Taro Kageyama and Hideki Kishimoto (Eds.)
Handbook of Japanese Lexicon and Word Formation

Handbooks of Japanese Language and Linguistics

Edited by
Masayoshi Shibatani
Taro Kageyama

Volume 3

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DE GRUYTER
MOUTON

ISBN 978-1-61451-275-2
e-ISBN (PDF) 978-1-61451-209-7
e-ISBN (EPUB) 978-1-5015-0081-7
ISSN 2199-2851

Library of Congress Cataloging-in-Publication Data
A CIP catalog record for this book has been applied for at the Library of Congress.

Bibliographic information published by the Deutsche Nationalbibliothek
The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available on the Internet at http://dnb.dnb.de.

Cover image: Hideki Kishimoto
Typesetting: RoyalStandard, Hong Kong
Printing and binding: CPI books GmbH, Leck
♾ Printed on acid-free paper
Printed in Germany

www.degruyter.com

Preface

The project of compiling a series of comprehensive handbooks covering major fields of Japanese linguistics started in 2011, when Masayoshi Shibatani received a commission to edit such volumes as series editor from De Gruyter Mouton. As the planning progressed, with the volume titles selected and the volume editors assigned, the enormity of the task demanded the addition of a series co-editor. Taro Kageyama, Director-General of the National Institute for Japanese Language and Linguistics (NINJAL), was invited to join the project as a series co-editor. His participation in the project opened the way to make it a joint venture between NINJAL and De Gruyter Mouton. We are pleased to present the *Handbooks of Japanese Language and Linguistics* (*HJLL*) as the first materialization of the agreement of academic cooperation concluded between NINJAL and De Gruyter Mouton.

The HJLL Series is composed of twelve volumes, primarily focusing on Japanese but including volumes on the Ryukyuan and Ainu languages, which are also spoken in Japan, as well as some chapters on Japanese Sign Language in the applied linguistics volume.

- Volume 1: *Handbook of Japanese Historical Linguistics*
- Volume 2: *Handbook of Japanese Phonetics and Phonology*
- Volume 3: *Handbook of Japanese Lexicon and Word Formation*
- Volume 4: *Handbook of Japanese Syntax*
- Volume 5: *Handbook of Japanese Semantics and Pragmatics*
- Volume 6: *Handbook of Japanese Contrastive Linguistics*
- Volume 7: *Handbook of Japanese Dialects*
- Volume 8: *Handbook of Japanese Sociolinguistics*
- Volume 9: *Handbook of Japanese Psycholinguistics*
- Volume 10: *Handbook of Japanese Applied Linguistics*
- Volume 11: *Handbook of the Ryukyuan Languages*
- Volume 12: *Handbook of the Ainu Language*

Surpassing all currently available reference works on Japanese in both scope and depth, the *HJLL* series provides a comprehensive survey of nearly the entire field of Japanese linguistics. Each volume includes a balanced selection of articles contributed by established linguists from Japan as well as from outside Japan and is critically edited by volume editors who are leading researchers in their individual fields. Each article reviews milestone achievements in the field, provides an overview of the state of the art, and points to future directions of research. The twelve titles are thus expected individually and collectively to contribute not only to the enhancement of studies on Japanese on the global level but also to the opening up of new perspectives for general linguistic research from both empirical and theoretical standpoints.

The *HJLL* project has been made possible by the active and substantial participation of numerous people including the volume editors and authors of individual

chapters. We would like to acknowledge with gratitude the generous support, both financial and logistic, given to this project by NINJAL. We are also grateful to John Haig (retired professor of Japanese linguistics, the University of Hawai'i at Mānoa), serving as copy-editor for the series. In the future, more publications are expected to ensue from the NINJAL-Mouton academic cooperation.

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Taro Kageyama, Director-General, National Institute for Japanese Language and Linguistics (NINJAL)/Professor Emeritus, Kwansei Gakuin University

Masayoshi Shibatani and Taro Kageyama

Introduction to the *Handbooks of Japanese Language and Linguistics*

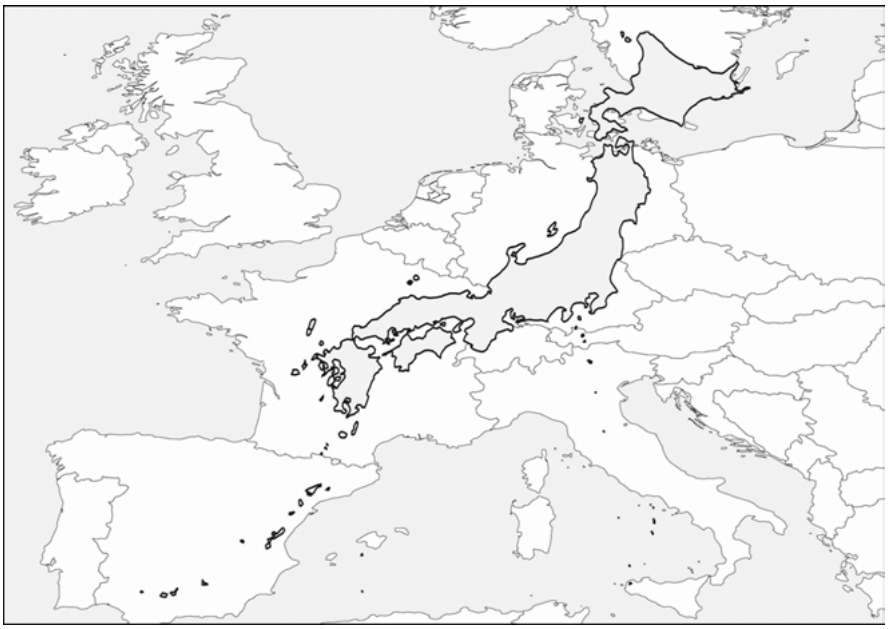
Comprising twelve substantial volumes, the *Handbooks of Japanese Language and Linguistics* (HJLL) series provides a comprehensive survey of practically all the major research areas of Japanese linguistics on an unprecedented scale, together with surveys of the endangered languages spoken in Japan, Ryukyuan and Ainu. What follows are introductions to the individual handbooks, to the general conventions adopted in this series, and the minimum essentials of contemporary Standard Japanese. Fuller descriptions of the languages of Japan, Japanese grammar, and the history of the Japanese language are available in such general references as Martin (1975), Shibatani (1990), and Frellesvig (2010).

