

# Comparative Constructions in Tamil and English- A Comparative Study with the existing Machine Translation systems

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## ABSTRACT

Comparative construction is a linguistic technique for demonstrating two or more items to show their similarities and differences. Typically, a comparative construction consists of a predicate and two noun phrases, one of which serves as the "criterion" of the comparison and the other as the object of comparison (the comparee NP). The sentences that are comparable to sentences like "Raja is taller than Roja", where the noun phrase after the item "than" is the standard NP, are prototype examples of comparative constructions in the languages of the globe. As suggested by Dixon [3], a prototypical comparative construction has three elements: participants of comparison (comparee and standard of comparison), the property (parameter of comparison), and the index of comparison. In this paper, we are not concerned with the typological study of comparative constructions. We have focused on mapping comparative constructions in Tamil with that of English and formulated rules for Machine Translation. The translation between Comparative construction sentences in Tamil and English are tested with the existing Machine Translation system and their results are discussed.

**Keywords:** *Comparative Construction, Tamil language, comparee, Standard of comparison, Degree Marker, Comparison of Inequality, Comparison of Equality, Machine Translation*

## 1. INTRODUCTION

A prototypical comparative construction involves a quality or property whose extent is compared, the entity being compared, and the standard of comparison. Comparison is a mental act by which two or more items are examined in order to assess similarities or differences between them. The comparison can be made with regard to a certain gradable, one-dimensional property, and the items are then assigned a position on a predicative scale. This mental act of comparison finds its linguistic encoding in comparison constructions, especially comparative constructions for the expression of comparison of inequality or equative constructions for the expression of comparison of equality. In this research, we have tested and compared the grammatical structures found in the Tamil language with those present in English [6-8]. This extensive analysis has enabled us to establish a set of rules that can be applied to facilitate Machine Translation between the two languages. To validate the effectiveness of our findings, we conducted thorough testing of the translation process for comparative construction sentences in both Tamil and English using an established Machine Translation system. The outcomes of these tests have been meticulously analyzed and are presented for discussion and evaluation.

## 2. LITERATURE REVIEW

The linguistic literature has especially been concerned with comparison of inequality and comparative constructions as found in the following English sentences [5].

(1) Mary is tall-er than Peter -Comparee - Parameter - Parameter/Degree Marker - Standard Marker - Standard

(2) Mary is more intelligent than Peter- Comparee - Parameter/Degree Marker - Parameter - Standard Marker - Standard

- Comparee (COM) = what is being compared against some standard of comparison (*Mary*); alternative terms used in the literature: Item compared.
- Standard of comparison (SOC) = what the comparee is being compared against (*Peter*)
- Standard Marker = marker of the grammatical function of the standard (*than*), alternative terms used in the literature: marker, pivot, relator
- Parameter of comparison (POC) = property of comparison (*tall, intelligent*); alternative terms used in the literature: Quality or Quantity, comment, (comparative) predicate.
- Degree Marker or Parameter Marker : It marks the degree of presence or absence of a property in the comparee (*more* or *-er*); alternative terms used in the literature: Index, comparative concept.

Dixon [1] makes use of the terms comparee, index, parameter, mark and standard. The following example will exemplify the use of these terms.

John is more famous than Bill.

comparee index parameter mark standard

In traditional grammar of English, four degrees of comparison of the adjective are distinguished. They are positive degree, equative degree, comparative degree, and superlative degree [5].

Positive degree: basic form of the adjective; *Susan is tall* - positive construction

Equative degree: parameter is ascribed to the comparee and the standard to the same extent; *Susan is as tall as Peter* - equative construction

Comparative degree: Parameter applies to the comparee to a higher extent than to the standard; *Susan is tall-er than Peter* - comparative construction

Superlative degree: shows the highest degree of the parameter applied to the comparee; *Susan is the tallest of her family* - superlative construction

Tamil does not make use of degree marker or parameter marker; it makes use of only parameter of comparison. In Tamil, there is no morphological distinction between positive degree, comparative degree and superlative degree. Rajendran [4] elaborately studied comparison of inequality and equality in Tamil.

