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SET THEORY AS AN EXPLANATION FOR THE SELECTION BETWEEN 
MÁS QUE/MÁS DE IN SPANISH

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Selection between the comparatives más que/más de 'more than' has long been an issue among grammarians of Spanish. Spanish grammars and textbooks contain lengthy explanations and rules with different solutions ranging from a listing of a number of Spanish sentences illustrating their usage to English translation equivalents. Unfortunately, none of these provides a satisfactory indication as to how the distinction is made, and exceptions are frequent.

The use of the notion of 'Set Theory' in grammar is not a new one. It has been written on by 'Cooper 1964' and 'Ortiz & Zierer 1968' and suggested by linguists such as 'Jacobson 1961', 'Bach 1964', and even 'Chomsky 1957'.

In this study we will apply the concept of set theory to the más que/más de distinction in Spanish and through this approach provide a solution that obtains more generally and gives information as to how the distinction functions.

Most Spanish grammars and textbooks list the más que/más de forms under a section titled 'Comparison of Inequality' or 'De and Que as Translations of the English "Than"'. We consulted over twenty Spanish grammars and textbooks as well as several journal articles. A synthesis of the rules which reflects a consensus follows:

COMPARISONS OF INEQUALITY

I más que:

'Pedro es más alto que Juan.'
(Pedro is taller than Juan.)

'Pedro come más que Juan.'
(Pedro eats more than Juan.)

II más de (el, la, lo, los, las) que:

When each member of a comparison contains a different verb (i.e. there are two clauses)

1) If the point of comparison is a noun, use de (el, la, los, las) que:
'Gasta más dinero del que gana'.
(He spends more money than he earns.)
'Ha cometido más crímenes de los que ha confesado.'
(He has committed more crimes than he has confessed.)

2) If the point of comparison is an adjective, adverb, or an entire idea, use de lo que:

'Era más pequeño de lo que parecía sentado.'
(He was smaller than he seemed when he was seated.)
'Hicieron mucho más de lo que era imaginable.'
(They did much more than what was imaginable.)

III In affirmative statements de is placed after más when followed by numerals or a numerical expression:

'Caminó más de cincuenta metros'.
(He walked more than 50 meters.)
'Perdimos más de mil dólares'.
(We lost more than 1,000 dollars.)

IV In negative statements either de or que may be placed after más when followed by numerals or a numerical expression, but with a difference in meaning.

No ... más que ... = 'only'
No ... más de ... = 'not more than'
'Ella no tiene más que veinte años'.
(She is only 20 years old.)
'Ella no tiene más de veinte años'.
(She isn't more than 20 years old.)

V After a superlative, English in is translated by de.

'María es la más guapa de la clase'.
(María is the prettiest girl in the class.)
'Es la montaña más alta de América'.
(It is the highest mountain in America.)

The two forms which seem to cause the most confusion are the no ... más que versus no ... más de followed by a numerical expression and the de (el, la, lo, los, las) que comparative. 'Hayward Keniston 1937:622' notes that '...it is not possible to determine whether a distinction existed in sixteenth-century
'Andrés Bello 1847:331' stated in his grammar that either de or que could be employed in such negative statements, but that all in all the preposition de 'suena mejor' 'sounds better' than the conjunction que. In his revision of Bello's grammar, Rufino Cuervo 'Bello 1847:499' added a note which reads: 'One perceives a difference between No se gastaron más de cien pesos and No se gastaron más que cien pesos. The latter seems to mean that only one hundred pesos were spent and the former that any amount up to and including one hundred pesos was spent'.

'Ramsey 1956:143', first published in 1894, states that either que or de may be used in negative statements, the preference being for que. A footnote explains that theoretically, no ... más que means only and no ... más de means not more than. Finally, the 'Real Academia Española 1973:418' grammar informs us that in modern language the construction with que has gained a lot of ground on the classical construction with de in negative statements.

According to the grammars then, there is not yet a clearcut distinction between que and de in the comparative forms with numerical expressions.

