Salish languages lack generalized quantifiers after all!

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Introduction It is more than a decade since Jelinek (1995) launched her influential claim that Northern Straits Salish (NSS) lacked generalized quantifiers (GQs), and thus constituted a counterexample to Barwise and Cooper's (1981) NP-Quantifier Universal. Subsequently, that claim has been challenged by Matthewson (1998, 2001) - see also Giannakidou (2004) - on the basis of a set of structures containing DP-adjoined strong quantifiers. In this paper I present new data involving cumulative readings of strong (proportional) quantifiers and the absence of strong crossover effects to show that in fact these structures are not GQs after all, thus re-establishing Jelinek's claim (albeit in a different form). As a result, Salish languages once again pose a challenge to the NP-Quantifier Universal.

Background Jelinek's original claim was that all strong quantifiers in NSS had both the syntax and the semantics of unselective A-type quantifiers like English *always* (Lewis 1975). This cannot be correct: all Salish languages which have been investigated (including NSS) display structures of the form [$_{DP}$ Q [$_{DP}$ D NP]], as illustrated in (1-2):

(1) ṯəm̓-ət=ɬ=kʷəʔ [$_{DP}$ *məḵʷ* [$_{DP}$ ksə=sqʷəlqʷəméy̓]]
hit-TR=1PL.SU=INFR [$_{DP}$ *all* [$_{DP}$ DET=dog(PL.REDUP)]]
'We hit all the dogs.' (*NSS; Central Salish*)

(2) c̓áqʷ-an̓-əm [$_{DP}$ *tákəm* [$_{DP}$ ʔi=šc̓úqʷaż=a]]
eat-TR-1PL.ERG [$_{DP}$ *all* [$_{DP}$ PL.DET=fish=EXIS]]
'We ate all the fish.' (*St'át'imcets (ST'); Northern Interior Salish)*

In this structure, *Q* is most frequently represented by a universal quantifier, but in ST', *šáq̓ʷuɬ* 'half' and *ƛ̓qʷaẇš* 'both' may also adjoin to DP (evidence is lacking for other Salish languages). A variety of syntactic tests support the structure in (1-2), including co-ordination with non-quantified DPs and movement to pre-predicative positions. Matthewson (2001) concludes that the structures in (1-2) are standard GQs, in contrast to non-quantified DPs (including those containing cardinality predicates), which are interpreted via choice functions. On standard assumptions, this predicts that the two classes will differ in scope. Non-quantified plural DPs should show no scope interactions, whereas GQs should be subject to QR, and therefore show scope ambiguities.

Data The first set of predictions is borne out: non-quantified plural DPs in ST' (including those containing weak quantifiers such as numerals) only yield cumulative rather than distributive readings, as illustrated in (3):

(3) qʷuš-xit-ítaš [$_{DP}$ ʔi=*nx̣ʷəx̣ʷʔúčin*=a] təwtwíẇt] [$_{DP}$ ʔi=*kaɬáɬš*=a míx̣aɬ]
shoot-IND-3PL.ERG [$_{DP}$ PL.DET=*four*=EXIS boy(PL) [$_{DP}$ PL.DET=*three*=EXIS bear]
'4 boys shot 3 bears.' (i.e., a total of 4 boys shot a total of 3 bears, in any combination.)

These findings are compatible with an analysis where only a DP-adjoined quantifier creates a GQ. However, crucially, in examples with two DP-adjoined quantifiers, the same facts hold: only cumulative – not distributive – readings are possible:

Context: Four children are meant to read four books over the summer holidays.

(4) [$_{DP}$ tákəm [ʔi=šḵʷəmḵʷúḵʷmiʔt=a]] paqʷaƛ̓ikšt-mín-itaš [$_{DP}$ šáq̓ʷuɬ [$_{DP}$ ʔi=púkʷ=a]]

[$_{DP}$ all [$_{DP}$ PL.DET=child(PL)=EXIS]] read-RED-3PL.ERG [$_{DP}$ half [$_{DP}$ PL.DET=book=EX]]
'All the children read half the books.' (Good on all readings where each of the 4 children reads at least one of the books, and a total of 2 out of the 4 titles are read; bad otherwise.)