1 Geography, Population, and Languages of Japan

Japan is situated in the most populous region of the world – Asia, where roughly one half of the world population of seven billion speak a variety of languages, many of which occupy the top tier of the ranking of the native-speaker population numbers. Japanese is spoken by more than 128 million people (as of 2013), who live mostly in Japan but also in Japanese emigrant communities around the world, most notably Hawaii, Brazil and Peru. In terms of the number of native speakers, Japanese ranks ninth among the world's languages. Due partly to its rich and long literary history, Japanese is one of the most intensely studied languages in the world and has received scrutiny under both the domestic grammatical tradition and those developed outside Japan such as the Chinese philological tradition, European structural linguistics, and generative grammar developed in America. The *Handbooks of Japanese Language and Linguistics* intend to capture the achievements garnered over the years through analyses of a wide variety of phenomena in a variety of theoretical frameworks.

As seen in Map 1, where Japan is shown graphically superimposed on Continental Europe, the Japanese archipelago has a vast latitudinal extension of approximately 3,000 kilometers ranging from the northernmost island, roughly corresponding to Stockholm, Sweden, to the southernmost island, roughly corresponding to Sevilla, Spain.

Contrary to popular assumption, Japanese is not the only language native to Japan. The northernmost and southernmost areas of the Japanese archipelago are inhabited by people whose native languages are arguably distinct from Japanese. The southernmost sea area in Okinawa Prefecture is dotted with numerous small islands



Map 1: *Japan as overlaid on Europe*
Source: Shinji Sanada. 2007. *Hōgen wa kimochi o tsutaeru [Dialects convey your heart].* Tokyo: Iwanami, p. 68.

where Ryukyuan languages are spoken. Until recent years, Japanese scholars tended to treat Ryukyuan language groups as dialects of Japanese based on fairly transparent correspondences in sounds and grammatical categories between mainland Japanese and Ryukyuan, although the two languages are mutually unintelligible. Another reason that Ryukyuan languages have been treated as Japanese dialects is that Ryukyuan islands and Japan form a single nation. In terms of nationhood, however, Ryukyu was an independent kingdom until the beginning of the seventeenth century, when it was forcibly annexed to the feudal domain of Satsuma in southern Kyushu.

A more recent trend is to treat Ryukyuan as forming a branch of its own with the status of a sister language to Japanese, following the earlier proposals by Chamberlain (1895) and Miller (1971). Many scholars specializing in Ryukyuan today even confer language status to different language groups within Ryukyuan, such as Amami language, Okinawan language, Miyako language, etc., which are grammatically distinct to the extent of making them mutually unintelligible. The prevailing view now has Japanese and Ryukyuan forming the Japonic family as daughter languages of Proto-Japonic. HJLL follows this recent trend of recognizing Ryukyuan as a sister language to Japanese and devotes one full volume to it. The ***Handbook of the Ryukyuan Languages*** provides the most up-to-date answers pertaining to Ryukyuan

language structures and use, and the ways in which these languages relate to Ryukyuan society and history. Like all the other handbooks in the series, each chapter delineates the boundaries and the research history of the field it addresses, comprises the most important and representative information on the state of research, and spells out future research desiderata. This volume also includes a comprehensive bibliography of Ryukyuan linguistics.

The situation with Ainu, another language indigenous to Japan, is much less clear as far as its genealogy goes. Various suggestions have been made relating Ainu to Paleo-Asiatic, Ural-Altaic, and Malayo-Polynesian or to such individual languages as Gilyak and Eskimo, besides the obvious candidate of Japanese as its sister language. The general consensus, however, points to the view that Ainu is related to Japanese quite indirectly, if at all, via the Altaic family with its Japanese-Korean subbranch (see Miller 1971; Shibatani 1990: 5–7 for an overview). Because Ainu has had northern Japan as its homeland and because HJLL is also concerned with various aspects of Japanese linguistics scholarship in general, we have decided to include a volume devoted to Ainu in this series. The ***Handbook of the Ainu Language*** outlines the history and current state of the Ainu language, offers a comprehensive survey of Ainu linguistics, describes major Ainu dialects in Hokkaido and Sakhalin, and devotes a full section to studies dealing with typological characteristics of the Ainu language such as polysynthesis and incorporation, person marking, plural verb forms, and aspect and evidentials.

