Syntax of VP Ellipses and Adverbial Positions in Japanese

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Abstract

The purpose of this paper is in two-folds. One revolves around defining structural characteristics of two types of VP ellipses in Japanese in construction with *soo-da* (so-be.affirmative) and *so-suru* (do-so). The other centers around presenting syntactic evidence in support of the proposal that adverbials and VP ellipses exhibit syntactic properties and as such should be given a bona-fide syntactic status in the generative grammar in general. For the former end, I utilize adverbials as landmarks of structural complexities (Pollock 1989, Ernst 2002, inter alia), and propose that *soo-da* (so-be.affirmative) VP ellipsis elides constituents which subject-oriented adverbials are dependent on,[1] whereas *so-suru* (do-so), manner adverbials. For the latter end, I demonstrate that the adverbials exhibit genuine *syntactic* properties which only structural analyses have a say in explicating certain semantic and syntactic mismatches observed in Japanese VP ellipses. This relates to an interpretive gap observed in semantic filling and syntactic substitution in Japanese VP ellipses involving *soo-da* (so-be.affirmative) and *so-suru* (do-so). A brief conclusion follows.

Key Word

Syntax, VP ellipsis, Adverb, Japanese, Generative grammar

Introduction

In VP ellipsis constructions, a part of VP is elided and represented by a pro-form. Further, the meaning denoted by the pro-form must parallel that of the equivalent VP constituents in the antecedent sentence. In general, those pro-forms are comprised of some form of verbal elements. For example, there are two types of VP ellipses in Japanese. In Japanese VP ellipsis constructions below, pro-forms in both sentences in (b) employ *soo* (so), and then a verbal element *da* (be.affirmative: henceforth 'be.affirm') in (1b), and *suru* (do) in (2b):

1a. Hiroshi-ga   tegami-o sute-ta

       -nom   letter.acc threw.away-past

   (Hiroshi threw away the letters.)

1b. Masaru-mo   soo-da

       -also   so-affir.pres.

(Marsaru is so, too.)

2a. Hiroshi-ga   tegami-o sute-ta

      -nom   letter.acc threw.away-past

  (Hiroshi threw away the letters.)

2b. Masaru-mo   soo-si-ta

      -also   so-do-past

  (Marsaru did so, too.)

As indicated in their English translations, the elided elements represented by *soo-da* (so-be.affirm.) in (1b) and those by *so-suru* (do-so) in (2b) copy their meanings from the antecedent constituents present in (1a) and (2a), respectively – from those that are equivalent to what have been elided in (1b) and (2b). In both instances, the elided constituents represented by the pro-forms denote 'threw away the letters' a la (1a) and (2a).

     The present paper first seeks to explore just how much syntactic constituents are elided by *soo-da* (so-be.affirm.) and *so-suru* (do-so) pro-forms in Japanese VP ellipsis constructions. To accomplish this goal, first, these two types of VP ellipses are shown to be syntactic in nature (Section 1). Then hierarchized adverbs are employed as landmarks of structural complexities (Pollock 1989, Ernst 2002, Nitta 2002, Kodama 2008, Engels 2012, inter alia) to determine the amount of constituents elided in the two types of VP ellipses in Japanese. This process in fact reconfirms the hierarchical organization of adverbials in turn, verifying the relative structural positions of adverbials in Japanese. The interaction of VP ellipses and adverbials also presents additional syntactic evidence for these ellipses, further supporting syntactic operations defining the possible interpretations for the constructions (Section 2). Finally, I argue for phase-theoretic syntactic derivations as indicated by formation of 'cyclic domains' of adverbials. Apart from the semantic types adverbials are predicated of, quite independent and distinct syntactic phases emerge from the possible and impossible interpretations yielded by VP ellipses in combination with differing types of adverbials. This further constitutes evidence supporting syntactic nature of adverbials (Section 3). A brief conclusion follows.

Section 1: Syntactic Nature of VP Ellipses in Japanese

     In this section, I establish that VP ellipses are syntactic in nature. This sets a stage for the aforementioned two inquiries attempted in this paper, leading to verification processes deployed in Section 2 and 3 to follow.

1.1: Hankamer & Sag (1976): A Diagnosis for Syntactic VP Ellipses

There are two types of VP ellipses in Japanese, one involving *soo-da* (so-be.affirm.), and the other, *so-suru* (do-so), repeated here as examples 3 and 4 below:

3a. Hiroshi-ga   tegami-o sute-ta

       -nom   letter.acc threw.away-past

   (Hiroshi threw away the letters.)

3b. Masaru-mo   soo-da

       -also   so-affir.pres.

   (Marsaru is so, too.)

4a. Hiroshi-ga   tegami-o sute-ta

       -nom   letter.acc threw.away-past

   (Hiroshi threw away the letters.)

4b. Masaru-mo   soo-si-ta

       -also   so-do-past

   (Marsaru did so, too.)

This subsection seeks to establish that these elliptic structures indeed belong to syntactic phenomena in nature. To illustrate this point, consider the following test for pragmatic control.

Hankamer and Sag (1976) in effect argue for two types of VP anaphoras: 'surface anaphora' and 'deep anaphora'. The former VP pro-forms are governed by syntactic principles, whereas the latter, not. Thus their 'surface anaphora' correspond to our 'syntactic VP ellipsis', whilst 'deep anaphora', 'non-syntactic VP ellipsis'. For expository purposes, let us henceforth call the former type of VP ellipses, 'syntactic VP ellipsis', and the latter, 'pragmatic VP ellipsis'. To sum, the syntactic VP ellipsis is syntactic in nature since its well-formedness is dictated by syntactic principles. In contrast, the pragmatic VP ellipsis does not belong to syntactic domain because its distribution and interpretation are determined by factors other than syntax, primarily pragmatics.[2]

According to Hankamer and Sag, syntactic VP ellipsis does not sanction pragmatic control (5a), whereas pragmatic one does (5b):

[Scenario: Hankamer attempts to stuff a 9-inch ball through a 6-inch hoop;]

5a. Sag: # It's not clear that you'll be able to.

5b. Sag: It's not clear that you'll be able to do it.

   (Hankamer and Sag 1976: 405. Their (3) and (4).)

The examples in 5 indicate that the pro-form *do so* in English corresponds to syntactic VP ellipsis, since it requires syntactic constituents to yield an interpretation. Contrarily, the pro-form *do it* is an instance of pragmatic VP ellipsis, for it allows pragmatic filling of its denotation, which we hereafter call 'pragmatic control'. In the pragmatic control, a pragmatically salient factor functions as an antecedent.

1.2: Unavailability of the Pragmatic Control in VP Ellipses

Mori (2015) applies this diagnostics to VP ellipsis involving *so-suru* (do-so) in Japanese, thereby establishing this form of VP ellipsis to be syntactic in nature:

[Scenario: An undercover documentary film is being shown at a national police headquarters. On the screen, a suspected criminal Hiroshi melts a stolen metal piece of art work. The next scene displays the art work melting into a pool of metal. The director stops the film, and says:]

6a. #Masaru-mo   soo-si-masi-ta.

