Back to the Drawing Board: A Longitudinal Study of Fossilized Errors

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Abstract
The problem of fossilized errors has been a problematic issue with EFL researchers because it shows that traditional methods of instruction are not effective. Fossilized errors were thus examined with university-level first-year Japanese EFL students to better understand the context in which they are occurring and their frequency over the course of an academic year. Data was collected from two corpora, the Monologic and Dialogic Corpus (MDC) 2019, which has 20,368 words, and 42 subjects, and the second corpus MDC2020, which has 16,997 words and 29 participants. Errors in the 2019/2020 corpora were identified and then coded for frequency; results showed the following fossilized errors: articles deletions (92/94), prepositions (39/43) plurals (54/55), subject-verb agreement (85/46), and general wording (60/69). However, in looking at clauses with errors/100 words, there were 5.29 errors in the 2019 corpus, whereas, in the 2020 corpus, there was a slight improvement of 3.35 errors/100 words, indicating that marginal progress was made. These results show many of these errors are interlingual and that students are unaware of their errors that they are making in their spontaneous speech. Alternative methods of instruction are thus needed in EFL education to highlight awareness and self-editing skills.

Keywords: Fossilized Errors, Error Correction, Corpora

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Introduction

Nothing gets more attention than an error that keeps on being repeated, again and again, particularly in monologic or dialogic speech. Fossilization is a term coined by Selinker (1972) who described it as a cessation of development in a language system or subsystem, which can affect most second language (L2) learners/users, particularly in areas of a language that can be phonological, grammatical, or lexical (Han & Odlin, 2006). ICALTEFL[1] noted that a fossilized error is a mistake a student has made so many times that it has become part of their natural speech, pointing out that even native speakers or near-native-like speakers can often say grammatically incorrect expressions such as:

* The spaghetti are ready.
* Are the money on the table?

It could be argued that educators should be more aware of the problem if they were less focused on grading reading comprehension quizzes, assessing listening skills, or responding to a rigid set of grammatical forms that had to be addressed. However, to focus and adequately respond to students' output, particularly over time, takes enormous effort and commitment. Thus, it should come as no surprise that most university-level students are not improving as fast as they should be. Based on their research on students' progress over an academic year, (Long & Watanabe, 2020) found that progress was mixed: global errors showed a decline from 22 to 15 incidents, local errors increased from 76 to 112 errors with a t-test confirming there was no significant difference between the two speech corpora regarding to global and local errors. The five most frequent errors were: (a) lexical phrasing (71), (b) article omissions (41), (c) plural errors (19), (d) preposition omissions (19), and verb usage (9). This data pointed to the difficulty of having students self-edit themselves as little to no instruction is given about this skill.

Review of Literature

As a topic for research and practice, fossilized errors should be more extensively researched than they have been; however, due to a lack of training or time, language researchers have found the issue to be problematic and that, due to situational constraints and environmental settings, too many teachers are willing ignoring such errors or unable to correct them. Language learners might also be unaware of their spontaneous oral errors or apathetic about improving them. One issue is that many EFL educators have not had any or very much training in how to respond to such errors. In their study on fossilization, Qian and Xiao (2010) underscore how challenging it might be for both students and teachers to take the needed action to address these emerging mistakes. Therefore, the researchers focused on three strategies prevent fossilization: (a) taking the right attitude towards students' mistakes, (b) paying attention to verbal output by grasping the relationship between accuracy and fluency, and (c) providing students with strategic feedback. One issue with these three strategies is that they are open to interpretation and tend to be difficult to replicate, especially in considering the one issue of students' motivation and goals. A second issue that such researchers fail to address reviewing and recycling information to better highlight error correction. In another study, Wei (2008), research focused on

[1] ICATEFL. Retrieved from: http://www.icaltefl.com/fossilized-errors-in-tefl.

the implications of interlanguage (IL) fossilization in L2, for which he described five types of fossilization: phonological, morphological, syntactic, semantic, and pragmatic.