2 History

Japan's rich and long literary history dates back to the seventh century, when the Japanese learned to use Chinese characters in writing Japanese. Because of the availability of abundant philological materials, the history of the Japanese language has been one of the most intensely pursued fields in Japanese linguistics. While several different divisions of Japanese language history have been proposed, Frellesvig (2010) proposes the following four linguistic periods, each embracing the main political epochs in Japanese history.

1.	Old Japanese	700–800	(Nara period, 712–794)
2.	Early Middle Japanese	800–1200	(Heian period, 794–1185)
3.	Late Middle Japanese	1200–1600	(Kamakura period, 1185–1333; Muromachi period, 1333–1573)
4.	Modern Japanese	1600–	(Edo, 1603–1868; Meiji, 1868–1912; Taishō, 1912–1926; Shōwa, 1926–1989; Heisei, 1989–)

This division reflects a major gulf between Pre-modern and Modern Japanese caused by some radical changes in linguistic structure during the Late Middle Japanese period. Modern Japanese is often further subdivided into Early Modern (Edo, 1603–1868), Modern (Meiji, 1868–1912; Taishō, 1912–1926), and Present-day Japanese (Shōwa, 1926–1989; Heisei, 1989–).

The ***Handbook of Japanese Historical Linguistics*** will present the latest research on better studied topics, such as segmental phonology, accent, morphology, and some salient syntactic phenomena such as focus constructions. It will also introduce areas of study that have traditionally been underrepresented, ranging from syntax and Sinico-Japanese (*kanbun*) materials to historical pragmatics, and demonstrate how they contribute to a fuller understanding of the overall history of Japanese, as well as outlining larger-scale tendencies and directions in changes that have taken place within the language over its attested history. Major issues in the reconstruction of prehistoric Japanese and in the individual historical periods from Old Japanese to Modern Japanese are discussed including writing and the materials for historical studies, influences of Sinico-Japanese on Japanese, the histories of different vocabulary strata, the history of honorifics and polite language, generative diachronic syntax, and the development of case marking.

3 Geographic and Social Variations

Because of the wide geographical spread of the Japanese archipelago from north to south, characterized by high mountain ranges, deep valleys, and wide rivers as well as numerous islands, Japanese has developed a multitude of dialects, many of which differ from each other in a way more or less like current descendants of the Romance language family. Like the historical studies, the research tradition of dialect studies has a unique place in Japanese linguistics, which has also attracted a large number of students, amateur collectors of dialect forms as well as professional linguists. The ***Handbook of Japanese Dialects*** surveys the historical backdrop of the theoretical frameworks of contemporary studies in Japanese geolinguistics and includes analyses of prominent research topics in cross-dialectal perspectives, such as accentual systems, honorifics, verbs of giving, and nominalizations. The volume also devotes large space to sketch grammars of dialects from the northern island of Hokkaido to the southern island of Kyushu, allowing a panoramic view of the differences and similarities in the representative dialects throughout Japan.

Besides the physical setting fostering geographic variations, Japanese society has experienced several types of social structure over the years, starting from the time of the nobility and court life of the Old and Early Middle Japanese periods, through the caste structure of the feudalistic Late Middle and Early Modern Japanese periods, to the modern democratic society in the Modern and Present-day Japanese

periods. These different social structures spawned a variety of social dialects including power- and gender-based varieties of Japanese. The ***Handbook of Japanese Sociolinguistics*** examines a wide array of sociolinguistic topics ranging from the history of Japanese sociolinguistics, including foreign influences and internal innovations, to the central topics of variations due to social stratification, gender differences, and discourse genre. Specific topics include honorifics and women's speech, critical discourse analysis, pragmatics of political discourse, contact-induced change, emerging new dialects, Japanese language varieties outside Japan, and language policy.

4 Lexicon and Phonology

The literary history of Japan began with early contacts with China. Chinese apparently began to enrich the Japanese lexicon in even pre-historic periods, when such deeply assimilated words as *uma* 'horse' and *ume* 'plum' are believed to have entered the language. Starting in the middle of the sixth century, when Buddhism reached Japan, Chinese, at different periods and from different dialect regions, has continuously contributed to Japanese in an immeasurable way affecting all aspects of grammar, but most notably the lexicon and the phonological structure, which have sustained further and continuous influences from European languages from the late Edo period on. Through these foreign contacts, Japanese has developed a complex vocabulary system that is composed of four lexical strata, each with unique lexical, phonological, and grammatical properties: native Japanese, mimetic, Sino-Japanese, and foreign (especially English).

The ***Handbook of Japanese Lexicon and Word Formation*** presents a comprehensive survey of the Japanese lexicon, word formation processes, and other lexical matters seen in the four lexical strata of contemporary Japanese. The agglutinative character of the language, coupled with the intricate system of vocabulary strata, makes it possible for compounding, derivation, conversion, and inflection to be closely intertwined with syntactic structure, giving rise to theoretically intriguing interactions of word formation processes and syntax that are not easily found in inflectional, isolating, or polysynthetic types of languages. The theoretically oriented studies associated with these topics are complemented by those oriented toward lexical semantics, which also bring to light theoretically challenging issues involving the morphology-syntax interface.