### 3. COMPARISON OF INEQUALITY

In a prototypical comparative construction in Tamil and English, the comparee occupies the subject position, and the standard of comparison occupies the predicate position. In English, the standard of comparison occupies a position at the end of the comparative construction after the parameter of comparison whereas in Tamil, the standard of comparison occupies the predicative position before the parameter of comparison. The standard of comparison is

marked for accusative case in Tamil. The parameter of comparison does not make use of a comparative degree marker; it is pronominalized to agree with the subject NP. English makes use of *than* as parameter of comparison and Tamil makes use of *viTa* or *kaaTTilum* as parameter of comparison.

(3) raaNiraataiy-ai vita/kaaTTilumazahkaana-val

Rani Radha-ACC POC ADJ-PN

' Rani is more beautiful than Radha '

The mapping between Tamil and English can be given as follows:

#### Mapping rule 1:

$NP_{COM} + NP_{ai} + vita/kaaTTilum + ADJ-PN = NP_{COM} + BE + more + ADJ + than + NP_{soc}$

In the superlative comparative construction, the parameter of comparison is marked for superlative degree in English. In Tamil, the parameter of comparison is not marked for superlative degree. The standard of comparison has to be an inclusive NP of superlative nature meaning 'of all', 'among all' and so on. In Tamil too, the standard of comparison in superlative comparative construction must be inclusive nature: *avarkaLelloorilum* 'among all'.

(4) raaNiavarkaLelloor-ai-yum viTaahakaana-val

Rani they all-ACC-EMP than ADJ-PN

Rani is most beautiful among all

#### Mapping rule 2:

$NP + NP_{ai} + viTa/kaaTTilum + ADJ-PN = NP_{COM} + BE + most + ADJ + among all.$

In English, certain adjectives inflect for comparative degree is marked with -er instead of *more*.

(5) raaNiraataiy-ai viTa/kaaTTilumuyaramaanaVal

Rani Radha-ACC POC ADJ-PN

Rani is taller than Radha

#### Mapping rule 3:

$NP_{COM} + NP_{ai} + vita/kaaTTilum + ADJ-PN = NP_{COM} + BE + ADJ-er + than + NP_{soc}$

Some adjectives in English, inflect for comparative marker -est instead of *most* .

(6) raaNiavarkaLelloor-ai-yum viTauyaramaana-val

Rani they all-ACC-EMP than tall-PN

Rani is tallest among all

#### Mapping rule 4:

**NP+ NP-ai + viTa/kaaTTilum + ADJ-PN = NP<sub>COM</sub> + BE + ADJ-est + among all.**

In the place of ADJ-PN Tamil can make use of noun denoting quality +adverbial marker when followed by the be-verb *iru*. English makes use of be-verb and adjective combination only. The following sentence will exemplify this statement.

(7) raaNiraataiyaviTa/kaaTTilumazhak-aakairu-kkiR-aaL

Rani Radha-ACC than beauty-ADVP be-PRE-3FS

Rani is more beautiful than Radha

#### Mapping rule 5

**NP<sub>COM</sub> + NP-ai + vita/kaaTTilum + N-ADVP iru-TEN-PNG= NP<sub>COM</sub> + BE + more + ADJ + than + NP<sub>SOC</sub>**

Similar to adjectives, adverbs too can make comparison of inequality. Consider the following example.

(8) raaNiraataiy-ai viTa/kaaTTilumveekamaakaoT-in-aaL

Rani Radha-ACC than fast run-PAS-PNG

Rani ran faster than Radha

In Tamil, the standard of comparison is marked for accusative marker; the standard marker *viTa/kaaTTilum* comes next and the parameter of comparison which is an adverb comes after standard marker and before the verb. In English, the verb comes before the parameter of comparison which is an adverb which is inflected for the comparative marker -er; the standard of comparison comes at the end and the standard marker *than* comes before the standard of comparison.