(5) [šáq̓^{w}uɬ ʔi=šk̓^{w}əmk̓^{w}úk̓^{w}miʔt=a] paq^{w}aƛ̓ikšt-mín-itaš [$_{DP}$ tákəm [$_{DP}$ ʔi=púk^{w}=a]]
[$_{DP}$ half [$_{DP}$ PL.DET=child(PL)=EXIS]] read-RED-3PL.ERG [$_{DP}$ all [$_{DP}$ PL.DET=book=EX]]
'Half the children read all the books.' (Good on all readings where exactly 2 of the children between them read a total of 4 titles; bad otherwise.)

These data show not only that DPs containing adjoined *tákəm* 'all' do not show the behaviour of GQs, but even more surprisingly, that neither do those containing the inherently proportional quantifier *šáq̓^{w}uɬ* 'half'.

Further evidence for the non-GQ status of DPs with adjoined quantifiers is provided by (the absence of) Strong Crossover effects (SCO) with *tákəm* 'all'. In ST', a pronoun may c-command a covalued lexical DP in a subordinate clause (Davis 2009). In such cases, the DP may contain an adjoined strong quantifier without inducing an SCO violation (6):

(6) čút=*wit*=tuʔ [$_{CP}$ k^{w}=š=x^{w}uż naš ċuq^{w}aż-am
said=*3PL*=REM [$_{CP}$ DET=NOM=going.to go fish-MID
[$_{DP}$ tákəm [$_{DP}$ ʔi=n-šnək̓^{w}núk̓^{w}ʔ=a]] natx^{w}]
[$_{DP}$ all [$_{DP}$ PL.DET=1SG.POSS-relative(PL.REDUP)=EXIS] tomorrow]
'My family all said they were going fishing tomorrow.'
(Literally: '*They* said that *all my relatives* were going fishing tomorrow.')

Since SCO effects are diagnostic of QR, and QR is one of the hallmarks of a GQ, this provides further evidence that adjoined strong quantifiers are not GQ-creating in ST'.

Analysis I assume a basic semantics for pluralities along the lines of e.g. Schwarzchild (1996). Cumulative readings are derived by the ** operator of Beck and Sauerland (2000), which is simply the equivalent of the * (plural) operator for transitive predicates. Since the principal use of DP-adjoined universals quantifiers in ST' is to enforce maximality (plain plural DPs allow exceptions, but plural DPs with *tákəm* 'all' do not), either an approach which picks out the maximal set denoted by a plural DP (e.g., von Fintel and Heim's 2001 *Max*), or one which enforces the distributive sub-entailments of a plural predicate (Dowty 1987, Brisson 2003) is potentially available. Following Ferch (2009), I choose the former because it correctly allows *tákəm* 'all' to appear with purely collective predicates, which have no distributive sub-entailments. For *šáq̓^{w}uɬ* 'half', I assume a denotation as in (7), which treats it as a special kind of choice function that picks out a subset of the set denoted by the plural DP, and is defined only if the cardinality of the subset chosen is exactly half of that of the superset.

(7) $[[\text{šáq̓}^{w}\text{uɬ}]]^{g} = \lambda P: \left| (g(i)(P) \right| = ½ \left| P \right|. (g(i))(P)$

Consequences The result is that ST' - and by extension other members of the Salish family - lack GQs altogether, contra Matthewson, but in line with Jelinek's original conjecture. Salish thus once again stands as an important counter-example to Barwise and Cooper's NP Quantifier Universal. Furthermore, the existence in a language of an inherently proportional quantifier such as *šáq̓^{w}uɬ* 'half' can no longer be taken as prima facie evidence for a GQ; cumulative versus distributive readings need to be checked individually for each quantificational element.