The four lexical strata characterizing the Japanese lexicon are also relevant to Japanese phonology as each stratum has some characteristic sounds and sound combinations not seen in the other strata. The ***Handbook of Japanese Phonetics and Phonology*** describes and analyzes the basic phonetic and phonological structures of modern Japanese with main focus on standard Tokyo Japanese, relegating the topics of dialect phonetics and phonology to the *Handbook of Japanese Dialects*.

The handbook includes several chapters dealing with phonological processes unique to the Sino-Japanese and foreign strata as well as to the mimetic stratum. Other topics include word tone/accent, mora-timing, sequential voicing (*rendaku*), consonant geminates, vowel devoicing and diphthongs, and the appearance of new consonant phonemes. Also discussed are phonetic and phonological processes within and beyond the word such as rhythm, intonation, and the syntax-phonology interface, as well as issues bearing on other subfields of linguistics such as historical and corpus linguistics, L1 phonology, and L2 research.

5 Syntax and Semantics

Chinese loans have also affected Japanese syntax, though the extent is unclear to which they affected Japanese semantics beyond the level of lexical semantics. In particular, Chinese loans form two distinct lexical categories in Japanese – verbal nouns, forming a subcategory of the noun class, and adjectival nouns (*keiyō dōshi*), which are treated as forming major lexical categories, along with noun, verb, and adjective classes, by those who recognize this as an independent category. The former denote verbal actions, and, unlike regular nouns denoting objects and thing-like entities, they can function as verbs by combining with the light verb *suru*, which is obviously related to the verb *suru* 'do'. The nominal-verbal Janus character of verbal nouns results in two widely observed syntactic patterns that are virtually synonymous in meaning; e.g., *benkyoo-suru* (studying-DO) 'to study' and *benkyoo o suru* (studying ACC do) 'do studying'. As described in the *Handbook of Japanese Lexicon and Word Formation*, the lexical category of adjectival noun has been a perennial problem in the analysis of Japanese parts of speech. The property-concept words, e.g., *kirei* 'pretty', *kenkoo* 'health/healthy', falling in this class do not inflect by themselves unlike native Japanese adjectives and, like nouns, require the inflecting copula *da* in the predication function – hence the label of adjectival noun for this class. However, many of them cannot head noun phrases – the hallmark of the nominal class – and some of them even yield nouns via *-sa* nominalization, which is not possible with regular nouns.

The Lexicon-Word Formation handbook and the ***Handbook of Japanese Syntax*** make up twin volumes because many chapters in the former deal with syntactic phenomena, as the brief discussion above on the two Sino-Japanese lexical categories clearly indicates. The syntax handbook covers a vast landscape of Japanese syntax from three theoretical perspectives: (1) traditional Japanese grammar, known as *kokugogaku* (lit. national-language study), (2) the functional approach, and (3) the generative grammar framework. Broad issues analyzed include sentence types and their interactions with grammatical verbal categories, grammatical relations (topic, subject, etc.), transitivity, nominalization, grammaticalization, voice (passives and

causatives), word order (subject, scrambling, numeral quantifier, configurationality), case marking (*ga/no* conversion, morphology and syntax), modification (adjectives, relative clause), and structure and interpretation (modality, negation, prosody, ellipsis). These topics have been pursued vigorously over many years under different theoretical persuasions and have had important roles in the development of general linguistic theory. For example, the long sustained studies on the grammatical of subject and topic in Japanese have had significant impacts on the study of grammatical relations in European as well as Austronesian languages. In the study of word order, the analysis of Japanese numeral quantifiers is used as one of the leading pieces of evidence for the existence of a movement rule in human language. Under case marking, the way subjects are case-marked in Japanese has played a central role in the study of case marking in the Altaic language family. Recent studies of nominalizations have been central to the analysis of their modification and referential functions in a wide variety of languages from around the globe with far-reaching implications to past studies of such phenomena as parts of speech, (numeral) classifiers, and relative clauses. And the study of how in Japanese prosody plays a crucial role in interpretation has become the basis of some important recent developments in the study of wh-questions.

The ***Handbook of Japanese Semantics and Pragmatics*** presents a collection of studies on linguistic meaning in Japanese, either as conventionally encoded in linguistic form (the field of semantics) or as generated by the interaction of form with context (the field of pragmatics). The studies are organized around a model that has long currency in traditional Japanese grammar, whereby the linguistic clause consists of a multiply nested structure centered in a propositional core of objective meaning around which forms are deployed that express progressively more subjective meaning as one moves away from the core toward the periphery of the clause. Following this model, the topics treated in this volume range from aspects of meaning associated with the propositional core, including elements of meaning structured in lexical units (lexical semantics), all the way to aspects of meaning that are highly subjective, being most grounded in the context of the speaker. In between these two poles of the semantics-pragmatics continuum are elements of meaning that are defined at the level of propositions as a whole or between different propositions (propositional logic) and forms that situate propositions in time as events and those situating events in reality including non-actual worlds, e.g., those hoped for (desiderative meaning), denied (negation), hypothesized (conditional meaning), or viewed as ethically or epistemologically possible or necessary (epistemic and deontic modality). Located yet closer to the periphery of the Japanese clause are a rich array of devices for marking propositions according to the degree to which the speaker is committed to their veracity, including means that mark differing perceptual and cognitive modalities and those for distinguishing information variously presupposed.