#### Mapping rule 6:

**NP<sub>COM</sub> + NP-ai + viTa/kaaTTilum + ADV +V-TEN-PNG = NP<sub>COM</sub> + V-TEN + ADV-er + than + NP<sub>SOC</sub>**

## 4. COMPARISON OF EQUALITY

If two or more items are found to be similar quantitatively or qualitatively they can be subjected to the comparison of equality. Consider the following sentence.

(9) raaNiraataiy-aippoolazhakaana-vaL

Rani Radha-ACC like ADJ-PN

'Rani is as beautiful as Radha'

In the above sentence, Rani is the comparee, i.e. item compared; Radha is the standard of comparison; *poola* is the standard marker; *andazhakaana* 'beautiful' is the parameter of comparison. In English, the standard of comparison comes at the end; the parameter of comparison comes in-between the standard marker as-----as.

**Mapping rule 7:**

**NP + NP-ai + poola + ADJ-PN = NP + BE + as-ADJ-as + NP<sub>SOC</sub>**

Similar to adjectives, adverbs also undergo comparison of similarity. Consider the following sentence.

(10) raaNiraataiy-aippoolaveekamaakandaTa-kkiR-aaL

Rani Radha-ACC like walk-PRE-3FS

'Rani walks as fast as Radha'

In Tamil, the subject function as the comparee; the standard of comparison marked for accusative case follows it; the standard marker *poola* follows next; the parameter of comparison which is an adverb follows it and the verb which inflect for tense and person-number-gender (PNG) occupies the final position of the construction. In English, the subject NP function as the comparee. The verb which is inflected for tense comes next. The parameter of comparison comes in between the standard marker 'as---as'.

**Mapping rule 8:**

**NP<sub>COM</sub> + NP-ai + poola + ADV + V-TEN-PNG = NP<sub>COM</sub> + V-TEN + as-ADV-as + NP<sub>SOC</sub>**

Comparison can be made without the explicit expression of adverb. In that context, the comparative construction become ambiguous. Consider the following example:

(11) raaNiraataiy-aippoolaoTu-kiR-aaL

Rani Radha-ACC like run-PRE-3FS

Rani runs like Radha

The Tamil sentence is ambiguous as it can be interpreted in a number of ways: 'Rani, runs (instead of walking) like Radha', 'Rani runs in the same speed like Radha', 'Rani runs in the same style or manner like Radha' and so on. Consider the following example,

(13) raaNi-kkuraataiy-aippoolaceelaiiru-kkiR-atu

Rani-DAT Radha-ACC like sari be-PRE-3NS

'Rani has sari like Radha'

The Tamil sentence is ambiguous inviting different interpretations: Rani has similar sari like Radha, Rani has sari of same colour like Radha, Rani has sari of same texture like Radha, and so on.

Comparison can be made without explicitly expressing the parameter of comparison. Consider the following example:

(14) raaNiraataiy-aippolairu-kkiR-aaL

Rani Radha-ACC like be-PRE-3FS

Rani resembles Radha.

The not-expression of parameter of comparison makes this sentence ambiguous allowing different interpretation from the point of view of quality and quantity.

**Mapping rule 9:**

**NP<sub>COM</sub> + NP-ai + poola + iru-TEN-PNG = NP<sub>COM</sub> + resemble-TEN + NP<sub>SOC</sub>**

*iru* can be replaced by *toonRu* 'appear' in the above construction of equality.

(15) raaNiraatay-aippoolatoonRu-kiR-aaL

Rani Radha-ACC like appear-PRE-3FS

Rani appears like Radha'

The addition of emphatic -ee can make the resemblance more closer.

(16) raaNiraataiy-aippoolav-eeiru-kkiR-aaL

Rani Radha-ACC like-EMP be-PRE-3FS

Rani resembles Radha very much.

Instead of *poola* 'like', *maatiri* 'like', *aLavukku* 'as much', *attanai* 'that many' can be made use of as standard marker.

(17) raaNikku raataiy-ai maatiri pasi.

Rani-DAT Radha-ACC like hunger

'Rani is hungry like Radha'

(18) raaNikkuraataiy-ai aLavukkupasi.

