Towards the Automatic Acquisition of Lexical Selection Rules

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Abstract

This paper is a study of a certain type of collocations and implication and application to acquisition of lexical selection rules in transfer-approach MT systems. Collocations reveal the co-occurrence possibilities of linguistic units in one language, which often require lexical selection rules to enhance the natural flow and clarity of MT output. The study presents an automatic acquisition and human verification process to acquire collocations and suggest possible candidates for lexical selection rules. The mechanism has been used in the development and enhancement of the Chinese-English and Japanese-English MT systems, and can be easily adapted to other language pairs. Future work includes expanding its usage to more language pairs and furthering its application to MT customers.

1   Introduction

In a transfer-based machine translation (MT) system, lexical choice is realized in the transfer stage by structural transfer rules, lexical transfer rules and bilingual 1exicons. While the structural transfer accounts for the transformation of syntactic structures between two languages, the lexical transfer is responsible for selecting a proper translation based on various interwoven constraints (e.g., syntax, semantics, domain, and pragmatics). Among various types of lexical selection rules, representation and treatment of collocations is one of them. Since collocation-an arbitrary and recurrent word combination [l]-is one of the important linguistic phenomena, the representation and treatment of collocations is indispensable for natural MT output [15].

Many theoretical and applied studies relating to collocations have been conducted from different points of view. One representative work from the computational linguistics point of view is Smadja's study on collocations [9, 10, 11, 12, 13], which not only reviewed the theoretical and applied studies related to collocations, but also explored the relevance to computational linguistics. Of the three types of collocations[1] categorized by Smadja [11]. the type of "predicative relations" is the point of interest of this paper. "A predicative relation consists of two words repeatedly used together in a similar syntactic relation. These lexical relations are the most flexible types of collocations. They are hard to identify since they often correspond to interrupted word sequences in the corpus" ([11], pp.148). One example occurs when a noun and a verb are used together in a verb-object pattern to form a predicative relation (e.g.. *"raise-question"*, *"reach-agreement")*. Similarly, there are other patterns such as adjective-noun *"top-priority"*, subject-verb *"temperature-rise",* and verb-complement *"blowout"* etc. For MT, collocations in one language usually require special translation treatment via lexical selection rules, instead of using the default translation coded in the bilingual lexicon. Additionally, the collocations of predicative relations are usually compositionally represented and treated. In a transfer-based MT system, they are represented by context-dependent lexical selection rules. Table 1 illustrates some examples for the translation of verb *"raise"* from English to French.

In Table 1. Rule 9 and 10 are generalized rules, where semantic (i.e., HUMAN or ANIMAL) or syntactic (i.e.. no object) information is used as the constraints. The word-specific rules (Rule 1-8) are actually the representation and treatment of the collocations (e.g., *"raise-question"*). This type of representation and treatment of collocations has served the production MT systems well, while the current challenges lie in the acquisition of collocations, the accumulation

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[1] The three types of collocations categorized by Smadja are: a)   Predicative   relations,   e.g..   "make-decision", "hostile-takeover"; b) Rigid noun phrases, e.g., "stock-market", "foreign exchange"; and c) Phrasal templates, e.g., "temperatures indicate previous day's high and overnight low to 8 a.m.".

No.	Condition	Word/Feature	French
0	default		soulever
1	object is	wage, salary, income, price	augmenter
2		concern, problem, question	soulever
3		subject	évoquer
4		capital, funds	obtenir
5		alarm	donner
6		complaint, objection	formuler
7		limit, voice, concentration	élever
8		landing gear	remonter
9	object has seman-tic tag	HUMAN, ANIMAL	élever
10	no object		augmenter

Table 1: Examples of lexical selection rules for verb *'"raise"* (English-French)

of lexical selection rules for the collocations, and the management of the rules.

This study towards automatic acquisition of such lexical selection rules for the production MT systems by automatic acquisition of collocations (of predicative relations) from a textual corpus. The process includes using the existing MT parsers to parse a textual corpus, to generate possible word collocation candidates, and to observe collocation frequency. The frequently appearing collocations are considered as potential candidates for lexical selection rules, and are presented in the form of rule template for human verification. The automatic acquisition of collocations has been experimented with in English, Chinese, and Japanese. The automatic acquisition and human verification method of expanding lexical selection rules has been used in the development and refinement of the SYSTRAN Chinese-English and Japanese-English MT systems. In this paper, examples in English are given for illustrative purpose. The Chinese sample results are listed in the Appendix.