These studies in Japanese syntax and semantics are augmented by cross-linguistic studies that examine various topics in these fields from the perspectives of language

universals and the comparative study of Japanese and another language. The ***Handbook of Japanese Contrastive Linguistics*** sets as its primary goal uncovering principled similarities and differences between Japanese and other languages around the globe and thereby shedding new light on the universal and language-particular properties of Japanese. Topics ranging from inalienable possession to numeral classifiers, from spatial deixis to motion typology, and from nominalization to subordination, as well as topics closely related to these phenomena are studied in the typological universals framework. Then various aspects of Japanese such as resultative-progressive polysemy, entailment of event realization, internal-state predicates, topic constructions, and interrogative pronouns, are compared and contrasted with individual languages including Ainu, Koryak, Chinese, Korean, Newar, Thai, Burmese, Tagalog, Kapampangan, Lamaholot, Romanian, French, Spanish, German, English, Swahili, Sidaama, and Mayan languages.

6 Psycholinguistics and Applied Linguistics

HJLL includes two volumes containing topics related to wider application of Japanese linguistics and to those endeavors seeking grammar-external evidence for the psychoneurological reality of the structure and organization of grammar. By incorporating the recent progress in the study of the cognitive processes and brain mechanisms underlying language use, language acquisition, and language disorder, the ***Handbook of Japanese Psycholinguistics*** discusses the mechanisms of language acquisition and language processing. In particular, the volume seeks answers to the question of how Japanese is learned/acquired as a first or second language, and pursues the question of how we comprehend and produce Japanese sentences. The chapters in the acquisition section allow readers to acquaint themselves with issues pertaining to the question of how grammatical features (including pragmatic and discourse features) are acquired and how our brain develops in the language domain, with respect to both language-particular and universal features. Specific topics dealt with include Japanese children's perceptual development, the conceptual and grammatical development of nouns, Japanese specific language impairment, narrative development in the L1 cognitive system, L2 Japanese acquisition and its relation to L1 acquisition. The language processing section focuses on both L1 and L2 Japanese processing and covers topics such as the role of prosodic information in production/comprehension, the processing of complex grammatical structures such as relative clauses, the processing issues related to variable word order, and lexical and sentence processing in L2 by speakers of a different native language.

The ***Handbook of Japanese Applied Linguistics*** complements the Psycholinguistics volume by examining language acquisition from broader sociocultural per-

spectives, i.e., language as a means of communication and social behavioral system, emphasizing pragmatic development as central to both L1 and L2 acquisition and overall language/human development. Topics approached from these perspectives include the role of caregiver's speech in early language development, literacy acquisition, and acquisition of writing skills. Closely related to L1 and L2 acquisition/development are studies of bilingualism/multilingualism and the teaching and learning of foreign languages, including Japanese as a second language, where topics discussed include cross-lingual transfer from L1 to L2, learning errors, and proficiency assessment of second language acquisition. Chapters dealing with topics more squarely falling in the domain of applied linguistics cover the issues in corpus/computational linguistics (including discussions on CHILDES for Japanese and the KY corpus widely-used in research on Japanese as a second language), clinical linguistics (including discussions on language development in children with hearing impairment and other language disorders, with Down syndrome, or autism), and translation and interpretation. Technically speaking, Japanese Sign Language is not a variety of Japanese. However, in view of the importance of this language in Japanese society and because of the rapid progress in sign language research in Japan and abroad and what it has to offer to the general theory of language, chapters dealing with Japanese Sign Language are also included in this volume.

7 Grammatical Sketch of Standard Japanese

The following pages offer a brief overview of Japanese grammar as an aid for a quick grasp of the structure of Japanese that may prove useful in studying individual, thematically organized handbooks of this series. One of the difficult problems in presenting non-European language materials using familiar technical terms derived from the European grammatical tradition concerns mismatches between what the glosses may imply and what grammatical categories they are used to denote in the description. We will try to illustrate this problem below as a way of warning not to take all the glosses at their face value. But first some remarks are in order about the conventions of transcription of Japanese, glossing of examples, and their translations used in this series.

7.1 Writing, alphabetic transcription, and pronunciation

Customarily, Japanese is written by using a mixture of Chinese characters (for content words), *hiragana* (for function words such as particles, suffixes and inflectional endings), *katakana* (for foreign loans and mimetics), and sometimes Roman alphabet.

Because Japanese had no indigenous writing system, it developed two phonogram systems of representing a phonological unit of "mora", namely *hiragana* and *katakana*, by simplifying or abbreviating (parts of) Chinese characters. *Hiragana* and *katakana* syllabaries are shown in Table 1, together with the alphabetic transcriptions adopted in the HJLL series.