As for the de (el, la, lo, los, las) que form, the 'Real Academia Española 1973:419' grammar says that the preposition de is generally preferred since it has greater traditional force, but que is also permissible. It goes on to mention that perhaps part of the reason for preferring de is for purposes of euphony, so as to avoid a que lo que type of construction by employing de lo que. However, 'Bolinger 1950:35' would disagree with this last statement and insist that the semantic distinction between que and de is respected regardless of euphony.

After reviewing the grammars, we felt it necessary to research current modern educated usage. 'Andrés Bello 1847:27' said, 'The grammar of a language is the art of speaking correctly, that is, according to proper usage, which is that of educated people.' We selected ten novels written by authors representing nine different geographical areas in the Spanish-speaking world. The nine areas were: Argentina (Rio Plate), Chile, Bolivia (Andes), Peru (Coastal), Venezuela, El Salvador (Central America), Mexico, Puerto Rico (Caribbean), and Spain. The novels were all written after 1970. A minimum of fifty pages of each novel was read. This provided just over 1000 pages of text. There were 271 examples of más que/más de found in the sample.

We carefully designed a questionnaire containing 25 items
that would elicit a choice between the two forms. These were presented to ten native speakers of Spanish from the same nine representative geographical areas and then analyzed to produce generalizations which we used to evaluate the rules presented by the grammarians. The speakers were chosen to reflect the same sociological characteristics; female, educated, age 20-30, etc.

We found, as did 'Bolinger 1950' in a similar study that the respondents generally agreed in their usage. They were able to consistently make the distinction between the two forms (147 out of 149 applicable responses). The exceptions to this unanimity occurred in sentences of the type No ... más que/de ... followed by a numerical expression and ... de/que (el, la, lo, los, las) que, etc.

There were five sentences of the type No ... más que/de ... 26 of the applicable responses favored de and 13 favored que, while nine allowed either form and there were two items left unanswered.

There were also five sentences of the type ... de/que (el, la, lo, los, las) que... Both the writers and the grammarians gave four out of the five sentences as evoking the form de. Of 39 responses, 30 preferred de while nine preferred que. In the other sentence, evoking que, five preferred que, two preferred de and one accepted either response. Two of the informants gave no response.

The importance of these results lies in the confirmation of the apparent existence of some underlying generalization that enables the Spanish speaker to make the distinction between the comparatives más que/más de. Their hesitation on the no más que/de followed by a numerical expression and the de/que (el, la, lo, los, las) que forms only points out the fact that the distinction in usage has not been totally refined as of yet.

Nevertheless, among the many solutions brought forward for the distinction between más que/más de, that of set theory appears to be the most plausible.

Set theory is a vast, complicated mathematical concept in its entirety. Its application in this and other linguistic instances can be greatly reduced in scope. For our purposes, it will be treated as the distinction between: 1) one set and 2) more than one set.

In this case, when the comparison is made including elements of one set, the form de is used. If more than one set is used the
form que is used. Spaulding comments that the competition between de and que in comparisons in Spanish has its roots in spoken Latin. 'Saenz 1940:329' suggests that herein lies the 'key to the solution of the problem.' There is a phenomenon in Latin known as the 'genitive of the whole' which is formed with words indicating parts of the whole. This was transmitted into the Romance languages in the form of the preposition de. This idea 'relation of a part to the whole to which it pertains' seems to be an integral part of the application of set theory to this distinction. Several of the grammarians such as Bolinger, Gili y Gaya, Bull, Keniston, and Anderson included this perception in their presentations on más que/más de. 'De Mello 1977:510-11' came closest when he said that '...que is used in comparisons involving two different entities, while de is required when reference is to a single entity.' While he understands the concept, he fails to recognize that the theoretical basis is set theory.

'Solé 1982' wrote an excellent survey article showing all the syntactical possibilities for más que/más de. De Mello wrote a review pointing out that all of her cases could be answered by his approach. They never came to a meeting of the minds, since Solé responded citing the same examples and saying that De Mello didn't understand what she was stating.

The essence of the matter is that both are right. Solé provides the syntactical structures but in the end her conclusions only say that there are two types of modification: one that is phrasal (de) in nature and one that is clausal (que) in nature. She still doesn't provide a basis for selection between the two forms.