　　　　　　-nom so-do-polite-past

　(Masaru did so, too.)

6b. Masaru-mo   bizyutsu-hin-o tokasi-masi-ta.

　　　　　　-nom art-item-acc   melt-Caus.-past.

　(Masaru melted a piece of art, too.)

6c. Go-ran-no   yooni Hiroshi-ga   bizyutsu-hin-o tokasi-masi-ta.

　honorific.-see-particle. like   -nom   art-item-acc   melt-Caus.-past

　Masaru-mo   soo-si-masi-ta.

　　　　　　-nom so-do-polite-past

　(As you saw it, Hiroshi melted the art work. Masaru did so, too.)

　(Mori 2015: 106-107. Her (22a)-(22c). Modified.)

7a. #Masaru-mo   soo-de-si-ta.

　　　　　　-nom so-be-polite-past

　(Masaru was so, too.)

7b. Masaru-mo   bizyutsu-hin-o tokasi-masi-ta.

　　　　　　-nom art-item-acc   melt-Caus.-past.

　(Masaru melted a piece of art, too.)

7c. Go-ran-no yooni Hiroshi-ga bizyutsu-hin-o tokasi-masi-ta.

honorific.-see-particle. like -nom art-item-acc melt-Caus.-past

Masaru-mo soo-de-su.[3]

-nom so-be-polite-pres.

(As you saw it, Hiroshi melted the art work. Masaru is so, too.)

The examples in 6 clearly demonstrate that the VP ellipsis in construction with the pro-form *soo-suru* (do so) belongs to syntactic domain. First and foremost, it resists pragmatic control (6a). Compare this to (6b), wherein the fully-fledged expression is judged licit. Finally, the VP ellipsis *soo-suru* (do so) becomes licit, if provided with an overt antecedent (6c). An analogous test on the availability of pragmatic control in VP ellipsis with *soo-da* (so-be.affirm.) illustrates that it involves syntactic processes as well, exactly for the same reason. See (7a-c) above.

To sum this subsection, I presented arguments for the syntactic nature of the two VP ellipses with *soo-da* (so-be.affirm.) and *soo-suru* (do so): they both resist pragmatic control, and clearly require overt syntactic antecedents.

Section 2: Adverbial Hierarchy and Elided Constituents in Japanese VP Ellipses

I proceed to demonstrate just how much constituents are elided in the VP ellipses in construction with *soo-da* (so-be.affirm.) and *soo-suru* (do so). Let me first present the adverbial hierarchy postulated in this paper (Section 2.1). Then I lay out the data which indicate the amount of the elided constituents in VP ellipses involving *soo-da* (so-be.affirm.) and *soo-suru* (do so).

2.1: Adverbial Hierarchy

The following table (8) presents the summary of the findings in this paper, and the adverbial hierarchy employed throughout this paper. This table adopts and partly combines the adverbial classifications in Engels (2012: 8. Her (1.20)), Kodama (2008: 43. Her (3) and discussion on Nitta 2002 therein), and Ernst (2002), and arranges them to incorporate the adverbial hierarchy found in this and next sections as well:

8. Adverbial Hierarchy, Elided Constituents, and Syntactic Phases:

Structural complexity	Semantic type	Syntactic phase & Elided constituent				Adverbial type	English example	Japanese example
		Soo-da		*Soo-suru*				
Higher ↕ Lower	Proposition	Phase IP		Phase IP		Epistemic	*probably, certainly*	*tabun, tasikani*
	Fact		Elided ↕			Evaluative	*luckily*	*kouun.nimo*
						Evidential	*clearly*	*akiraka.ni*
	Event 1	*				Subject-oriented	*wisely, intentionally*	*kasikoku.mo, wazato, koi.ni*
	Event 2	*		Phase VP		Frequency	*often, frequently*	*tabitabi, hinnpan.ni*
		*				Time	*at 2 o'clock*	*2-zi.ni*
	Event 3	*		Phase *v*P 2	Elided ↕	Place	*in the park*	*kooen.de*
	Sub-event	*		Phase *v*P 1		Manner	*slowly, well*	*yukkuri, yoku*
		*				Resultative	*flat*	*hirataku*

Note: '*' stands for unavailability for computational purposes.

The adverbs above serve as landmarks signaling syntactic complexities to determine the elided constituents in the two types of VP ellipses in the next subsection. The elided constituents of the VP ellipses with *soo-da* (so-be.affirm.) and *soo-suru* (do so) are shown in arrows with the remark 'Elided', under the column 'Syntactic phase & Elided constituent'. The table (8) also recapitulates what to be explicated in the next section by incorporating the findings in Section 3 in regard to possible syntactic phases. As the readers can verify for themselves, there is a mismatch between what syntax considers a phase and how semantics cuts the world. This is yet another evidence for the syntactic nature of the VP ellipses to be explored in the reminder of this paper.

Section 2.2: Constituents Elided in VP Ellipses with *Soo-da* (so-be.affirm.) and *Soo-suru* (do so)

The following is an instance of VP ellipsis in construction with *soo-da* (so-be.affirm.) and an adverbial :

9a. Hiroshi-wa　kasikoku.mo　ringo-o tabe-ta

　　　　-top　wise.particle　apple-acc eat-past

　(Hiroshi wisely ate the apple.)

9b. Masaru-mo　　soo-da

       -also   so-affirm.pres.

  (Masaru is so, too.)

Let us now seek for a mechanism through which the construction in (9b) is syntactically derived.

     Lasnik (1999) adopts a syntax of elision for VP ellipses. In this approach, the entire derivation proceeds as follows. First, the sentence containing a pro-form initially generates a parallel structure to the antecedent sentence in the elided site as well (10b):

10a. Hiroshi-wa   kasikoku.mo   [ringo-o tabe]-ta

          -top   wise.particle   apple-acc eat-past

  (Hiroshi wisely ate the apple.)

10b. Masaru-mo   [ringo-o tabe]-da

          -also   apple-acc eat- affirm.pres.

  (Masaru is, eat apples, too.)

Then the corresponding materials in (10b) are deleted under the 'parallelism' between the antecedent VP in (10a) and the elliptical site, as in (10c):

10c. Masaru-mo   [~~ringo-o tabe~~]-da

          -also   apple-acc eat- affirm.pres.

  (Masaru is, too.)

And finally, the elided constituents are substituted with a pro-from:[4]

10d. Masaru-mo   [soo]-da

          -also   so-affirm.pres.

  (Masaru is so, too.)

     Next, let us examine the following illicit VP ellipsis construction apparently analogous to the well-formed (10d). An additional material indicating the time of eating is added in (11b):

11a. Hiroshi-wa   ringo-o tabe-ta

          -top   apple-acc eat-past

  (Hiroshi ate the apple.)

11b. *Masaru-mo   3-zi-ni   soo-da
            -also   3-o'clock-at so-affirm.pres.
  (Masaru is so at 3 o'clock, too.)