However, fossilized errors do not need to be permanent, and second language learners always have the opportunity to continue developing grammar usage.[2] Wei's research is critical as all too often teachers tend to miss recognizing syntactic, semantic-pragmatic, or morphological errors, putting their time and energy solely on grammatical forms whereas the other kinds of errors might have more importance or impact on the message. Another way of understanding error formation came from Han (2005), who identified 50 variables used to explain the causes of fossilization; these can be categorized into four factors (a) environmental, (b) cognitive, (c) neurobiological, and (d) socio-affective. Han then offers a systematic way of further analysis, relying on macroscopic and microscopic perspectives.

Hasbún (2007), having examined college students in Costa Rica, found that not only the verb form usage but also the prepositions and articles usage seem to be persistent errors over time, indicating the tendency of these errors becoming fossilized (p.126). Taher (2011) identified that Swedish junior high school students made frequent errors of verb tense, verb inflection, and subject-verb agreement. The causes of errors are considered to be incorrect transfer from Swedish into English as well as lack of grammatical knowledge. To correct errors in spoken English, Kayum (2015) proposed using feedback sheets, media technology such as recording, and self-correction by students. In the study of English-speaking learners of Japanese, Hirotani, Matsumoto, and Fukada (2012) targeted the students who enrolled in the first-year Japanese courses at a university in the U.S. to investigate how the fluency-related measures changed over time. They discovered that several measures of fluency deteriorated in both oral reading and Q&A tasks. Such complexity factors as new words were identified to have hindered fluency development.

Treatment of fossilized errors

In responding to fossilized errors, self-monitoring has been the first strategy for most EFL educators, with O'Malley and Chamot (1990) defining self-monitoring as "checking one's comprehension during listening or reading or checking the accuracy and/or appropriateness of one's oral or written production when it's taking place" (p. 46). Birdsong (1989) discusses how metacognitive awareness is really "a reflection of the growth of two skill components involved in language processing: the analysis of linguistic knowledge into structured categories and the control of attentional procedures to select and process specific linguistic information" (p. 498). Teachers, thus, are called upon to develop both linguistic knowledge as well as editing/proofing skills.

To better understand the role of attention, Kormos (2000) studied 40 EFL speakers in Hungary to analyze the frequency for self-repairs and correction rates. The results showed that in 12 speech samples, those lexical errors were repaired more than grammatical errors; moreover, students who had higher proficiency levels in their L2

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[2] Carnegie Mellon University Intercultural Communication Center: Retrieved from: https://www.cmu.edu/icc/language-training/handouts/assets/fossilized-grammar.pdf

had corrected fewer mistakes than learners who had been at pre-intermediate levels. Pillai (2006) explored repairs in spontaneous production and found that speakers did not stop immediately upon being aware of the error; additionally, speakers tended to continue speaking longer before they interrupted themselves. The issue of self-monitoring and self-reflection has gained global attention, with Sánchez Luján (2012) using a blended environment at a Columbian university with distance classes; in the study, participants were asked to observe and record their own behavior. Results indicated that students could identify areas of improvement independently, but far more analysis is needed on the types of awareness that his participants gained from the self-assessment tools provided.

Kormos (2000) also investigated the role of attention in monitoring second language speech production, analyzing the frequency for self-repairs and the correction rate of errors in the speech of 40 native speakers of Hungarian. Results showed that in L2 speech, error repairs had been more frequent than repairs in L1; furthermore, it was also learned that students who had higher levels of proficiency in their L2 had corrected fewer mistakes than learners who had been at pre-intermediate levels. This research established that L2 learners pay particular attention to lexical choice.

A similar strategy in responding to error formation is that of self-evaluation; O'Malley and Chamot (1990) also defined self-evaluation as "checking the outcomes of one's own language learning against a standard after it has been completed" (p. 46); later, this definition was refined with Brown (2007) who stated that it was a process of "checking the outcomes of one's own language learning against an internal measure of completeness and accuracy" (p. 134). Thus, students are now prompted to assess their own performance in a variety of tasks, which can raise self-confidence and self-esteem if done correctly with self-assessing rubrics and checklists (Schraeder, 1996; Min, 2005; Tamjid and Birjandi, 2011), as well as improving skills, language acquisition, and meta-cognitive strategy use.