2   Collocations and MT

The co-occurrence possibilities of linguistic units in one language often require special lexical selection rules for more natural translation. Since there are scales of collocational probability and acceptability in the co-occurrent words, treatments of their translation vary. Some collocations are firm or frozen type, like *"gunboat-diplomacy", "make-sense"* and *"side-effect"*. Some collocations include syntactic relations (i.e., predictive relations) like *"top-priority",* and *"reach-agreement".* Using lexical selection rules to represent and treat collocations in MT is one of the most effective and economical ways to enhance the natural flow and clarity of output.

The collocations of the predicative relations mostly concern the open class words (i.e., verbs, nouns, adjectives and adverbs). The common syntactic relations of such collocations comprise the syntactic constraints of their lexical selection rules. The common ones include the following syntactic structures: verb-object(VO),

subject-verb (SV). adjective-noun (AN), noun-noun (NN). adverb-verb (AV) and verb-complement (VC). Examples of such lexical selection rules of English-French are given in Table 2.

	English examples	French translation
AN	top priority	première priorité
NN	text file	textes fichier
VO	pave way	préparer terrain
VO	bridge gap	établir lien
SV	system run	système fonctionner
VA	tear apart	détacher
VA	go away	partir
AV	far exceed	dépasser
AV	just learn	venir d'apprendre
VV	make work	faire fonctionner

Table 2: Examples of various types of lexical selection rules (English-French)

Among the above types, the modification relations are relatively easier to identify than those concerning verbs. Modifiers tend to be close to the modified words, and their word sequences are continuous. Thus, through pure statistical methods, such collocations can also be readily identified without any syntactic information. The collocations concerning verbs are a bit difficult because of their discontinuous nature. For example, *"reach-agreement"* was found in the following sentences (Table 3). Such collocations are not pure word association, but constitute complex syntactic structure [8, 11]. With the help of a good parser, the collocations can be identified under the category "verb-object" .

... said it has **reached agreements** to acquire 48 companies
... Steelers **reached** a verbal **agreement for a new …**
An **agreement was reached** this week for the two to meet...
Under an **agreement reached** in Vienna, the number of ...
.... having **reached** cease-fire **agreements** with everyone ...
The merge **agreement** they **reached** over the weekend, ...
Under the initial **agreement, reached** in February. ...
"a verbal agreement on a major issue" has been **reached …**
Should an **agreement** be **reached.** Harper said, current ...

Table 3: Occurrence of *"reach agreement"*

Traditionally, the acquisition of such collocations was obtained by available collocation dictionaries and by lexicographers' linguistic intuition. The lexical selection rules of collocations were accumulated via reviewing large amount of MT output. When the translation of a collocation was considered bad translation, lexicographers may decide to add a lexical selection rule based on the presented syntactic and/or semantic conditions. The advantages of this process include 1) the rules are empirically motivated; 2) and the results are tangible in translation output. The drawbacks are that 1) the acquisition of collocations depends on availability of linguistic resources and lexicographers' linguistic expertise; and 2) the process is slow. A more efficient way to acquire collocations and quickly accumulate the lexical selection rules is needed.

There have been many studies on automatic acquisition of collocations from textual corpora. Several approaches have been proposed to retrieve various types of collocations from the analysis of a textual corpus via statistical methods. Researchers also realized the importance of syntactic relations in the process, and have performed various experiments to that end [2, 11]. With the aid of a robust parser, the Xtract tool [11] successfully produced complex syntactic structural collocations. In general, these studies are more or less research oriented and are inclined for language generation. The current study concentrates on collocations and the implication/application to the generation of lexical selection rules in production MT systems. The lexical selection rules for the predicative relations collocations are the focus of the study. Similar to other studies [2, 11]. we use a parser−the parser in the MT system−to analyze a textual corpus, and to retrieve predicative relation collocations. Our goal is different in the application of such information. We go on further to show how the information is applied to the acquisition of lexical selection rules in transfer-based MT systems and to show the tangible results of the process.