The derivation of (11b) proceeds as follows, rendering the structure to be illicit in the theoretical framework standardly assumed for VP ellipses we have just seen. First, an analogous structure to the antecedent VP in (12a) is generated for the VP ellipsis construction in (12b):

12a. Hiroshi-wa   ringo-o tabe-ta
          -top   apple-acc eat-past
  (Hiroshi ate the apple.)

12b. *Masaru-mo   3-zi-ni   [ringo-o tabe]-da
            -also   3-o'clock-at   apple-acc eat- affirm.pres.
  (Masaru is so, eat the apple at 3 o'clock, too.)

Under the parallelism, identical elements to the antecedent VP are targeted for deletion in (12b). Next, the matching constituents are elided a la this parallelism between the antecedent VP and the elliptical site:

12c. *Masaru-mo   3-zi-ni   [~~ringo-o tabe~~]-da
            -also   3-o'clock-at   apple-acc eat- affirm.pres.
  (Masaru is, at 3 o'clock, too.)

Finally, the elided constituents are given a pro-from:

12d. *Masaru-mo   3-zi-ni   [soo]-da
            -also   3-o'clock-at   so-affirm.pres.
  (Masaru is so at 3 o'clock, too.)

    Nothing is at stake in this derivation to give a star to the sentence in (12d). The examples in (13) address this question, possibly shedding the light for a clue:

13a.Hiroshi-wa   ringo-o tabe-ta
          -top   apple-acc eat-past
  (Hiroshi ate the apple.)

13b. Masaru-mo   tabun   soo-da

　　　　　-also   perhaps   so-affirm.pres.

　(Masaru is so perhaps, too.)

Why is 13b well-formed whereas 12b is not? Let us now refer back to the adverbial hierarchy in 14:

14. Adverbial Hierarchy:

Structural complexity	Semantic type	Adverbial type	English example	Japanese example
Higher ⬍ Lower	Proposition	Epistemic	*probably, certainly*	*tabun, tasikani*
	Fact	Evaluative	*luckily*	*kouun.nimo*
		Evidential	*clearly*	*akiraka.ni*
	Event 1	Subject-oriented	*wisely, intentionally*	*kasikoku.mo, wazato, koi.ni*
	Event 2	Frequency	*often, frequently*	*tabitabi, hinnpan.ni*
		Time	*at 2 o'clock*	*2-zi.ni*
	Event 3	Place	*in the park*	*kooen.de*
	Sub-event	Manner	*slowly, well*	*yukkuri, yoku*
		Resultative	*flat*	*hirataku*

As in 14, the adverb *tabun* (perhaps) is one of the epistemic adverbials, and thus it sits quite high in the syntactic structure, being a dependent to the constituent interpreted as proposition at LF, presumably IP. Contrary to this, *3-zi-ni* (at three o'clock) belongs to VP adverbials, and occupies a position quite low in the structure, suggesting that the constituent this adverbial is adjoined to is smaller, or less complex. This is strongly indicative that the constituents larger than VP is elided in VP ellipsis in construction with *soo-da* (so-be.affirm.) in (12c). Let us now hypothesize this to be true. Then the derivations for (12) and (13) are actually as in (15) and (16), respectively:[5]

15a. Hiroshi-wa   [IP ringo-o tabe]-ta

　　　　　-top   apple-acc eat-past

　(Hiroshi ate the apple.)

15b. *Masaru-mo   [_{IP} 3-zi-ni [ringo-o tabe]]-da

        -also   3-o'clock-at   apple-acc eat- affirm.pres.

  (Masaru is so, eat the apple at 3 o'clock, too.)

15c. *Masaru-mo   [_{IP} 3-zi-ni [~~ringo-o tabe~~]]-da

        -also   3-o'clock-at   apple-acc eat- affirm.pres.

  (Masaru is, at 3 o'clock, too.)

15d. *Masaru-mo   3-zi-ni   [soo]-da

        -also   3-o'clock-at   so-affirm.pres.

  (Masaru is so at 3 o'clock, too.)

As the readers can verify, the derivation in (15) does not observe the parallelism condition in (15c) in determining the constituents to be deleted. This, I propose, is the cause of the ill-formedness in (12b).

    In contrast to this, the derivation for (13), given here as (16), successfully observes the parallelism requirement on VP ellipsis in (16b). This is possible since the additional adverbial *tabun* (perhaps) in (16b) is situated outside the IP that is targeted as the eliding site in the VP ellipsis construction involving *soo-da* (so-be.affirm.). In this way, the adverbial *tabun* (perhaps) is able to escape the elided site:

16a. Hiroshi-wa   [_{IP} ringo-o tabe]-ta

      -top   apple-acc eat-past

  (Hiroshi ate the apple.)

16b. Masaru-mo   tabun   [_{IP} ringo-o tabe]-da

      -also   perhaps   apple-acc eat-pres so-affirm.pres.

  (Masaru is, eat apples, perhaps, too.)

16b. Masaru-mo   tabun   [_{IP} ~~ringo-o tabe~~]-da

      -also   perhaps   apple-acc eat-pres so-affirm.pres.

  (Masaru is, perhaps, too.)

16b. Masaru-mo   tabun   [_{IP} soo]-da

      -also   perhaps   so-affirm.pres.

  (Masaru is so perhaps, too.)

Seen from this perspective, the question of how much constituents are to be deleted in the VP ellipses in construction with *soo-da* (so-be.affirm.) now turns to an inquiry of where the cut is amongst the advebials that makes it possible for each adverbial to escape the elided site of *soo-da* (so-be.affirm.) in this type of VP ellipsis. The following data indicate that the cut is situated between evidential adverbials and subject-oriented adverbials:

17a. Hiroshi-wa   ringo-o tabe-ta

         -top   apple-acc eat-past

  (Hiroshi ate the apple.)

17b. Masaru-mo   tabun/kouun.nimo/akiraka.ni/*kasikoku.mo/*hinpan.ni/*2-zi-ni/*kooen.de/*yukkuri soo-da

        -also   perhaps/luckily/clearly/wisely/frequently/2-o'clock-at/park-in/slowly   so-affirm.pres.

  (Masaru is so perhaps/luckily/clearly/*wisely/*frequently/*at 2 o'clock/*in a park/*slowly, too.)

Thus the adverbial chart is further modified to accommodate the elided materials in VP ellipsis involving *soo-da* (so-be.affirm.) as in (18):

18. Adverbial Hierarchy and Elided Constituents for *soo-da*:

Structural complexity	Semantic type	Elided constituent in *soo-da*	Adverbial type	English example	Japanese example
Higher	Proposition		Epistemic	*probably, certainly*	*tabun, tasikani*
	Fact		Evaluative	*luckily*	*kouun.nimo*
			Evidential	*clearly*	*akiraka.ni*
	Event 1	**Elided**	Subject-oriented	*wisely, intentionally*	*kasikoku.mo, wazato, koi.ni*
	Event 2		Frequency	*often, frequently*	*tabitabi, hinnpan.ni*
			Time	*at 2 o'clock*	*2-zi.ni*
	Event 3		Place	*in the park*	*kooen.de*
	Sub-event		Manner	*slowly, well*	*yukkuri, yoku*
Lower			Resultative	*flat*	*hirataku*

Applying the same line of reasoning, the syntactic 'cut' for the well-formedness of additional adverbials in VP ellipsis with *soo-suru* (do so) is located between place adverbials and manner

adverbials, as the data below point to.[6] This will revise the adverbial chart in (18) to (21):

19a. Hiroshi-wa   ringo-o tabe-ta

          -top   apple-acc eat-past

  (Hiroshi ate the apple.)