Fauziati (2011) looked at eight error types and tried a pedagogical intervention over a period of one semester; the rewrites of the first composition showed revealed that grammar instruction was capable of reducing 66% of the learners' errors, from 422 error cases in C1 to 142 error cases in C2. However, despite teachers' best attempts in addressing self-monitoring and self-repairs, little progressive improvement has been noted. One issue in students failing to catch errors is that L2 learners seem to pay more attention to lexical appropriacy and in, some cases, phonological appropriacy rather than to grammatical elements such as verb forms (Poulisse & Bongaerts, 1994).

A final analysis of how to understand and categorize grammatical errors comes from Ellis & Barkhuizen (2005:61):

1. Errors of omission: when the learner has left out a word e.g., "My sister happy."
2. Errors of addition: when the learner has added a word or an ending to another word which is grammatically incorrect e.g., "I have eated".
3. Misinformation/Substitution: when the learner uses the wrong form of a morpheme or structure e.g. when they use the wrong preposition in a sentence such as "It was the hardest time in my life".
4. Misordering: e.g. when the learner places a morpheme incorrectly in a grammatical construction such as "She fights all the time her brother".

5. Blends: when the learner is uncertain of which word to use and blends two different phrases e.g., “The only one thing I want”.

The evidence in the above studies point to the importance of the use of self-monitoring and self-evaluation to help students to improve their grammatical accuracy; however, a common problem with these studies lies in the difficulty of replication, with many of the procedures, materials, context (class size, time, level of students), and participants’ background (age, level), being too vague or generalized.

Fossilized Errors by Japanese EFL Learners

Research by Long and Hatcho (2018) had focused on the grammatical accuracy of Japanese EFL learners, with one aim being to see if English teachers can identify errors as being intralingual or interlingual, and which type of error was more common. From the Japanese University Student Corpus (JUSC) comprising of 61 transcripts containing 51,061 words, an inventory of errors was formed based on this corpus, which contained 400 errors in context.

The primary errors were incorrect use of articles (381), incorrect verb tense (162), incorrect use of prepositions (158), the omission of verbs (152), modifier errors (111), and incorrect subject-verb agreement (76), which indicated the commonality of particular errors and issue related to fossilization. In taking the analysis further, regarding intralingual and interlingual errors (the impact of L1 on error formation), it was found that 35% of the 400 errors that had been identified were deemed as being intralingual [859 responses], 51% were seen as interlingual [1233 responses], and 12.5% were undetermined [301 responses]. Likewise, Bryant (1984) stated that as for the types of errors that Japanese EFL learners, that research shows that articles, verb tense, prepositions, modifiers, and subject-verb agreement to be the most frequent errors made by Japanese EFL learners, indicating possible L1 interference.

The Study

Rationale

Questions remain about the kinds of fossilized errors. By examining the fossilized errors in two new corpora, (Monologic and Dialogic Corpus [MDC] 2019 and 2020) it would be possible to validate these preliminary findings and establish more consistent and reliable parameters of grammatical accuracy.

Research Questions

1. In comparing the two years of data, are there significant differences between the frequency of interlingual and intralingual fossilized errors?
2. In comparing the two years of data, are there significant differences between the two TOEIC groups regarding the frequency of fossilized errors?
3. Based on the two sets of data, do fossilized errors decrease significantly over an academic year? If so, which errors show the most improvement?

Participants and interviewing

There were 42 students who were interviewed for the first corpus MDC2019, and 29 for the second, MDC2020. For this study, 12 students were selected, six from the lower to intermediate proficiency range (210-450) and six from a higher TOEIC range (645-920). All of the participants were Japanese, aged 18 to 19, except for two foreign students who were Korean. The one outlier was a Japanese student who had lived in New Zealand for a number of years and had the highest TOEIC score of 985. University procedures and approval for the study was requested, granted, and followed, and all of the students agreed to be interviewed, to have their conversations transcribed and studied. Student consent was obtained, with the aims of the study being reviewed by a university committee beforehand. These participants were all engineering majors as the university is focused on this area of study. The sample size of the study is 12 students divided into two groups: high-proficiency group and low-proficiency group.

Students were called in one-by-one and in the interview and were given the background of the research study and permission forms in both Japanese and English.

Students were made aware that their monologues and dialogues were to be videotaped, transcribed, and used for research purposes. Participants knew they had the right to withdraw from the research once it started and that learning about their fluency and grammatical accuracy, it would benefit them in future interactions. Their names of the students were abbreviated in the final corpora that were uploaded to the research website.[3] Students were able to read the interview script out beforehand to avoid any lapses in comprehension that might impact the fluency data. The interview process began with them being asked to give a self-introduction monologue, which was then followed by a three-question dialogue with information about friends, family, and classes.