3   Description

3.1   System Description

The SYSTRAN translation system, a general-purpose fully automatic MT system, employs a transfer approach. A unified and highly modular architecture applies to all language-pair systems [3, 4, 5, 16]. The dictionaries are an important integrated knowledge base, which not only contain bilingual lexicons for translation, but also include other linguistic knowledge [5]. In the stem dictionary (i.e., lexicon), a source language word has one general translation plus optional domain-specific translations [6]. Target translations can also be assigned by word-specific lexical selection rules in the expression dictionary, in which there are extensive conditional lexical selection rules to assign translations based on the specified syntactic and/or semantic constraints. The predicative relation collocations are represented and treated in the lexical selection rules. This is the type of lexical selection rules discussed in the paper (see English-French examples in Table 2).

The development of the SYSTRAN Chinese-English system started in 1995. After the initial development which emphasizing on building a large lexicon and a basic parser, the current work has shifted to improving translation quality. One area is to quickly expand the lexical selection rules, which will enhance the natural flow and clarity of MT output. This motivated the development of automatic acquisition of lexical selection rules for collocations. The work persists in the representation and treatment of the collocations, but focuses on automation.   The availability of large textual corpora and the initial extensive development on the Chinese-English MT system fulfilled the prerequisites of the work. These were: 1) A large textual corpus is required to make the acquisition of collocations statistically significant: 2) A robust parser is needed to parse the corpus: 3) A large lexicon with good coverage is helpful to produce baseline translation.

3.2   Process Description

The result of the study is a tool, which consists of a set of utilities to locate syntactic collocations in context from a large corpus. The first step is to use an MT parser to parse and translate a textual corpus. This includes various linguistic processing, such as identification of sentences, word boundary determination (for Chinese and Japanese), morphology analysis, parts of speech tagging, syntactic analysis, semantic analysis, source-target transfer and finally output the translation. At the end of such process, words which fit in the pre-set syntactic constrains are output along with the MT output. The information will be later used to make statistical observations. The frequently appearing word pairs with syntactic relations are considered as collocations. The results include the collocation words in certain syntactic relations, their frequency in the corpus, their current translation, and whether such collocations had been already treated etc. The final results can be output by frequency, specific words, or lexical selection rule templates for human review. The collocations are acquired via statistical observations of word pairs with certain syntactic relations. The syntactic relations used in collocations are the syntactic constrains of the lexical selection rules. This process results in the automatic generated templates for lexical selection rules. Large amounts of such rules requires hierarchical management of complexity, which is extremely important for the development and refinement of large-scale production MT systems [7], but is beyond the discussion of the paper.

3.3   Steps

Step 1 Producing word pairs

Description The MT system parses and translates a textual corpus. Besides the regular linguistic processing in the MT system, a routine is executed to generate word pairs that meet certain conditions. The predefined rules in the routine include the most common syntactic relations of predicative relations collocations (see Table 2 for examples), and also contain some filtering conditions. For example, for a verb, which 1) has verb-object[2] relations; 2) The object is a regu-

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[2] The objects in the verb-object pattern include "semantic objects". For example, a verb-object pair "reach-agreement" can be produced from "An agreement has been reached".

lar noun (which filtering out proper noun etc.), is a candidate for the verb-noun pattern of collocations.

Input Sentence

The Washington Bullets lost all-star forward Juwan Howard Saturday when the free agent reached an agreement to play for the Miami Heat, according to his agent, David Falk.

Output

		4611	
The Washington Bullets lost all-star forward Juwan Howard Saturday when the free agent reached an agreement to play for the Miami Heat, according to his agent, David Falk.			Les balles de Washington ont perdu le tout-étoile Juwan vers l'avant Howard samedi où l'agent libre a conclu un accord au jeu pour la chaleur de Miami, selon son agent, David Falk.
VO	lose all-star	perdre etoile	//enlog-4611
AN	free agent	libre agent	//enlog-4611
VO	reach agreement	conclure accord	//*enlog-4611

Note

The output starts with a side-by-side source and target sentence pair. The word pairs which fit in the specified profile are output below in the order of: syntact/semantic structure, source lexical pair (in their citation forms, e.g.. *"lose"-"lost"*. *"reach"-"reached")*, their translation, filename and sentence number. The asterik (*) by the file name indicates that a lexical selection rule has applied to the translation (i.e., a rule already existed).

Step 2 Generate frequency

Description All the syntactic collocation pairs generated in Step 1 are collected. A frequency count of each pair is performed. The output can be sorted by frequency or word order.