Table 1: *Alphabetic transcriptions adopted in HJLL*

transcription	*a*	*ka*	*sa*	*ta*	*na*	*ha*	*ma*	*ya*	*ra*	*wa*	*n*
hiragana	あ	か	さ	た	な	は	ま	や	ら	わ	ん
katakana	ア	カ	サ	タ	ナ	ハ	マ	ヤ	ラ	ワ	ン
transcription	*i*	*ki*	*si*	*ti*	*ni*	*hi*	*mi*	–	*ri*	–	
hiragana	い	き	し	ち	に	ひ	み	–	り	–	
katakana	イ	キ	シ	チ	ニ	ヒ	ミ	–	リ	–	
transcription	*u*	*ku*	*su*	*tu*	*nu*	*hu*	*mu*	*yu*	*ru*	–	
hiragana	う	く	す	つ	ぬ	ふ	む	ゆ	る	–	
katakana	ウ	ク	ス	ツ	ヌ	フ	ム	ユ	ル	–	
transcription	*e*	*ke*	*se*	*te*	*ne*	*he*	*me*	–	*re*	–	
hiragana	え	け	せ	て	ね	へ	め	–	れ	–	
katakana	エ	ケ	セ	テ	ネ	ヘ	メ	–	レ	–	
transcription	*o*	*ko*	*so*	*to*	*no*	*ho*	*mo*	*yo*	*ro*	*o*	
hiragana	お	こ	そ	と	の	ほ	も	よ	ろ	を	
katakana	オ	コ	ソ	ト	ノ	ホ	モ	ヨ	ロ	ヲ	

Because of phonological change, the columns indicated by strikethroughs have no letters in contemporary Japanese, although they were filled in with special letters in classical Japanese. If all the strikethroughs were filled, the chart will contain 50 letters for each of *hiragana* and *katakana*, so the syllabary chart is traditionally called *Gojū-on zu* (chart of 50 sounds). To these should be added the letter ん or ン representing a moraic nasal [N], on the rightmost column.

The "50-sound chart", however, does not exhaust the *hiragana* and *katakana* letters actually employed in Japanese, because the basic consonant sounds (*k, s, t, h*) have variants. The sound represented by the letter *h* is historically related to the sound represented by *p*, and these voiceless obstruents (*k, s, t*, and *p*) have their respective voiced counterparts (*g, z, d*, and *b*). Table 2 shows letters for these consonants followed by five vowels.

Table 2: *Letters for voiced obstruents and bilabial [p]*

transcription	*ga*	*za*	*da*	*ba*	*pa*
hiragana	が	ざ	だ	ば	ぱ
katakana	ガ	ザ	ダ	バ	パ
transcription	*gi*	*zi*	*zi*	*bi*	*pi*
hiragana	ぎ	じ	ぢ	び	ぴ
katakana	ギ	ジ	ヂ	ビ	ピ
transcription	*gu*	*zu*	*zu*	*bu*	*pu*
hiragana	ぐ	ず	づ	ぶ	ぷ
katakana	グ	ズ	ヅ	ブ	プ
transcription	*ge*	*ze*	*de*	*be*	*pe*
hiragana	げ	ぜ	で	べ	ぺ
katakana	ゲ	ゼ	デ	ベ	ペ
transcription	*go*	*zo*	*do*	*bo*	*po*
hiragana	ご	ぞ	ど	ぼ	ぽ
katakana	ゴ	ゾ	ド	ボ	ポ

It is important to note that Tables 1 and 2 show the conventional letters and alphabetical transcription adopted by the HJLL series; they are not intended to represent the actual pronunciations of Japanese vowels and consonants. For example, among the vowels, the sound represented as "u" is pronounced as [ɯ] with unrounded lips. Consonants may change articulation according to the following vowels. Romanization of these has been controversial with several competing proposals.

There are two Romanization systems widely used in Japan. One known as the Hepburn system is more widely used in public places throughout Japan such as train stations, street signs, as well as in some textbooks for learners of Japanese. This system is ostensibly easier for foreigners familiar with the English spelling system. The *Kunreishiki* (the cabinet ordinance system) is phonemic in nature and is used by many professional linguists. The essential differences between the two Romanization systems center on palatalized and affricate consonants, as shown in Table 3 below by some representative syllables for which two Romanization renditions differ:

Table 3: *Two systems of Romanization*

Hiragana	IPA	Hepburn	Kunreishiki
し	[ʃi]	shi	si
しゃ	[ʃa]	sha	sya
しゅ	[ʃɯ]	shu	syu
しょ	[ʃo]	sho	syo
じ and ぢ	[ʤi]	ji	zi
じゃ	[ʤa]	ja	zya
じゅ	[ʤɯ]	ju	zyu
じょ	[ʤo]	jo	zyo
ち	[tʃi]	chi	ti
ちゃ	[tʃa]	cha	tya
ちゅ	[tʃɯ]	chu	tyu
ちょ	[tʃo]	cho	tyo
つ	[tsɯ]	tsu	tu
づ and ず	[dzɯ]	dzu	zu
ふ	[ɸɯ]	fu	hu

Except for the volumes on Ryukyuan, Ainu, and Japanese dialects, whose phonetics differ from Standard Japanese, HJLL adopts the Kunreishiki system for rendering cited Japanese words and sentences but uses the Hepburn system for rendering conventional forms such as proper nouns and technical linguistic terms in the text and in the translations of examples.

The cited Japanese sentences in HJLL look as below, where the first line transliterates a Japanese sentence in Kunreishiki Romanization, the second line contains interlinear glosses largely following the Leipzig abbreviation convention, and the third line is a free translation of the example sentence.

(1) *Taroo wa Ziroo to Tookyoo e it-te kutusita o kat-ta.*
Taro TOP Jiro COM Tokyo ALL go-GER sock ACC buy-PST
'Taro went to Tokyo with Jiro and bought socks.'