Corpora

42 Japanese students were asked to give a self-introduction monologue, which was then followed by a three-question dialogue in the MDC2019, whereas in MDC2020, there were 29 participants. The Monologic and Dialogic Corpus (MDC) 2019 has 20,368 words, and the MDC2020 has 16,997 words.

Data analysis

Data analysis involved an independent T-test was used for estimating the mean difference between the two groups of students in 2019 and 2020; the Mann-Whitney test was used for non-normally distributed independent variables. A paired T-test was used for estimating the mean difference between the two groups of students over the academic year 2019/2020 for normally distributed variables, whereas the Wilcoxon Signed-rank test was used for non-normally distributed variables. The continuous variables in the study were checked for normality using the Shapiro-Wilk test. All statistical analyses were performed in SPSS (version 25). Based on previous research (Long and Watanabe, 2020), fossilized errors were based on the following forms:

[3] Researcher's website: genderfluency.com

verb tense, verb agreement, verb usage, articles misuse, article omissions, prepositions, adjective/modifiers, phrasing and noun plurals.

Results

As for the first research question, interlingual errors were identified as including articles, plurals and prepositions since the Japanese do not have articles, plurals, and do rely on particles to connote placement and direction. Thus, errors relating to article usage and prepositions can be considered interlingual. Regarding significant differences between the frequency of interlingual and intralingual fossilized errors, a t-test showed no significant different $t(5) = .21$, $p < 0.844$ between these two kinds of errors.

As for the second and third research questions, results showed marginal improvement, if not an increase in error rates on most of the variables. In looking at the MDC2019 corpus, for the lower proficiency group, verb tense errors, verb agreement errors, verb usage errors, article deletions, preposition errors, adjective errors, adverb errors, general phrasing/wording, and nouns plurals tended to be fossilized, while for the higher proficiency group, preposition errors, adjective errors, general phrasing/wording, and nouns plurals were the most redundant errors.

In particular, descriptive statistics indicated that for the 15 participants for both corpora, that error-free clauses / 100 words decreased slightly while clauses with errors / 100 words increased by one additional clause. Global errors showed a significant decline, while local errors increased from 97 to 158 errors. For errors related to parts of speech, a t-test confirmed there was a significant difference (t (23) = 2.19366, $p < 0.0386$) between the two speech corpora with more error frequency occurring in the 2019 corpus. This data indicates that error formation remains high and that little awareness on the part of the student was taking place.

Table 1: Difference in grammar accuracy variables over the academic year 2019/2020 in the low-proficiency group

Group	Variable	Over the year	Mean	Mean difference	P-value
Lower	Total Errors	2019	14.8	-6.2	.048
		2020	21.0		
	Clauses with Errors/100	2019	3.9	.3	0.643
		2020	3.7		
	Clauses with Errors	2019	12.2	-4.0	0.125
		2020	16.2		
	Error Free Clauses/100	2019	15.0	6.6	0.048
		2020	8.4		
	Error Free Clauses	2019	42.2	19.5	0.012
		2020	22.7		
	Verb Tense Errors	2019	.8	-1.3	.082
		2020	2.2		
	Verb Agreement Errors	2019	3.7	.2	0.833
		2020	3.5		
	Verb Usage Errors	2019	1.0	-1.0	0.296
		2020	2.0		
	Articles Misuse	2019	.2	.2	0.363
		2020	.0		
	Article Deletions	2019	4.2	.5	0.831
		2020	3.7		
	Article Incorrect Insertion	2019	.0	0	0.0
		2020	.0		
	Preposition Errors	2019	2.7	.7	0.675
		2020	2.0		
	Adjective Errors	2019	.0	-.8	0.093
		2020	.8		
	Adverb Errors	2019	.0	-.3	0.175
		2020	.3		
	General Phrasing/wording	2019	1.0	-4.2	0.005
		2020	5.2		
	Nouns Plurals	2019	1.3	-.3	0.611
		2020	1.7		

Table 2: Difference in grammar accuracy variables over the academic year 2019/2020 in the high-proficiency group.