Output

Freq		English	French
206	VO	score point	marquer points
135	VO	do thing	chose
105	VO	run homer	courir homer
98	VO	score goal	marquer but
94	VO	kill people	tuer gens
90	VO	play game	jouer jeux
84	VO	tell story	dire histoire
80	VO	take time	prendre fois
79	VO	take step	prendre mesure
79	VO	spend time	passer temps
75	VO	win award	gagner récompense
68	VO	make sense	avoir sense
67	VO	win race	gagner course
64	VO	spend year	passer années
60	VO	make mistake	faire erreur
60	VO	do work	effectuer travail
57	VO	win title	gagner titre
55	VO	run average	courir moyenne
45	VO	raise question	soulever question
796	AN	brief count	bref compte
583	AN	high school	lycée
259	AN	real estate	immobilier
238	AN	supreme court	suprême cour
233	AN	minimum wage	salaire minimum
203	AN	illegal immigrant	illegal immigré
199	AN	chief executive	cadre supérieur
198	AN	wild count	sauvage compte
138	AN	small business	petite entreprise
133	AN	general manager	directeur général
124	AN	foreign relation	étrangères relations
124	AN	federal court	fédérale cour

In a corpus with 3 million words, we found the following collocations concerning the verb *"reach"*.

Freq		English	French	
46	VO	each agreement	conclure	accord
18	VO	each level	atteindre	niveaux
9	VO	each point	atteindre	point
7	VO	each base	atteindre	base
6	VO	each settlement	atteindre	règlement
4	VO	each stage	atteindre	étape
4	VO	each peak	atteindre	crêtes
4	VO	each accord	atteindre	entente
3	VO	each verdict	atteindre	verdict
3	VO	each site	atteindre	emplacement
3	VO	each people	atteindre	personnes
3	VO	each home	atteindre	maison
3	VO	each decision	prendre	décision
3	VO	each deal	atteindre	affaire
3	VO	each conclusion	tirer	conclusion
3	VO	each audience	atteindre	assistances
3	VO	each adulthood	atteindre	âge adulte

Note

There are many sentences containing word *"reach"* in the corpus. Some of them are filtered out based on the specified rules. For example: *"But he could not be reached for comment"* (Rule: the object is a personal pronoun - filtered). *"As unemployment has reached 18%, the government has toughened ..."* (Rule: the object is a number - filtered). Some of them are missed due to bad parsing.

Step 3 Generate lexical transfer entries

Description Based on the frequency or word list, a lexicographer can quickly review the collocations and their translation. When the word pairs are true collocations, and require a different translation other than the current one, the lexicographer may add a lexical selection rule. Except for some utilities that can automatically generate templates for lexical selection rules, the rest of the process involves human intervention. One of the great challenges is to find the proper translation for the collocations. The automation of such process can be made possible by using bilingual corpora [14], and this is one of our future development items. Examples of lexical selection rules of verb *"reach"* for English-French are given below.

Collocation	"reach"	Object
reach agreement	conclure	default
reach conclusion	tirer	aboutissement
reach decision	prendre	prise
reach position	arrêt	default
reach understanding	parvenir	accord

Step 4 Re-run translation

Description Since the ultimate goal of the work is to improve translation quality, we run translation comparators after the new lexical selection rules are updated in the rule base. This process not only shows the tangible results, but also serves the overall quality assurance. The following example shows one translation comparison with/without the lexical selection rules.

Source	Before	After
The Washington Bullets lost all-star forward Juwan Howard Saturday when the free agent reached an agreement to play for the Miami Heat, according to his agent. David Falk.	Les balles de Washington ont perdu le tout-étoile Juwan vers l'avant Howard samedi quand l'agent libre a atteint un accord de jouer pour la chaleur de Miami, s'accordant à son agent, David Falk.	Les balles de Washington ont perdu le tout-étoile Juwan vers l'avant Howard samedi o l'agent libre a conclu un accord de jouer pour la chaleur de Miami. selon son agent, David Falk.

Applied Rules
according to
reach .VO agreement

4 Results and Discussion

4.1 Results

The automatic acquisition of collocations has been experimented with in English. Chinese and Japanese. Its application in the generation of lexical selection rules has been used in the development and enhancement of the SYSTRAN Chinese-English and Japanese systems.

We have run the acquisition process on two Chinese corpora. One corpus contains news articles from XinHua News Agency of P. R. China, and the other one contains computer science texts. Samples of high frequency of collocations generated from the news corpus are given in Appendix. From the 5 megabytes of Chinese news corpus (1.5 million words based on our Chinese segmentation), the total of verb-object collocations extracted from the corpus was 3300. and adjective-noun was 12,000.