19b. Masaru-mo   tabun/kouun.nimo/akiraka.ni/kasikoku.mo/hinpan.ni/2-zi-ni/kooen.de/??yukkuri soo-si-ta

          -also   perhaps/luckily/clearly/wisely/frequently/2-o'clock-at/park-in/slowly   so-do-past

  (Masaru is so perhaps/luckily/clearly/wisely/frequently/at 2 o'clock/in a park/??slowly, too.)

20a. Hiroshi-wa   ie-o   tate-ta

          -top   house-acc   build-past

  (Hiroshi built the house)

20b. Masaru-mo   sankaku.ni   ?(?)soo-si-ta

          -top   traiangular   so-do-past

  (Hiroshi did so, ?(?)triangular, too.)

21. Adverbial Hierarchy and Elided Constituents of VP ellipses:

Structural complexity	Semantic type	Elided constituent		Adverbial type	English example	Japanese example
		soo-da	*soo-suru*			
Higher	Proposition			Epistemic	*probably, certainly*	*tabun, tasikani*
	Fact	**Elided**		Evaluative	*luckily*	*kouun.nimo*
				Evidential	*clearly*	*akiraka.ni*
	Event 1			Subject-oriented	*wisely, intentionally*	*kasikoku.mo, wazato, koi.ni*
	Event 2			Frequency	*often, frequently*	*tabitabi, hinnpan.ni*
				Time	*at 2 o'clock*	*2-zi.ni*
	Event 3		**Elided**	Place	*in the park*	*kooen.de*
	Sub-event			Manner	*slowly, well*	*yukkuri, yoku*
Lower				Resultative	*flat*	*hirataku*

    The present section explored the amount of structures deleted in the two types of VP ellipses

in Japanese. Under the parallelism requirement, we have established these to be as in 21. There is, however, yet further consideration to be added to the derivational characteristics of the VP ellipses in Japanese. I exposit this immediately below.

Section 3: Phases in Japanese VP Ellipses and Syntactic Nature of VP Ellipses

As we have seen so far, VP ellipses in Japanese involving *soo-da* (so-be.affirm.) and *so-suru* (do-so) target a certain constituent, and implement the operation of deletion under parallelism. When the parallelism requirement is not met, the derivation crashes. There is one more tenet I would like to explicate as an additional characteristics of Japanese VP ellipses. This consideration leads us to posit syntactic phases for VP ellipses within the framework of the Minimalism (Section 3.1). Then I present one additional piece of evidence on adverbial scope interaction in favor of syntactic approach to Japanese VP ellipses involving *soo-da* (so-be.affirm.) and *so-suru* (do-so) (Section 3.2). A brief conclusion follows.

3.1: Phases in VP Ellipses

The examples in 22 pose a peculiar question to us:

22a. Hiroshi-wa   tabun   ringo-o   tabe-ta

          -top   perhapsre apple-acc eat-past

  (Hiroshi perhaps ate the apple.)

22b. Masaru-mo tasiaka.ni   kouun.nimo/akiraka.ni/kasikoku.mo/??hinnpann.ni/??2-zi-ni/?*kooen.de/*yukkuri

        -also   certainly   luckily/clearly/wisely/frequently/2-o'clock-at/park-in/slowly

   [soo]-si-ta

   so-do-past

  (Masaru did so certainly,   luckily/clearly/wisely/??frequently/??at 2 o'clock/?*in a park/*slowly, too.)

In (22b), two occurrences of adverbials are involved. The adverbial present in the antecedent sentence is replaced with another adverbial of the same kind in the elliptic sentence. Then yet another adverbial is added in the latter to examine the well-formedness of the combinations of the adverbials.

The question here is why (22b) is licit for certain combinations of adverbials. The cut is where the frequency adverbial is situated, presumably VP, for the well-formedness of *do-so* ellipsis to hold with overt *tabun* (perhaps) in (22). It makes sense that all the VP adverbials (viz., from

frequency to resultative adverbials) cannot participate in VP ellipsis construction in (22): a constituent larger than VP has already been elided in (22) under parallelism. The peculiarity arises, though, when certain adverbials can co-occur with *tabun* (perhaps) in (22b). Given the analysis so far, it is natural to posit then that epistemic, evaluative, evidential, and subject-oriented adverbials are all within a single domain to which an operation of elision applies. I propose that this is indeed so. If this analysis is tenable, then we should see other 'domains' wherein multiple adverbials appear in the ellipsis construction, with one adverbial of the same kind as in the antecedent sentence, and the other, of a different kind. This is borne out.

The constructions in (23) point to other three 'cuts', giving rise to possible three independent domains: the first one includes frequency adverbials and time adverbials (23-24), the second, place adverbials by themselves (25-26), and the third, manner adverbials and resultative adverbials (27):

23a. Hiroshi-wa   hinnpann.ni   ringo-o   tabe-ta
          -top   frequently   apple-acc eat-past
   (Hiroshi frequently ate the apple.)

23b. Masaru-mo   tabun/kouun.nimo/akiraka.ni/kasikoku.mo   tokidoki   soo-si-ta
          -also perhaps/luckily/clearly/wisely   sometimes so-do-past
   (Masaru did so sometimes, perhaps/luckily/clearly/wisely, too.)

23c. Masaru-mo   tokidoki   ?2-zi-ni/??kooen.de/*yukkuri   soo-si-ta
          -also   sometimes   2-o'clock-at/park-in/slowly   so-do-past
   (Masaru did so sometimes, ?at 2 o'clock/??in a park/*slowly, too.)

24a. Hiroshi-wa   hinnpann.ni   ie-o   hirataku   tate-ta
          -top   frequently   house-acc   flat   build-past
   (Hiroshi frequently built the house flat.)

24b. Masaru-mo   tokidoki   *?sankaku.ni   soo-si-ta
          -top   sometimes traiangular   so-do-past
   (Masaru did so sometimes, *?triangular.)

25a. Hiroshi-wa   2-zi-ni   ringo-o   tabe-ta
          -also   2-o'clock-at   apple-acc   eat -past
(Hiroshi ate the apple at 2 o'clock.)

25b. Masaru-mo   3-zi-ni   ??kooen.de/*yukkuri   soo-si-ta

      -also   3-o'clock-at   park-in/slowly   so-do-past

(Masaru did so at 3 o'clock, ??in a park/*slowly, too.)