Group	Variable	Over the year	Mean	Mean difference	P-value
Higher	Total Errors	2019	17.7	1.0	0.882
		2020	16.7		
	Clauses with Errors/100	2019	3.1	.6	0.486
		2020	2.5		
	Clauses with Errors	2019	16.0	.7	0.912
		2020	15.3		
	Error Free Clauses/100	2019	10.2	.7	0.915
		2020	10.6		
	Error Free Clauses	2019	86.2	-22.5	0.363
		2020	108.7		
	Verb Tense Errors	2019	1.5	.7	0.484
		2020	.8		
	Verb Agreement Errors	2019	1.7	.8	0.185
		2020	.8		
	Verb Usage Errors	2019	1.7	.8	0.341
		2020	.8		
	Articles Misuse	2019	.7	.7	0.102
		2020	.0		
	Article Deletions	2019	4.8	3.0	0.091
		2020	1.8		
	Article Incorrect Insertion	2019	1.0	1.0	0.111
		2020	.0		
	Preposition Errors	2019	1.5	.2	0.872
		2020	1.3		
	Adjective Errors	2019	.0	-.8	0.259
		2020	.8		
	Adverb Errors	2019	.0	0	
		2020	.0		
	General Phrasing/wording	2019	3.0	-4.8	0.157
		2020	7.8		
	Nouns Plurals	2019	1.5	-.8	0.341
		2020	2.3		

Table 3. Phase 3 Analysis: Global / Local Errors and Fossilized Errors

	MDC2019 20,368 words		**MDC2020 16,997 words**	
	Total	%	Total	%
Fossilized Errors	266	1.31	120	0.71
Verb tense errors	14	0.07	5	0.03
Verb agreement errors	31	0.15	14	0.08
Verb usage errors	10	0.05	1	0.005
Article omissions (*the*)	51	0.25	23	0.14
Article omissions (*a*)	86	0.42	38	0.22
Preposition errors (*to*)	17	0.06	6	0.04
Preposition errors (*at*)	8	0.04	0	0
Preposition errors (*in*)	5	0.02	0	0
Prepositions errors (*around/under*)	0	0	0	0
Preposition errors (*f*or)	3	0.014	1	0.005
Preposition errors (*about*)	1	0.004	2	0.011
Prepositions errors (*with*)	5	0.02	1	0.005
Prepositions errors (*on*)	1	0.004	1	0.005
Prepositions errors (*from*)	0	0	3	0.02
Adjective / modifier errors	7	0.03	3	0.02
Possessive Pronoun errors	3	0.01	4	0.02
Phrasing errors (insertions/word order)	7	0.03	8	0.05
Possession not marked	8	0.04	2	0.011
Noun (Plural) errors	7	0.03	3	0.011

Note: A fossilized error is defined as an error that has been repeated three times in different transcripts.

Further investigation examined specific cases and examples of fossilized errors. Data revealed that for verb tense, students had specific problems with *choose/chose*, and *belong/belonged,* and for verb agreement students had problems with *like, dislikes, lives, works, and is/are.* As for verb usage, students had problems with infinitives and gerunds, *I want built, I was belong, my mother working*. For the MDC2019 corpus, for article deletions involving the article *the,* there were 52 cases whereas in the MDC2020 corpus, there were 23; likewise, for the omission of *a*, for the 2019 corpus, there were 86 cases and 38 cases in 2020.

Preposition errors focused on the use of *to* (2019, 17 cases; 2020, 6 cases), *of* (2019, 1 case, 2020, no cases), *at,* (2019, 8 cases; 2020 0 cases), *in* (2019, 5 cases; 2020 0 cases), *for* (2019, 3 cases; 2020 1 cases) (2019, 5 cases; 2020 1 case) *on* (2019, 1case; 2020 1 case), and *from* (2019, 0 cases, 2020 3 cases). In regard to adjectives, students had issues with comparatives and superlatives (*more old*) and usage (*little women*) along with the use of *many* (*many difficult*). Phrasing errors involved missing or inserted words / word order (MDC2019, 7 cases; MDC2020, 8 cases) along with problems with possession, marked by apostrophes (MDC2019, 8 cases; MDC2020, 2 cases). For these participants, errors with noun plurals were based on words *machine,* and the word *subject.* Thus, the most improvement that was shown related to verb tenses, verb agreement, verb usage, prepositions, and, to some degree noun plurals.