Rani-DAT Radha-ACC that much hunger

'Rani is that much hungry like Radha'

(19) raaNikkuraataiy-ai attanaipasi.

Rani-DAT Radha-ACC that much hunger

'Rani is as much hungry as Radha'

*aLavuvu* and *attanai* specifies quantity. Another way of expressing quantity for the sake of comparison is using *ettanai* 'how much' and *attanai* as exemplified in the following comparative construction.

(20) raaNi-kkuettanaiceelaiiru-kkiR-at-ooattanaiceelairaatai-kk-um iru-kkiR-atu

Rani-DAT how-much be-PRE-3NS-Q that-much saree Radha-DAT-EM be-PRE-3NS

'Radha has as many as saris Rani'

*ettanai---attanai*, *evvaLavuvu--- avvaLavuvu* can be equated with *as many as* and *as much as* respectively. Similarly *eppaTi---appaTi* and *evvaaRu--avvaaRu* can be equated with English *what manner--that manner* as exemplified in the following example.

(21) raaNieppaTiooT-in-aaL-ooappaTiraat-aiy-um oot-in-aaL

Rani how run-PAS-3FS-Q that-manner Radha-ACC-EMP

Rani waked in the same manner like Radha'

Exact resemblance can be expressed by making use of the emphatic markers *-ee* and *taan* as exemplified by the following sentence.

(22) raaNiraatai-eetaan

Rani Radha-EMP EMP

'Rani is exactly like Radha'

*camamaaka* 'equally', *iNaiyaaka* 'equally' can be used to specify the exactness in the resemblance.

(23) raaNi raatai-kku samamaaka/iNaiyaaka paaT-in-aaL

Rani Radha-DAT equally sing-PAS-3FS

Rani sang as equally as Radha

One can notice similarity expressed in the following comparative phrases. In these constructions *poonRa* is used as standard marker.

(24) matipoonRamukam

moon like face

'moon like face'

(25) taamaraipoonRamukam

lotus like face

'lotus like face'

Comparison of equality can be studied elaborately, but such an elaborative method is not adopted here.

## 5. COMPARATIVE STUDY WITH THE EXISTING MACHINE TRANSLATION

Comparative construction Sentences in Tamil are translated to English using the existing Translation Systems. The table given below shows the translation rules for the Comparative construction Sentences between Tamil and English and also the results of the existing Translation Systems.

Table 1. Comparative Study with the existing Machine Translation

Rule No	Tamil sentence & Rule	English Translation & Rule	Google	Bing - Microsoft	Systran
1.	ராணிராதாவைவிட அழகானவள் (NP <sub>COM</sub> + NP-ai + vita/ kaaTTilum + ADJ-PN)	Rani is <b>more</b> beautiful than Radha  (NP <sub>COM</sub> + BE + <b>more</b> + ADJ + <b>than</b> + NP <sub>SOC</sub> )	Rani is <b>more</b> beautiful than Radha Yes	Rani is <b>more</b> beautiful than Radha Yes	<b>Queen</b> is <b>better</b> than Radha  No
2.	ராணி அவர்கள் எல்லோரையும் விட அழகானவள் (NP+ NP-ai + viTa/kaaTTilum + ADJ-PN)	Rani is the <b>most</b> beautiful among all  (NP <sub>COM</sub> + BE + <b>most</b> +	Rani is <b>more</b> beautiful than all of them	The <b>queen</b> is <b>more</b> beautiful than all of them	The <b>Queen</b> is <b>more</b> beautiful than them all

