher utters the sentence “someone must organize every room.” The students divide the duty, and after all every room is organized by someone (potentially by different people). Will the teacher be happy with the situation?
In Goro 2007, he descriptively points out such contexts where the inverse scope is acquired, referring to them as “irrealis” contexts, but leaves the analysis open. As opposed to Goro’s observation, our survey reveals that not all “irrealis” contexts allow this reading, and that sentences in an existential modal context as in (5) do not yield the inverse scope (7 out of 8 speakers rated (5) as either ?? or *).

\[
[Dareka-ga]_{\exists} [dono heya-mo]_{\forall} katazukeru kamo-sirenai.\]

\[\text{Someone may (epi.) organize every room.}\]

\[\exists > \forall \quad *?\forall > \exists\]

2. Analysis.

In this paper, we argue that with a universal modal, a universal quantifier \(dono N-mo\) has a semantic scopal effect of taking a wider scope than the actual realization at LF, and that the apparent inverse scope is not acquired by QR of the universal quantifier. We also argue that there should be distinct semantics for \(dono N-mo\) and \(dare/nani-mo\), which, as far as I know, have been treated as identical in the literature. The apparent inverse scope is acquired only when we look at the world as a collection of minimal possible worlds (cf. Heim 1990 for the notion of minimality). As illustrated in (6), the surface scope holds true in each of the minimal events.

---

1 The detailed gloss of \(nak-ereba-nara-nai\) will be something like ‘neg-if-be-neg,’ which literally means ‘if not P, it’s bad.’ In this paper, we do not look at the detailed structure inside the phrase, but we will just assume that it can serve as a universal modal as a whole. Also it should be noted that this phrase has some variants; \(nakereba-ikenai, nakutewa-naranai, nakutewa-ikenai\). The detailed glosses will be the same as the basic one for all of them, and s for judgment all of them behave in the same way.
2.1 Not a QR.

2.1.1 Different quantifier
Contrary to a naïve hypothesis that the universal quantifier QRs to a higher position relative to the existential quantifier, we argue that the surface scope must be preserved at LF. We can see this from the example in (7), where many cannot take scope over someone even in a universal modal context.

(7) [Dareka-ga]∃ [ooku-no heya-o]many katazuke nakereba-naranai.
    someone-NOM many    room-ACC    organize    must (deontic)
    ‘Someone must (deon.) organize many rooms.’ ∃ > many *many > ∃

(8) what many > ∃ reading would be:

   room A      room B       room C       room D        room E       <unorganized>
   person A    person B     person C     person D

   (9a) Indeterminate
   pron.  | Ø: interrogative | ka: existential | mo: universal | de-mo: free choice
   --- | --- | --- | --- | ---
   dare | dare  | dare-ka | dare-mo | dare-de-mo
        | ‘who’  | ‘someone’ | ‘everyone’ | ‘anyone (FC)’
   nani | nani | nani-ka | nani-mo | nan-de-mo
      | ‘what’ | ‘something’ | ‘everything’ | ‘anything (FC)’
   dono (Det.) | dono N | dono N-ka | dono N-mo | Dono N-de-mo
     | ‘which N’ | ‘some N’ | ‘every N’ | ‘any N (FC)’

The reason why the sentence (7) does not have the reading where the situation (8) is true is that since the scope illusion is not induced by the actual QR of the lower quantifier, the surface scope must be preserved, and we cannot find a situation where the reading ∃ > many is true in (8).

2.1.2 Universal quantification of different phrases
There are several ways to express ‘everything/everyone’ in Japanese. Some of them, which use phrases referred to as ‘indeterminate pronouns’ (Kuroda 1965), are in (9a), while other ways are illustrated in (9b-e).

(9) a.
b. *subete-no* N ‘all-GEN N’ <compatible with both inanimate and animate elements>
   e.g. *subete-no* gakusee ‘all students’ *subete-no* doa ‘all doors’
   gakusee *subete* ‘all students (floating quantifier)’

c. *zen-in* ‘all-members’<only animate>
   e.g. *Zen-in*-ga     ki-ta.
       all-members-NOM come-PAST
       ‘Everyone came.’
   Gakusee  *zenin*-ga     ki-ta.
       student     all-members-NOM come-PAST
       ‘All of the students came.’

d. *zen-bu* ‘all-parts’ <only inanimate>
   e.g. *Zen-bu*-ga    koware-ta.
       all-parts-NOM break-PAST
       ‘Everything broke.’
   Doa  *zen-bu*-ga    koware-ta.
       door     all-parts-NOM break-PAST
       ‘All of the doors broke.’

e. *minna* ‘everyone’ <only animate, colloquial>
   e.g. *Minna*-ga     ki-ta.
       everyone-NOM come-PAST
       ‘Everyone came.’
   Gakusee  *minnna*-ga     ki-ta.
       student     everyone-NOM come-PAST
       ‘All of the students came.’

The apparent inverse scope reading in question is not yielded, or at least very hard to get, with other quantifiers than *dono* N-mo.

(10)   [Dareka-ga]∃ [nani-mo-(kamo)-o]∀ katazuke nakereba-naranai.
   someone-NOM what-MO-(emphasis)-ACC organize  must (deontic)
   ‘Someone must (deon.) organize everything.’

If the universal quantifier actually QRs to a higher position relative to the existential quantifier under the universal modal context, it is predicted that the inverse scope reading in (10) should be as good as that in (3a). However, the reading is not available. This suggests that only with the combination of *dono* N-mo and universal modal is the inverse scope yielded.