26a. Hiroshi-wa   2-gatu-ni   ie-o   tate-ta

      -top   2-month-in   house-acc   build-past

(Hiroshi built the house in February.)

26b. Masaru-mo   6-gatu-ni   ??sankaku.ni   soo-si-ta

      -also   6-month-in   traiangular   so-do-past

(Masaru did so, in June, ??triangular, too.)

27a. Hiroshi-wa   yukkuri   ie-o   tate-ta

      -top   slowly   house-acc   build-past

(Hiroshi built the house slowly.)

27b. Masaru-mo   zinnsoku.ni   ?sankaku.ni   soo-si-ta

      -top   fast   traiangular   so-do-past

(Masaru did so fast, ?triangular, too.)

We have thus far established the phases for VP ellipses in construction with *soo-suru* (do so). In what to follow, I will elaborate the same for VP ellipses in construction with *soo-da* (so-be.affirm.).

Applying the same reasoning to *soo-da* constructions, their derivational phases are as follows. For this type of VP ellipsis, the first cut is between evidential adverbials and subject-oriented adverbials (28). Each of the adverbials from subject-oriented adverbials down, however, comprises a class of its own, and moreover, it is incompatible with the adverbials in the first group.[7] I propose that this is because VP ellipsis *soo-da* (so-be.affirm.) elides IP once and for all, and that IP constitutes a phase qualitatively different from VP and other phases.[8]

28a. Hiroshi-wa   tabun   ringo-o   tabe-ta

      -top   perhaps   apple-acc eat-past

  (Hiroshi perhaps ate the apple.)

28b. Masaru-mo   tasiaka.ni   kouun.nimo/akiraka.ni/*?kasikoku.mo/??hinnpann.ni/??2-zi-ni/?*kooen.de/*yukkuri

      -also   certainly   luckily/clearly/wisely/frequently/2-o'clock-at/park-in/slowly

  soo-da

so-be-pres.

(Masaru is so certainly, luckily/clearly/*wisely/??frequently/??at 2 o'clock/?*in a park/*slowly, too.)

To sum, the data above invite us to revise the adverbial hierarchy chart as in (29):

29. Adverbial Hierarchy, Elided Constituents, and Syntactic Phases

Structural complexity	Semantic type	Syntactic phase & Elided constituent			Adverbial type	English example	Japanese example
		Soo-da		*Soo-suru*			
Higher	Proposition	Phase IP		Phase IP	Epistemic	*probably, certainly*	*tabun, tasikani*
	Fact		Elided		Evaluative	*luckily*	*kouun.nimo*
					Evidential	*clearly*	*akiraka.ni*
	Event 1	*			Subject-oriented	*wisely, intentionally*	*kasikoku.mo, wazato, koi.ni*
	Event 2	*		Phase VP	Frequency	*often, frequently*	*tabitabi, hinnpan.ni*
		*			Time	*at 2 o'clock*	*2-zi.ni*
	Event 3	*		Phase *v*P 2	Elided	Place	*in the park*	*kooen.de*
Lower	Sub-event	*		Phase *v*P 1		Manner	*slowly, well*	*yukkuri, yoku*
		*				Resultative	*flat*	*hirataku*

Note: '*' stands for unavailability for computational purposes.

3.2: Scope Interaction of Adverbials

I present one more piece of evidence in support for syntactic analysis of VP ellipses and adverbials. I have argued for syntactic accounts of VP ellipses in Japanese so far. If indeed this is the case, then we predict more syntactic properties to be at work for VP ellipsis constructions under discussion. This is borne out:

30a. Hiroshi-wa   hinpan.ni   ringo-o   tabe-ta

        -top   frequently   apple-acc   eat -past

  (Hiroshi frequently ate the apple.)

30b. Masaru-mo   2-zi-ka   5-zi-ni   soo-si-ta

        -also   2-o'clock-or   5-o'clock-at so-do -past

(Masaru did so (frequently), at 2 o'clock or 5 o'clock, too.)

31. Either at 2 o'clock or 5 o'clock, the event of frequent eating of apples occurred (that is, all the frequent eating events occurred at 2 o'clock or all the frequent eating events occurred at 5 o'clock, without any mixing of time).

In (30b), I am only interested in the reading wherein the frequency adverbial is present as a null element. The example in (30b) yields only the reading where the quantificational disjoined time adverbial takes wide scope over the frequency adverbial, as in (31), and not the other way around. This is indicative that the time adverbial is outside the elided constituent in (30b). Recall that the frequency adverbial is within the same phase of the time adverbial. Yet, the structure in (30b) only avails the reading reminiscent of syntactic operation under phase. If this were a pure semantic phenomenon, nothing should prevent the frequency adverbial from taking scope over the time adverbial.

Summary

This paper argued for syntactic accounts of Japanese VP ellipses in construction with *soo-da* (so-be.affirm.) and *so-suru* (do-so), as well as for syntactic nature of adverbials. The exact elided constituents are summarized in (29). In the process, the adverbial hierarchy is verified as well. Syntactic phases are proposed to better account for the data involving Japanese VP ellipses under discussion. VP ellipsis with *soo-da* (so-be.affirm.) exhibited yet another interesting characteristics in that it suggests more complex computational processes for IP phase. I leave this for future research.

Notes:

[1] Here, I assume this 'dependency' to be syntactically realized in the normal sense of 'adjunction', which is to be introduced to syntax in the standardly hypothesized fashion, creating an ordered pair (Chomsky 1994).

[2] Hankamer and Sag (1976) term the pro-forms as 'anaphora', due to their anaphoric nature. This anaphoric nature of the pro-forms is translated into the 'parallelism', copying or deleting equivalent constituents in the Minimalism.

[3] For some reason, present form is more widely accepted here. I leave the exact cause of this grammatical judgment for future research.

[4] I leave aside the issues as to the levels this pro-form is realized in, or lexical and derivational peculiarities Japanese language might exhibit. For details on this point, see Mori (2015) and the references therein.

[5] I assume that *ta* and *da* have moved out of IP in the examples below.

[6] The data in (19-20) are subtle. They may be acceptable for some speakers. In that case, the constituent

elided in *soo-suru* (do-so) ellipsis construction in Japanese is actually a lot smaller than where resultative adverbials assume their positions in the structure. I leave this for the future research.

[7] For the sake of space, I did not list each example sentence to demonstrate this.

[8] The question still remains as to the phase discrepancy between the VP ellipsis using *soo-da* (so-be.affirm.), and the one employing *soo-suru* (do so) with respect to subject-oriented adverbials. I leave this for future research.