The orthographic convention of rendering Japanese is to represent a sentence with an uninterrupted sequence of Sino-Japanese characters and *katakana* or *hiragana* syllabaries without a space for word segmentation, as in 太郎は次郎と東京へ行って靴下を買った for (1). In line with the general rules of Romanization adopted in

books and articles dealing with Japanese, however, HJLL transliterates example sentences by separating word units by spaces. The example in (1) thus has 10 words. Moreover, as in *it-te* (go-GERUNDIVE) and *kat-ta* (buy-PAST) in (1), word-internal morphemes are separated by a hyphen whenever necessary, although this practice is not adopted consistently in all of the HJLL volumes. Special attention should be paid to particles like *wa* (topic), *to* 'with' and *e* 'to, toward', which, in the HJLL representation, are separated from the preceding noun or noun phrase by a space (see section 7.3). Remember that case and other kinds of particles, though spaced, form phrasal units with their preceding nouns.

7.2 Word order

As seen in (1), Japanese is a verb-final, dependent-marking agglutinative language. It is basically an SOV language, which marks the nominal dependent arguments by particles (*wa*, *to*, *e*, and *o* above), and whose predicative component consists of a verbal-stem, a variety of suffixes, auxiliary verbs, and semi-independent predicate extenders pertaining to the speech act of predication (see section 7.6). While a verb is rigidly fixed in sentence final position, the order of subject and object arguments may vary depending on pragmatic factors such as emphasis, background information, and cohesion. Thus, sentence (2a) with the unmarked order below, in principle, may vary in multiple ways as shown by some possibilities in (2b)–(2d).

(2) a. *Taroo ga Hanako ni Ziroo o syookai-si-ta.*
Taro NOM Hanako DAT Jiro ACC introducing-do-PST
'Taro introduced Jiro to Hanako.'
b. *Taroo ga* ***Ziroo o*** *Hanako ni syookai-si-ta.*
c. ***Hanako ni*** *Taroo ga Ziroo o syookai-si-ta.*
d. ***Ziroo o*** *Taroo ga Hanako ni syookai-si-ta.*

Adverbs, likewise, can be rather freely placed, though each type of adverbs has its basic position.

(3) a. ***Saiwainimo*** *Hanako ga gohan o tai-te kure-te i-ta.*
luckily Hanako NOM rice ACC cook-GER GIVE-GER BE-PST
'Luckily Hanako had done the favor of cooking the rice (for us).'
b. *Hanako ga* ***saiwainimo*** *gohan o tai-te kure-te i-ta.*
c. *Hanako ga gohan o* ***saiwainimo*** *tai-te kure-te i-ta.*

Notice that while the verbal complex in the sentence above is not as tightly organized as a complex involving suffixes, a sentence adverb cannot be placed within the verbal complex, showing that the sequence of *tai-te kure-te i-ta* forms a tighter constituent,

which, however, permits insertion of the topic particle *wa* after each of the gerundive forms. (See section 7.4 below on the nature of gerundive forms in Japanese.)

As the normal position of sentence adverbs is sentence initial, manner and resultative adverbs have an iconically-motivated position, namely before and after the object noun phrase, respectively, as below, though again these adverbs may move around with varying degrees of naturalness:

(4) *Hanako ga* ***isoide*** *gohan o tai-te kure-ta.*
Hanako NOM hurriedly rice ACC cook-GER GIVE-PST
'Hanako did the favor of cooking the rice hurriedly (for us).'

(5) *Hanako ga gohan o* ***yawarakaku*** *tai-te kure-ta.*
Hanako NOM rice ACC softly cook-GER GIVE-PST
'Hanako did the favor of cooking the rice soft (for us).'

The fact that an object noun phrase can be easily separated from the verb, as in (2b.d), and that adverbs can freely intervene between an object and a verb, as in (5), has raised the question whether Japanese has a verb phrase consisting of a verb and an object noun phrase as a tightly integrated constituent parallel to the VP in English (cf. **cook hurriedly the rice* – the asterisk marks ungrammatical forms).

7.3 NP structure

Noun phrases, when they occur as arguments or adjuncts, are marked by case particles or postpositions that are placed after their host nouns. Because case markers can be set off by a pause, a filler, or even longer parenthetic material, it is clear that they are unlike declensional affixes in inflectional languages like German or Russian. Their exact status, however, is controversial; some researchers regard them as clitics and others as (non-independent) words.

Elaboration of Japanese noun phrases is done by prenominal modifiers such as a demonstrative, a genitive noun phrase, or an adjective, as below, indicating that Japanese is a consistent head-final language at both nominal and clausal levels.