The solution to the selection lies in set theory. We have taught this as being theoretically feasible since 1974. The research to verify it wasn't carried out until 1984. In the review of the literature we found that mention was made of this application by 'Ortiz & Zierer 1968'. Their observations appear tucked away at the end of a general article on set theory and linguistics. They only explored the possibility and provided general suggestions.

Our research suggests that the underlying distinction here is that the Spanish speaker perceives each comparison in his mind as being one of two types:

1) An extension of one entity, set, or thing, which would require the use of de.
2) A comparison of two different entities, sets, or things, which would require the use of que.
The following examples with illustrations will demonstrate how the distinction works.

1. Pedro es más alto que Juan.

2. Gastas más dinero del que ganas.

3. Hicieron mucho más de lo que era imaginable.

4. Caminó más de cincuenta metros.
5. No tiene más de 20 años.

\[
\begin{array}{c|c|c}
\text{años} & +21 & \text{no tiene} \\
\hline
20 & 20 & \\
19 & 18 & \\
\end{array}
\]

6. No tiene más que 20 años.

\[
\begin{array}{c|c|c}
\text{años/ X} & +15 & \text{no tiene} \\
\hline
20 & 15 & \\
10 & 10 & \text{(unspecified entity)} \\
5 & 5 & \\
\end{array}
\]

7. Tiene más que un carro.

\[
\begin{array}{c|c|c|c}
\text{casa, amigos} & \text{esposa, motocicleta, etc.} \\
\hline
\text{carro/ X} & \text{carro} & \\
\end{array}
\]

8. María es la más guapa de la clase.

\[
\begin{array}{c|c|c}
\text{guapas} & + & + + + + \\
\hline
\text{las otras guapas} & \text{María} & \\
\end{array}
\]

\[
\begin{array}{c|c|c}
\text{guapas} & + & + + + + \\
\hline
\text{las otras guapas} & \text{María} & \\
\end{array}
\]
CONCLUSIONS

Our approach provides a solution that applies more generally and provides information on how the distinction is made by Spanish speakers between the forms más que/más de in the comparative. This illustration of how the distinction is made through the application of set theory is an improvement over the somewhat lengthy and involved traditional grammar explanations. It goes to the real root of the distinction and handles all of the más que/de comparatives encountered in the Spanish language in a neat and concise way.
APPENDIX

QUESTIONNAIRE WITH RESULTS SUPERIMPOSED

FAVOR DE DAR LA FORMA CORRECTA DE MÁS DE LO QUE, MÁS QUE LO QUE, ETC. PARA LAS ORACIONES SIGUIENTES. SI HAY MÁS DE UNA POSIBILIDAD, DÉ LAS ALTERNATIVAS CON UNA EXPLICACIÓN DEL SIGNIFICADO DE CADA UNA.

<table>
<thead>
<tr>
<th>DE</th>
<th>QUE</th>
<th>EITHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>1</td>
<td>6. No (traigas) más _______ una docena.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>7. Tiene más vidas _______ los gatos.</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>8. Tenían una carta más _______ los demás.</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>9. (Querían) ser algo más _______ ricos.</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>10. Es la montaña más alta _______ América.</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>11. No tienen que hacer más _______ sentarse en sus oficinas.</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>12. (Estaba) sin más adorno _______ una cruz.</td>
</tr>
</tbody>
</table>
13. En la vida, más vale una vez colorada
________ mil descoloridas.

14. ...porque son más tristes _______ entierro
a pie.

15. No la tomamos en serio más _______ cuatro
docenas de mujeres.

16. No era más _______ una niña asustada.

17. Jaime, que entonces no tenía más _______
siete años.

18. Ángela Vicario era la más bella _______
las cuatro.

19. No se demoró más _______ diez minutos.

20. Estaba más bella _______ nunca.

21. No duraría más _______ un minuto.

22. Perro más inteligente _______ los hombres.

23. Esta llamada capital no era más _______ un
poblacho.

24. La moral de hoy, en más _______ un
sentido, había cambiado mucho.

25. Vengo también de un ambiente más _______
acomodado.
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