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Impacts on English International Testing Goal Achievement
~Student Inclusivity, Learning Curves, and Diminishing Returns~

学生中心教育、学習曲線および学習収穫逓減
～国際英語検定の結果への影響～

Gavin LYNCH

Abstract

This paper seeks to explain the reasons behind the phenomenon represented in the hypothesis that *students who initially score highly in IELTS find it more difficult to increase their score by the same proportion as those who don't score as highly* (Lynch, 2015a), in the situation of language education. It presents the Law of Diminishing Returns and the Learning Curve, along with a case study from a Japanese university to show that this hypothesis is a natural phenomenon, meaning that students who perform highly in any test (or in any task), when compared to those who do not perform as well (with both groups coming from the same base ability or performance) will find it difficult to maintain additional increases in performance that are greater than the group who are playing "catch up". Overall, the findings of this paper provide reasons behind the hypothesis and produce a simple theory which states that as the ability of a class increases, goals in terms of an increase in standardised test scores should be reduced accordingly. In other words, while the above hypothesis includes the word IELTS, the phenomenon is not limited to just the IELTS examination. This allows us to generalise the hypothesis to *students who initially score highly find it more difficult to increase their score by the same proportion as those who don't score as highly*. The above findings were under the conditions that students had completed the first phase of a language education learning curve (i.e., basic language education), which can be expected to be true in the case of all university students as they have completed at least six years of compulsory secondary level education.

1.0   Introduction

Lynch (2015a, b) reported that a class of students who were self-selected for a challenging class will, all else being equal, score more highly in the IELTS international English language test than those students who had been selected purely on the basis of their results in a placement test. In that research, the former class is labelled as Class B, and the latter as Class A. However, it was noticed that, after Class B scored significantly higher than Class A, the slope of their improvement in the

English language was not as steep as that of Class A. This paper seeks to explain the reasons behind this phenomenon which is represented in the hypothesis that *students who initially score highly in IELTS find it more difficult to increase their score by the same proportion as those who don't score as highly*. Indeed, this paper looks at the issue from a more general point of view, seeking to explain the matter using models from education in general, as well as from the field of economics. In particular, the learning curve, the law of diminishing returns, and a case study of university lecturers' intuition-based setting of goals (using the TOEIC) are used to argue the existence of a curved learning effect in English education, with this effect then used to explain the observed IELTS and other testing results.

2.0   Observed Data, Return Expectation Laws and Hypotheses, and a Case Study

2.1 Results Observed from IELTS Results in a University

It has been shown that, when students self-select to be placed in a high-stakes class which includes international testing, those students initially perform better than students who were teacher selected, when other conditions are the same. However, this better performance is not maintained linearly (Lynch, 2015a). Table 1 and Graph 1 show this phenomenon, showing Class B (the self-selecting class) scoring higher than Class A (the placement test selected class) from a similar ability start-point. Subsequently, the slope of Class B's improvement becomes flatter, but Class A's improvement slope does not significantly change.
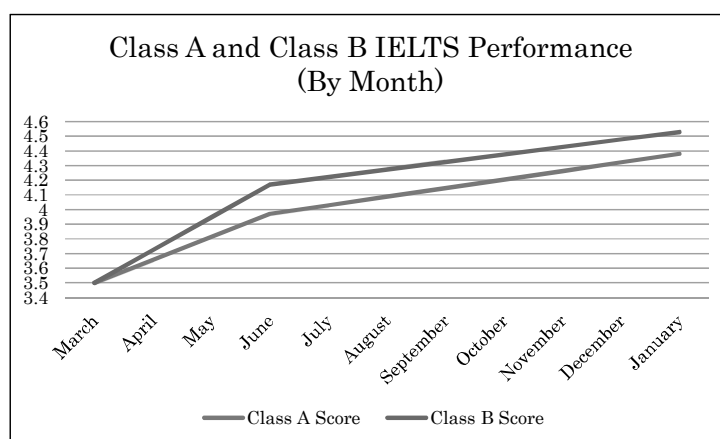
	Class A			Class B		
Date	Mar-13	Jun-13	Jan-14	Mar-14	Jun-14	Jan-15
Overall Score	3.5	3.97	4.38	3.5	4.17	4.53

Table 1: Class A and Class B IELTS Test Scores
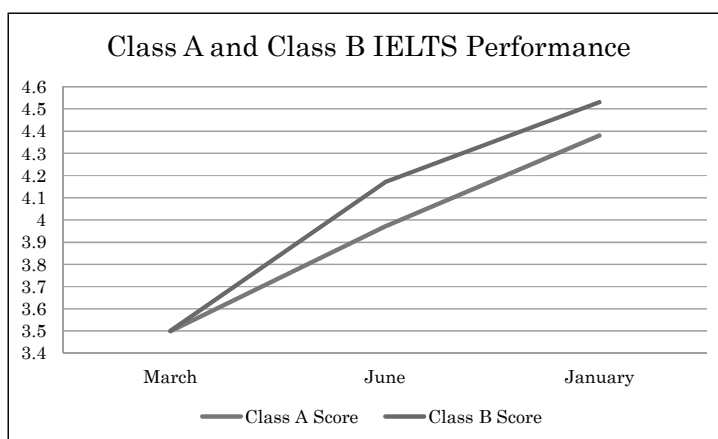
Graph 1: Class A and Class B IELTS Test Performance

On visual inspection, the performance of Class A (the lower line) looks more consistent (i.e. straighter) than the performance of Class B. However, the perceptive researcher will notice that the gaps shown between testing times are not equal and, therefore, Class A's English language improvement slope may not be so consistent after all. Graph 2 shows the same data, with data points calculated for each month (consistent data time gaps).


Graph 2: Class A and Class B IELTS Test Performance (By Month)

The data plotted in Graph 2 suggests that both Class A and Class B show what is known in economics as "diminishing returns", which is a situation where the same effort (class and personal study) produces a lower return (IELTS test score), and that the returns for Class B diminish more rapidly than those for Class A. Reasons for this are discussed below.

2.2 The Law of Diminishing Returns

There is a generality of economic theory which might be called a law (Shephard and Färe, 1974) called the Law of Diminishing Returns. Using an analogy, they explain it as a proposition that asserts that "as equal quantities of capital and labor are applied successively to a given plot of land, the output resulting from these applications will increase monotonically at first up to a certain point, after which further applications will result in steadily decreasing product increments tending to zero." An example of the law of diminishing returns is simulated in Graph 3.

Law of Diminishing Returns: Visual Example
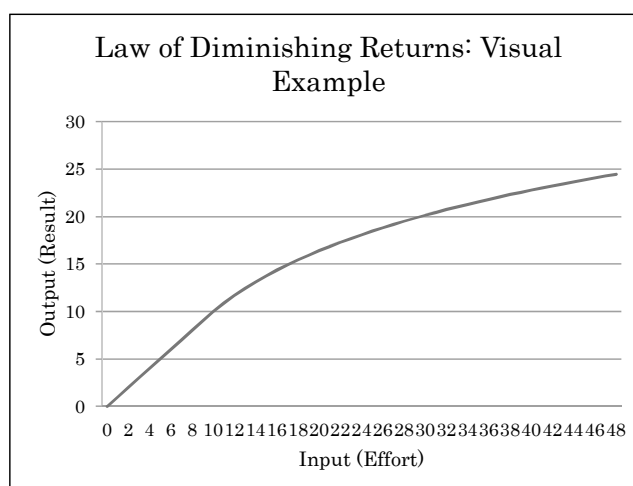
Graph 3: The Law of Diminishing Returns (Visual Example)

Notice that, in the example given in Graph 3, an input of one unit of effort yields an output of one unit of result, for the first ten units of input. In other words, there is a straight line relationship for the first ten units. Then, from input units 11 onwards, the resultant output decreases in perpetuity. Note that the above ignores the phenomenon of "negative returns" that would be expected to eventually occur in Shephard and Färe's (1974) analogy.