2.2 Fox & Sauerland’s (1996) illusive scope with generic tense

Our analysis is compared to Fox & Sauerland’s (1996) “illusive scope” of universal quantifiers in generic context, found in frozen scope environments such as double object construction in English, and in rigid scope languages such as Korean and Japanese. Personally, I do not agree with the judgment in (11b), but I do agree that the inverse scope reading ∀ > ∃ is available in the sentence in (12), where *dono* N-mo is used instead of *subete-no* N.
(11) a. In general, I give a tourist every leaflet. \(\exists > \forall \quad \forall > \exists\)

b. Japanese

Geemu-de-wa, hitori-no kodomo-ga subete-no doa-o tataku.

game-in-TOP one-GEN child-NOM all-GEN door-ACC knock

‘In the game, one child knocks on all doors.’ \(\exists > \forall \quad \forall > \exists\)  
(F&S (1996: 2, 3))

(12) Kono geemu-de-wa, dareka-ga dono doa-mo tataku.

this game-in-TOP someone-NOM which door-MO knock

‘In the game, someone knocks on every door.’ \(\exists > \forall \quad \forall > \exists\)

Their explanation goes like this: The sentence in (11a) “asserts that whenever we look at the relevant portions of the world, we tend to find a tourist who gets all of the leaflets” (F&S 1996: 4). If we assume that the situation for (11a) is something like (6), the situation is compatible with the assertion. This is because in situation A, there is someone who gets all of the leaflets in the situation, though there is only one leaflet in the situation, and in situation B and C the same holds true.

2.3 Amending F&S

F&S deal with generic tense, which takes scope over situations, and we attempt to apply their analysis to universal modals, which take scope over possible worlds. This leap might at first look surprising, but we would like to cast a doubt on their analysis and go on to discuss that there is actually an implicit universal modal in the examples they have. The sentence (11a) is typically understood in a job context, which involves obligation. Note that generic tense can be assumed when a sentence expresses a habit, as in (13b), where the inverse scope reading is hard to obtain.

(13) a. In general, I (must) give a tourist every leaflet (as a job duty). \(\forall > \exists\)  
b. In general, (as I stroll along), I give a tourist every leaflet (when I feel like). \(\exists > \forall \quad \forall > \exists\)

Other sentences they have in F&S contain verbs such as ensures, and checks. Note that the judgment for the inverse scope reading in (14c), where ensures is replaced by says, gets worse.

(14) a. In general, a guide ensures that every tour to the Louvre is fun. \(\forall > \exists\)

b. At linguistics conferences, a grad student checks that everybody has a badge. \(\forall > \exists\)

c. In general, a guide says that every tour to the Louvre is fun. \(\exists > \forall \quad \forall > \exists\)

We suspect that F&S actually look at the generic context with some universal force, not the generic context in general.\(^2\) Applying their analysis to our analysis is not a huge leap.

\(^2\) An informant judged the inverse scope reading in the sentence with a universal modal but without “in general,” as obtainable (“I must give a tourist every leaflet”). I haven’t consulted many speakers yet, but this needs to be investigated.
2.4 Difference in distributivity and D-linkedness between dono N-mo and dare/nani-mo

Another point we would like to propose is that dono N-mo ‘which N-MO (lit)/every N’, unlike dare/nani-mo ‘who/what-MO (lit)/everyone,’ has a strong effect to make us look at the divided worlds, as we will discuss below. As we saw in (10), the apparent inverse scope is not yielded with dare/nani-mo. This observation suggests that there is a distinction between dono N-mo and dare/nani-mo, in that dono ‘which’ bears an effect to help us looking at the divided worlds, while dare/nani does not have the effect. In other words, dono N-mo can be more precisely paraphrased as ‘each one of N,’ and dare/nani-mo is paraphrased as ‘all of them.’ The idea that there is a distinction between what are assumed as universal quantifiers in distributivity is not new (Beghelli & Stowell 1997, Spector 2012 for English each and every/all).³

(15) Context: Talking about a normal sized room.
   a. Every student fits into this room.
   b. #Each student fits into this room.

(16) a. #In this country, each citizen is equal.
   b. In this country, every citizen is equal. (Spector 2012: 56)

(17) a. What surprised me when I went to the city was that every car was illegally parked!
   b. #What surprised me when I went to the city was that each car was illegally parked!

Moreover (or, alternatively), we would like to propose that dono N denotes the set of the contextually defined things that are N, and nani denotes the set of (contextually not defined) inanimate things. Namely, dono N is D-linked, while nani is not. We again compare this association of D-linkedness with the exceptional scope-taking to the association of D-linkedness with the violation of superiority effects in English.

We follow Shimoyama (2006) and assume that -mo is a generalized quantifier with universal force. Combined with -mo, both dono N-mo and nani-mo denote the set of all things (that are N) with an appropriate contextual restrictor. The idea is that for the example (3a), we can assume the set of the accessible possible worlds, in each of which there exists a set of situations created by dono N.

(3) a. [Dareka-ga]∃ [dono heya-mo]∀ katazuke nakereba-naranai.
      someone-NOM which room-MO organize must (deontic)
      ‘Someone must (deon.) organize every room.’ ✓∃ > ∀ ✓∀ > ∃


The LF of (3a) is that in every accessible possible world w such that the w conforms with requirement, there is a set of minimal situations, such that every situation s, such that someone organizes every room in s, is a situation which someone organizes every room. The situation illustrated in (6) matches the LF. The existential modal will allow various situations, and thus (6) does not match the LF of (5).

³ Fodor & Sag (1982) point out that each is “a quantifier that favors wide scope.” If we assume that dono N-mo can, just in parallel with each, undergo the operation of QR, then the inverse scope in question will be said to results from QR. I leave this point open.
References

Spector, Benjamin. 2012. “Generalized Scope Economy,” handout from *MIT Linguistics Colloquium* at MIT, yesterday!