		<b>ADJ + among all)</b>			
3.	ராணிராதாவைவிட உயரமானவள்  (NP <sub>COM</sub> + NP-ai + vita/kaaTTilum + ADJ-PN )	Rani is <b>taller</b> than Radha  (NP <sub>COM</sub> + BE + ADJ-er + than + NP <sub>SOC</sub> )	Rani is <b>taller</b> than Radha	Rani is <b>taller</b> than Radha	<b>Queen</b> is <b>taller</b> than Radha
4.	ராணி அவர்கள் எல்லோரையும் விட உயரமானவள்  (NP+ NP-ai + viTa/kaaTTilum + ADJ-PN )	Rani is the <b>tallest</b> among all  (NP <sub>COM</sub> + BE + ADJ-est + among all)	Rani is <b>taller</b> than all of them	The <b>Queen</b> is <b>taller</b> than all of them	The <b>Queen</b> is <b>taller</b> than them all
5.	ராணிராதையைக்காட்டிலும் அழகாக இருக்கிறாள்  (NP <sub>COM</sub> + NP-ai + vita/ kaaTTilum + N-ADVP iru-TEN-PNG)	Rani is <b>more</b> beautiful than Radha  (NP <sub>COM</sub> + BE + more + ADJ + than+ NP <sub>SOC</sub> )	Rani is <b>more</b> beautiful than Radha	Rani is <b>more</b> beautiful than Radha	Queen is <b>more</b> beautiful than queen

6.	<p>ராணிராதாவைவிடவேகமாக டினாள்</p> <p>(NP<sub>COM</sub> + NP-ai +viTa/ kaaTTilum + ADV +V-TEN-PNG )</p>	<p>Rani ran <b>faster</b> than Radha</p> <p>(NP<sub>COM</sub> + V- TEN+  ADV-er +than +  NP<sub>SOC</sub> )</p>	<p>Rani ran <b>faste</b> r than Radh a</p>	<p>Rani ran faster than Radha</p>	<p><b>Queen</b> ran <b>faster</b> than Radha</p>
7.	<p>ராணிராதாவைப்போல் அழகான வள்</p> <p>(NP + NP-ai + pool + ADJ-PN)</p>	<p>Rani is <b>as</b> <b>beautif</b> <b>ul as</b> Radha</p> <p>(NP + BE + as-ADJ- as + NP<sub>SOC</sub>)</p>	<p>Beau tiful like Rani Radh a</p>	<p>Rani is <b>as</b> <b>beauti</b> <b>ful as</b> Radha</p>	<p>She is as beautif ul as queen Radha</p>
8.	<p>ராணிராதாவைப்போல் வேகமாக நடக்கிறாள்</p> <p>( NP<sub>COM</sub> + NP-ai + poola + ADV + V- TEN-PNG )</p>	<p>Rani walks <b>as fast</b> <b>as</b> Radha</p> <p>(NP<sub>COM</sub> + V-TEN + as- ADV-as +NP<sub>SOC</sub> )</p>	<p>Rani walks <b>as</b> <b>as</b> <b>fast</b> <b>as</b> Radh a</p>	<p>Rani walks as fast as Radha</p>	<p><b>Queen</b> <b>acts</b> <b>swiftly</b> <b>as</b> Radha</p>
9.	<p>ராணிராதாவைப்போல் இருக்கி றாள்</p> <p>(NP<sub>COM</sub> + NP-ai + poola + iru-TEN- PNG)</p>	<p>Rani looks/ resembl es Radha.</p> <p>(NP<sub>COM</sub> + Look/ resembl</p>	<p><b>Look</b> <b>s like</b> Rani Radh a</p>	<p>Rani <b>looks</b> <b>like</b> Radha</p>	<p>She is like Rani Raddh a</p>

		e-TEN + NP <sub>soc</sub> )			
10	ராணிராதையேதான்	'Rani is exactly like Radha'	Rani is Radha	It's Rani Radha	Rani Raddha
	Correct output percentage		60%	70%	40%

## 6. CONCLUSION

The Comparison of equality and inequality needs elaborate study. Only certain important aspects of comparison are studied here from the point of view of machine translation. We try to map comparative constructions of equality and inequality in Tamil and English by positing mapping rules. The Comparative construction Sentences in Tamil are translated to English using the existing Translation Systems and the results indicate that the existing Translation system needs to concentrate on the specific pattern of comparative construction Sentences between Tamil and English. The Proposed Mapping rules will enhance the results of the existing Machine Translation systems.

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