For reference, the calculation used to produce the example in Graph 3 was [Output = Input] for the first ten units of input, and [Output = Previous Output + (Previous Input/Current Input)] for subsequent input. This calculation guarantees a positive but decreasing output after ten units, although never quite going to zero. One reason for this is that the Law of Diminishing Returns in this paper is based on an educational context, which is expected to produce *something* (even as a side-effect of what is being taught, or as learners will mature over time).
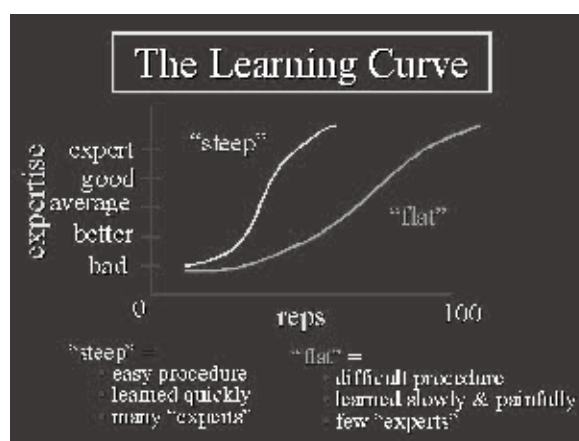
2.3 Learning Curve

Learning Curve is a concept that describes "how new skills or knowledge can be quickly acquired initially, but subsequent learning becomes much slower" (Investopedia, 2015). The concept has wide applications such as in education, in industry (e.g., when considering staff training), and in finance (e.g., when considering resource investment). Research into the application of the concept is long established with, for example, the most relevant five papers using the keyword "Learning Curve" cited in Google Scholar dating from 1979, 1974, 1981, 1992, and 1964, respectively (Google Scholar, 2015). However, none of these papers deal with learning curve in education, not to mention in language education while, on the other hand, research into learning curve in the business and science world is well developed.

There are many examples of the learning curve. Graph 4, below, shows a traditional sigmoid learning curve (Teamsquatchinusa, 2014). Note that, as with the depiction of the Law of Diminishing Returns, above, the "plateau" is not depicted as a true plateau, with its slope being (slightly) greater than zero.
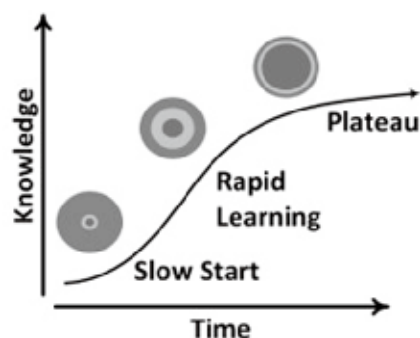
Graph 4: Traditional Sigmoid Learning Curve

It has been shown that the slope of the learning curve can be adjusted, depending on the teaching procedure, the method of learning, and the availability of experts in the topic field (Bokertov, 2015). Graph 5 shows two learning curves, one relatively steep and one relatively flat. The word "reps" in the graph refers to the word "repetitions", although this does not necessarily mean students have to repeat their learning in the same way as before; they could, for example, use learned grammar gained from reading in a different environment such as in writing, speaking or even listening.

Graph 5: Steep and Flat Sigmoidal Learning Curves (Bokertov, 2015)

2.4 Data from a Case Study on "Fair Expectations in Setting English Goals"

The following is a case study from a Japanese university. The university was looking for a way of setting goals to: 1. motivate their students to become more aware of, and to put more effort into

their English learning, 2. introduce an element of accountability into the English programme, and 3. serve as a teacher and curriculum guide. It was decided that, instead of setting overall class goals, each student would have their own personal goal based on their current ability. This was deemed necessary due to the wide range of student English ability in each class, despite most students being placed according to their pre-entry TOEIC scores. Another advantage of goal setting would be that the university could announce to students a "minimum acceptable level", an "ideally expected level", as well as an "individual student personal goal". The TOEIC test was chosen as a suitable goal for the students for reasons including the following:

1. The students' TOEIC score before entering university was known, due to them having taken the pre-entry placement test (which was a TOEIC test).

2. Japanese companies are familiar with the TOEIC test. Therefore, being able to write a TOEIC result when applying for a job would be beneficial to the students.

3. Many of the teachers were familiar with the TOEIC contents.

4. The TOEIC is relatively inexpensive (when compared to international tests such as the IELTS).

5. There is a wide selection of material available for teaching TOEIC. Books which include short lessons are available, ensuring that TOEIC teaching would not take more than 1/4 of class time. (Note: It was decided that teachers would teach TOEIC for 20 minutes out of a 90 minute class).

One issue that had to be solved was the question of how to set the aforementioned minimum acceptable level, ideally expected level, and individual student personal goals. TOEIC is a multiple choice examination, with students being required to choose one answer from four choices in most questions, and to choose one answer from three choices in one short section. Therefore, random answering should, on average, result in a score of over 1/4 of the maximum score.

The maximum score in the TOEIC (reading and writing test) is 990 points so any student should be expected to score at least approximately 250 points at a sitting (if guessing randomly with average luck). Unfortunately, however, it was noticed that a not insignificant number of students had scored much lower than that in their pre-entry TOEIC tests. This could have been for a number of reasons, such as not understanding how to do the test, apathy (including falling asleep), poor test time management (i.e., not being able to select an answer to all answers in time), or, for a few cases, bad luck.

The teachers considered the above, and deemed that a minimum acceptable goal score should be 250 points.

The ideally expected level of all students was set at 600 points for first year students after one year. This was based on the teachers' experiences and opinions that any serious Japanese university student should be expected to achieve 600 points in TOEIC. Such a score was also regarded as a suitable intermediate step toward achieving the goals set by a range of multinational corporations, or companies that export their products internationally. A guide to the TOEIC (Trew, 2007) gives the results of a survey of such companies showing the ranges required for the following:

    1. Airline flight attendant (600-700)

    2. Promotion to section chief (600-730)

    3. Assignment to overseas offices (650-750), and

    4. Executive managers (800+)

However, it was also recognised that having all students achieve 600 points was an ideal situation that was different than reality, hence the need to create a personal goals system. The personal goals for students were set based on the score each individual student got on the pre-entry placement test. The teachers intuitively (based on their experience) knew that, for example, it would not be a huge feat for a student with a score of 300 points to increase their score by, say, 50 points. However, a student with 900 points would require an enormous effort to achieve a similar increase.