The evaluation of these result focus on the process, the efficiency and translation results. The methodology has been proven useful. A total of 3400 new lexical selection rules have been added to the Japanese-English systems. Translation improvements are evident.

4.2 Discussion

We made the following observations:

The acquisition of high-quality collocations depends on the success of the parser. When the parser produces wrong parsing results, wrong collocations are generated. The wrongly generated collocations simply don't make sense. This is very obvious with young parsers, like the Chinese-English parser, which is not quite mature at this point. The early Chinese results revealed that 1/3 of the suggested candidates are due to bad parsing, especially when the early analysis was wrong (e.g., bad segmentation, parts of speech tagging, etc.). In that case, the results are mixed with bad parsing and good suggestions, exposing more segmentation and parsing problems, aside from suggesting lexical selection rules. To turn the problem into an advantage, we revised the process for the Chinese-English system by adding a correction step. In this step, the lexicographer first evaluates and corrects segmentation and parsing problems that can be corrected by adding word-specific exception rules. After the correction, the results are much cleaner and usable.

As Smadja [11] pointed out, collocations are often domain dependent. The frequency collocation list generated from the news corpus was different from the one of the computer science corpus. This suggests that the tool can be used when a general purpose MT system is being tuned for translating certain domains of text by accumulating domain specific lexical selection rules. The domain-specific collocations can also be used in automatic domain recognition[6]. For example, *"free-agent"*, *"home-run"* occur frequently in sports related texts. The frequent occurrence of such collocations provides clue for possible domains of a text.

Collocations are one part of lexical selection rules. Other lexical selection rules use syntactic and/or semantic features other than specific words. For example, there are *"address-issue"*, *"address-need"* word specific lexical selection rules, and a generalized rule: when the object of *"address"* has semantic feature HUMAN or GROUP or NATION, the French translation is *"adresser"*. Acquisition of such types of rules is planned for future development.

5 Conclusion

The current study focuses on collocations and the implications and applications in the acquisition of lexical selection rules in production MT systems. The resulting tool has been used in the fast expansion of Chinese-English and Japanese-English lexical selection rules and proven to be useful in practice. The mechanism can be easily adapted to other language pairs with minor adjustments. The tool requires and takes advantage of the existing MT parsers, and generates word-specific lexical selection rule candidates. The continued accumulation and management of the lexical selection rules ultimately improve translation quality.

The implementation suggests that most lexical selection rules can be effectively generated by rules using simple syntactic and/or semantic constraints, especially when no syntactic structural transfer is involved. The advantages of the acquisition process include:

- The acquisition of collocations is automatic. This greatly improves the efficiency of the lexical selection rule building process.

- The lexical selection rules acquired are derived from live texts-empirically motivated. This emphasis on the distribution and population of linguistic phenomena will be what is most important to cover.

- The results are tangible in translation quality.

The apparent future work includes expanding its application to more language pair systems and applying automatic acquisition of translation from bilingual corpora. Exploring the possibility of providing the tool for MT users is pressing. Commercial MT systems often provide users with the ability to have customer specified lexicons, or even customer defined linguistic rules. Syntactic and/or semantic analysis is obscure for the users, but highlighting the possible candidates for the user to choose is applicable.

Acknowledgements

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Appendix

Samples of the Verb-Object and Adjective-Noun collocations generated from the Chinese corpus

Format: Indicator. Frequency, Pattern, Chinese collocation pair, English MT
    Indicator: the asterisk (*) indicates whether the collocation have been treated