Discussion

The data confirms that fossilized errors tend to be based on verb agreement, articles (omissions based on *the* and *a*), prepositions, (*to, for, with*) adjectives, possessive pronouns, and phrasing. Concerning the types of errors that Japanese EFL learners often make, the data confirms previous research and the experience of many educators, e.g. (Bryant, 1984) that articles, verb tense, prepositions, modifiers, and subject-verb agreement are the most frequent fossilized errors made by Japanese EFL learners. This data also shows that not all fossilized errors are alike in regard to frequency, and semantic impact; teachers should take into account the level of difficulty of each kind of error, with phrasing being the most problematic. Demir (2019) noted "the effectiveness of any error correction method changes on the number of factors, instruction content, students' proficiency, motivation and, of course, the students linguistic background, so results can vary dramatically.

Thus, educators need to bypass the traditional way of grammar instruction of randomly addressing various forms in one chapter, and providing tasks, to one in which errors are systematically and continuously taught throughout the year, looking at ever-increasingly complex forms and usage. By relying on specific grammar strands and clusters (Byrd, 1997), fossilized errors could be substantially reduced. Teachers could then examine how grammatical forms cluster and impact meaning in a variety of communication, emails, speeches, dialogues, monologues, and in technical English. Specifically, clusters such as verb-phrase + prepositions combinations should be examined along with how nouns (plurals) affect verb agreement. Furthermore, teachers could provide various kinds of clusters of articles + adjectives + nouns function in dialogues and then in emails, as well as have students take on increasingly complex phrasing.

A series of developmental grammar correction tasks in a second-person roleplay is one innovative step that can help teachers to spot errors in the classroom. Such tasks would allow for students' answers to various questions, opinions, and ideas, so teachers can provide more relevant feedback that pertains to the students' own needs as they write and then rehearse their roleplays. Teachers will have to rely on various kinds of explicit and implicit learning mechanisms that require both copious input and output.

Nonetheless, it was clear from this study that many errors were being repeated several times. Educators should instead focus on the most common errors throughout the course, paying attention to a variety of contexts, again with increasing levels of complexity. It is also important for English teachers to realize the impact of L1 on EFL: teachers should be aware that prepositions in English, like particles in Japanese, take some time to understand and to use insofar that many are related to idiomatic usage. Further research could diversify data collection tools (incorporating online grammar checkers and dictation tools) and include different instructional contexts such as meaning-focused versus form-focused to test the effectiveness of various types of error correction across different contexts. More innovative tasks can include (a) sentence completions with increasingly longer and more complex syntax and punctuation marks, (b) having students select particular meanings based on a prompt in a second-person roleplay in which they are placed, and (c) identifying and correcting grammatical errors in dialogues and speeches.

Conclusion

This research examined university-level first-year Japanese EFL students to better understand the context in which they are making errors and the frequency over the course of an academic year. Data was collected from two corpora, the Monologic and Dialogic Corpus (MDC) 2019 has 20,368 words, and 42 subjects, and the second corpus MDC2020, which has 16,997 words and 29 participants. Errors in the 2019/2020 corpora were identified and then coded for frequency; results showed the following fossilized errors: articles deletions (92/94), prepositions (39/43) plurals (54/55), subject-verb agreement (85/46), and general wording (60/69). However, in looking at clauses with errors/100 words, there were 5.29 errors in the 2019 corpus, whereas, in the 2020 corpus, there was a slight improvement of 3.35 errors/100 words, indicating that marginal progress was made.

The data in this paper indicates that currently, students are seemingly unaware of the kinds of errors they are making in their spontaneous speech. Due to constraints that come with class sizes, educators are often ill-equipped to identify them and to provide real-time feedback to these students, thereby allowing many errors to become fossilized. In short, more innovative research needs to be made into error analysis, especially as to how errors become fossilized in the first place, the frequency of their occurrence, possible differences in the production of their oral and written expression, and which techniques are the most effective in addressing them. The results will make a significant contribution to the theoretical consciousness-raising applied linguistics and all language practitioners.

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