The following logic was used to work out the students' personal goals:

    1. Students who had a pre-entry TOEIC score at or over the ideally expected level (of 600 points) would be required only to increase their score by 10 points. (One reason was that it was assumed that such a student would have other goals, such as IELTS. Another reason was to make a relatively fair system, so a high level student would not be "punished" for initially scoring well, whether due to high skill or good luck).

        Example 1: Student A's pre-entry TOEIC score was 660 points.
          => Student A's goal TOEIC score was 660 + 10 = 670 points.

    2. Students scoring less than 600 points in the pre-entry TOEIC test were required to increase their score by 20% of the difference between their score and the ideally expected score, or to get a score of 250, whichever was the highest.

        Example 2: Student B's pre-entry TOEIC score was 400 points.
          => Student A's goal TOEIC score was 400 + (600-400)*20% = 440 points.

   Example 3: Student C's pre-entry TOEIC score was 100 points.

=> Student A's goal TOEIC score was 100 + (600-100)*20% = 200 points.

However, this score was less than 250 points, so the goal was set at 250 points.

It was agreed that the above system was as fair as possible to all the students, while establishing one standard for the entire cohort of students. It achieved a balance between achieving a minimum standard at university, setting an ideal goal, supporting and encouraging higher level students to continue to improve (and not slip back), encouraging other students by not being so draconian as to dissuade students from studying (as an achievable goal was set for each student), and holding students responsible for their study results. The standard was given teeth by assigning 20% of the students' class evaluation score (i.e., their class credit) to achievement of their personal goals (and also giving partial credit for partial goal achievement).

The implementation of the above was not directly research driven, being rather intuition, expectation and experience driven. When the above system was graphed (using cumulative gains per each additional input), the graph shown in Graph 6 was revealed.
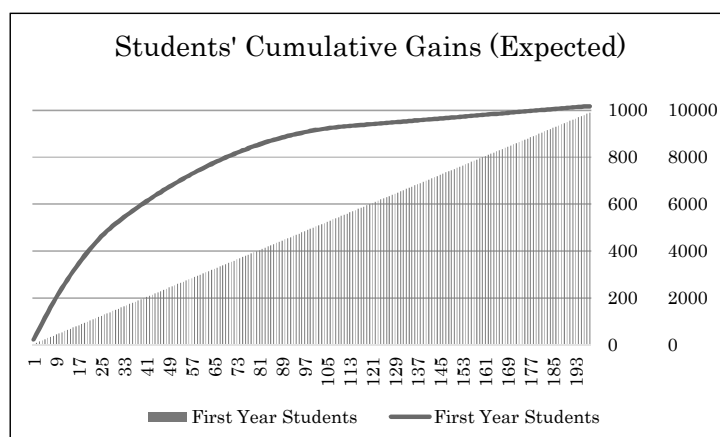
Graph 6: One-Year TOEIC Achievement Goals in a Japanese University

It can be seen that the graph resembles more the Law of Diminishing Returns model than the Learning Curve model. Note that the curved line is the cumulative output, including the previous output. In other words, it simulates the situation of an imaginary student who takes the TOEIC continuously and improves their score by the smallest (consistent) unit each time, which is then used as the next input (next beginning score). In the TOEIC, the test score goes up in increments of five points. As the minimum score (higher than zero) is five points, and the maximum score is 990 points, the number of increments (used as input, on the x-axis) is therefore 199. The first y-axis (max axis value shown 1000) is also an input indicator, and merely shows what score each increment on the x-axis refers to (i.e. x-axis value multiplied by five). The output is the curved line,

which has a maximum of over 10,000 (to be precise, it is 10,165). This is graphed while taking into account the previous scores gained, as it is cumulative output. The scores gained are the improvement in a student's ability (from the student's current level to the student's personal goal level). Therefore, a student who started at five points (with a personal goal of 250 points) would have to gain (or output) +245 points. The next student, beginning at 10 points (with same personal goal of 250 points) would have to gain +240 points. These are added together to become 485 points for a total system output, and so on (resulting in a depiction of cumulative increase). Note that the above graph is not to be used as a reference for calculating students' goal scores, as it shows cumulative data. The calculation presented earlier should, instead, be used.

3.0 Discussion

3.1 The Law of Diminishing Returns vs The Learning Curve

It can be seen from the data above that the system put in place in the case study was similar to a Diminishing Returns Model. However, that does not necessarily mean that the Learning Curve Model is not valid in education. In fact, comparison of the Diminishing Returns Model and the sigmoidal Learning Curve Model show that they are similar when the first third of the Learning Curve Model is disregarded. It can be taken for granted that this first third, with its low slope, has been completed by all students by the time they get to university. In English language education, things students learn in this initial section would include writing the alphabet, saying simple sentences such as greetings, and being able to understand simple utterances, which is, for some, the "learned slowly and painfully" section (Bokertov, 2015). Students cover at least this section in their year of two of compulsory language education at secondary level, and then go on to learn more advanced material. The result is that, basically, students at university level are expected to be in the second or third segment (of three) of the learning curve, which means that *both* the Law of Diminishing Returns and The Learning Curve are valid at university level.

3.2 Meaning for Language Education at Tertiary Level

The above discussion of the two models, together with findings from the case study, show that the Law of Diminishing Returns (and the second and third segments of the Learning Curve) are important depictions of how learning works in university, in a language program. This, in turn, means that all student and class goals should not be absolute (such as only setting a target of X points in a test for all students in class Y) but, instead, need to include student personal goals. Furthermore, it also becomes clear that language ability goals for a series of classes should not be set in terms of language tests. In other words, goals (in terms of increases in language ability as shown on standardised testing) should be set at less than previous goals (with *previous* referring to

either classes students have taken *and/or* classes where the average ability of students is lower than the current class).

To illustrate the above, let's take a series of classes:

The classes can be labelled as：　　　　Class 1, Class 2, Class 3, Class 4, ... , ...

The respective goals for each class are:　Goal 1, Goal 2, Goal 3, Goal 4, …, ...

The language ability of the students in the classes would follow the following pattern:

Class 1 < Class 2 < Class 3 < Class 4 < ... < ...

On the other hand, the goal of each class (in terms of an expected increase in points on standardised testing, when the same test is taken in all classes) would obey the following pattern:

Goal 1 > Goal 2 > Goal 3 > Goal 4 > ... > ...

Of course, by extension, the personal goals of each student would, when comparing classes, also reveal the same pattern.

4.0 Conclusion

This research used Law of Diminishing Returns and the Learning Curve, along with a case study from a Japanese university to show that the general hypothesis "*students who initially score highly find it more difficult to increase their score by the same proportion as those who don't score as highly*" is a natural phenomenon, meaning that students who perform highly in any test (or in any task), compared to those who do not perform as well, with both groups coming from the same base ability or performance, will find it difficult to maintain additional increases in performance that are greater than the group who are playing "catch up". A simple theory was produced which states that as the ability of a class increases, goals in terms of an increase in standardised test scores should be reduced accordingly. The hypothesis in Lynch (2015a) limited itself to the IELTS examination, but this paper has allowed us to generalise the hypothesis to include all standardised tests and tasks.

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