3*	VO	采取 措施	take measure		93	AN	国际 社会	international society
13	VO	解决 问题	solve problem	*	89	AN	重要 作用	vital role
1*	VO	作出 贡献	make contribution		85	AN	友好 合作	friendly cooperation
54	VO	发表 讲话	make speech	*	74	AN	重要 意义	vital significance
33	VO	举行 会谈	hold discussion		67	AN	友好 关系	friendly relations
	VO	讨论 问题	discuss issue	*	59	AN	积极 作用	positive role
47	VO	提高 素质	improve quality		57	AN	亚太 地区	Asian and Pacific area
45	VO	告诉 记者	tell reporter		56	AN	优良 传统	fine tradition
45	VO	发生 变化	change		54	AN	贫困 地区	impoverished area
44	VO	发表 声明	issue statement		53	AN	新 政府	new government
	VO	取得 成绩	obtain result		53	AN	新 形势	new situation
	VO	开展 活动	carry out activity		53	AN	先进 单位	advanced unit
	VO	完成 任务	complete task		48	AN	大 面积	big area
	VO	出席 会议	attend conference		45	AN	稳定 发展	stable development
	VO	取得 成果	yield result		44	AN	新 品种	new variety
	VO	取得 成效	obtain result		44	AN	广大 群众	broad masses
	VO	作出 决定	make decision		44	AN	国际 会议	international conference
	VO	取得 进展	make progress		44	AN	人均 收入	average per person income
	VO	召开 会议	hold conference		43	AN	经济 形势	economical situation
	VO	下 基层	go down to basic unit		43	AN	先进 技术	advanced technology
	VO	接受 采访	accept interview	*	43	AN	根本 利益	basic interest
	VO	举行 会议	hold conference	*	43	AN	中央 电视台	Central Committee Television
	VO	获得 冠军	win championship		40	AN	高 纪录	high records
	VO	占 总数	account for total		40	AN	部分 地区	part areas
	VO	取得 成就	obtain achievement		40	AN	新 时期	new time
	VO	交换 意见	exchange opinion		40	AN	大中型 企业	large and middle scale enterprise
	VO	达成 协议	reach agreement		40	AN	中央 国家机关	central state organization
	VO	参加 会议	attend conference		39	AN	新 贡献	new contribution
	VO	创 纪录	create record		39	AN	新 台阶	new stair
	VO	深入 基层	go down to basic unit		39	AN	优质 产品	high quality product
	VO	克服 困难	overcome difficulty		39	AN	主要 任务	main duty
	VO	促进 发展	promote development	*	39	AN	重大 问题	important issue
	VO	获 奖	win prize		38	AN	新 发展	new development
	VO	进行 比赛	carry on competition		38	AN	主要 原因	main reason
	VO	引起 反响	cause echo		37	AN	实际 情况	actual situation
	VO	发表 谈话	make statement	*	37	AN	有关 专家	concerned expert
	VO	进行 会谈	carry on discussion		36	AN	正式 访问	official visit
	VO	建立 关系	establish relations		36	AN	基本 路线	basic route
	VO	帮助 企业	help enterprise		36	AN	主要 内容	main content
	VO	加强 管理	strengthen management		35	AN	经济 技术	economical technology
	VO	要求 政府	request government		35	AN	有关 规定	related stipulation
	VO	提高 质量	enhance quality	*	35	AN	一致 意见	agreement
	VO	产生 影响	have influence		34	AN	广大 人民	broad masses
	VO	调整 结构	adjust structure		34	AN	优质 服务	high quality service
	VO	填补 空白	fill blank		33	AN	新 情况	new situation
	VO	参加 活动	participate activity		33	AN	实用 技术	practical technology
	VO	遇到 困难	encounter difficulty		33	AN	大 贡献	big contribution
	VO	收到 效果	receive effect		33	AN	大 企业	big enterprise
	VO	提供 援助	provide aid		30	AN	重要 贡献	important contribution
	VO	加强 工作	strengthen work		30	AN	热烈 掌声	warm applause
	VO	创造 条件	create condition		30	AN	有效 措施	effective measure
	VO	举行 集会	hold assembly		30	AN	先进 人物	advanced character
	VO	主持 会议	preside over conference	*	30	AN	大 作用	major function
	VO	进入 阶段	enter stage		29	AN	新 问题	new problem
	VO	提供 服务	provide service		29	AN	大量 工作	massive work
	VO	夺得 冠军	win champship		29	AN	大 发展	big development
	VO	调动 积极性	arise enthusiasm		28	AN	迅速 发展	rapid development
	VO	改变 状况	change condition		28	AN	突出 贡献	prominent contribution
	VO	发生 冲突	have conflict		27	AN	专门 委员会	special committee
	VO	存在 分歧	have difference		26	AN	贫困 山区	impoverished mountainous area
	VO	培养 人才	foster talent		26	AN	同类 产品	similar product
	VO	发扬 精神	carry forward spirit		25	AN	领先 地位	leading position
	VO	进行 访问	carry on visit		25	AN	辛勤 劳动	industrious work
	VO	进行 改革	carry on reform		25	AN	不同 程度	different degree
	VO	签订 合同	sign contract		24	AN	经济 政策	economical policy