(6) a. *kono Taroo no kaban*
this Taro GEN bag
lit. 'this Taro's bag'

b. *Taroo no kono kaban*
Taro GEN this bag
lit. 'Taro's this bag'

Japanese lacks determiners of the English type that "close off" NP expansion. The literal translations of the Japanese forms above are ungrammatical, indicating that English determiners like demonstratives and genitive noun phrases do not allow further expansion of an NP structure. Also seen above is the possibility that prenominal modifiers can be reordered just like the dependents at the sentence level. The order of prenominal modifiers, however, is regulated by the iconic principle of placing closer to the head noun those modifiers that have a greater contribution in specifying the nature and type of the referent. Thus, descriptive adjectives tend to be placed closer to a head noun than demonstratives and genitive modifiers of non-descriptive types. Interesting is the pattern of genitive modifiers, some of which are more descriptive and are placed closer to the head noun than others. Genitives of the same semantic type, on the other hand, can be freely reordered. Compare:

(7) a. *Yamada-sensei no kuroi kaban*
Yamada-professor GEN black bag
'Professor Yamada's black bag'
b. **kuroi Yamada-sensei no kaban*
(O.K. with the reading of 'a bag of Professor Yamada who is black')

(8) a. *Yamada-sensei no gengogaku no koogi*
Yamada-professor GEN linguistics GEN lecture
'Professor Yamada's linguistics lecture'
b. **gengogaku no Yamada-sensei no koogi*
(O.K. with the reading of 'a lecture by Professor Yamada of linguistics')

(9) a. *Yamada-sensei no kinoo no koogi*
Yamada-professor GEN yesterday GEN lecture
lit. 'Professor Yamada's yesterday's lecture' 'Yesterday's lecture by Professor Yamada'
b. *Kinoo no Yamada-sensei no koogi*

(10) a. *oomori no sio-azi no raamen*
big.serving GEN salt-tasting GEN *ramen*
lit. 'big-serving salt-tasting *ramen* noodles'
b. *sio-azi no oomori no raamen*

(11) a. *atui sio-azi no raamen*
hot salt-tasting GEN *ramen*
'hot salt-tasting *ramen* noodles'
b. *sio-azi no atui ramen*

Numeral classifiers (CLFs) pattern together with descriptive modifiers so that they tend to occur closer to a head noun than a possessive genitive phrase.

(12) a. *Taroo no san-bon no enpitu*
Taro GEN three-CLF GEN pencil
'Taro's three pencils'
b. **san-bon no Taroo no enpitu*

Numeral classifiers also head an NP, where they play a referential function and where they can be modified by a genitive phrase or an appositive modifier, as in (13a.b). They may also "float" away from the head noun and become adverbial, as in (13c).

(13) a. *Taroo wa gakusei no* ***san-nin*** *o mikake-ta.*
Taro TOP student GEN three-CLF ACC see.by.chance-PST
'Taro saw three of students by chance.'

b. *Taroo wa gakusei* ***san-nin*** *o mikake-ta.*
Taro TOP student three-CLF ACC see.by.chance-PST
lit. 'Taro saw student-threes by chance.'

c. *Taroo wa gakusei o* ***san-nin*** *mikake-ta.*
Taro TOP student ACC three-CLF see.by.chance-PST
'Taro saw students, three (of them), by chance.'

As in many other SOV languages, the so-called relative clauses are also prenominal and are directly placed before their head nouns without the mediation of "relative pronouns" like the English *which* or *who* or "complementizers" like *that*. The predicates in relative clauses are finite, taking a variety of tense and aspect. The subject may be replaced by a genitive modifier. Observe (14a).

(14) a. *Boku mo [Taroo ga/no kat-ta] hon o kat-ta.*
I ADVPART Taro NOM/GEN buy-PST book ACC buy-PST
'I also bought the book which Taro bought.'

b. *Boku mo [Taroo ga/no kat-ta] no o kat-ta.*
I ADVPART Taro NOM/GEN buy-PST NM ACC buy-PST
'I also bought the one which Taro bought.'

The structure used as a modifier in the relative clause construction can also head a noun phrase, where it has a referential function denoting an entity concept evoked by the structure. In Standard Japanese such a structure is marked by the nominalization particle *no*, as in (14b).

7.4 Subject and topic

Some of the sentences above have noun phrases marked by the nominative case particle *ga* and some by the topic marker *wa* for what appear to correspond to the subject noun phrases in the English translations. This possibility of *ga*- and *wa*-marking is seen below.

(15) a. *Yuki ga siro-i.*
snow NOM white-PRS
'The snow is white.'

b. *Yuki wa siro-i.*
snow TOP white-PRS
'Snow is white.'

As the difference in the English translations indicates, these two sentences are different in meaning. Describing the differences between topic and non-topic sentences has been a major challenge for Japanese grammarians and teachers of Japanese alike. The difference in the English translations above, however, is indicative of how these two sentences might differ in meaning. Sentence (15a) describes a state of affairs involving specific snow just witnessed, whereas (15b) is a generic statement about a property of snow unbounded by time. Thus, while (15a) would be uttered only when the witnessed snow is indeed white, (15b) would be construed true even though we know that there are snow piles that are quite dirty.

A similar difference is seen in verbal sentences as well.

(16) a. *Tori ga tob-u.*
bird NOM fly-PRS
'A bird is flying/is about to fly.'

b. *Tori wa tob-u.*
bird TOP fly-PRS
'Birds fly.'

Non-topic sentences like (15a) and (16a) are often uttered with an exclamation accompanying a sudden discovery of a state of affairs unfolding right in front of one's eyes. The present tense forms (*-i* for adjectives and *-(r)u* for verbs) here anchor the time of this discovery to the speech time. The present tense forms in (15b) and (16b), on the other hand, mark a generic tense associated with a universal statement.

These explanations can perhaps be extended to a time-bound topic sentence seen in (17b) below.

(17) a. *Taroo ga hasit-ta.*
Taro NOM run-PST
'Taro NOM ran.'

b. *Taroo wa hasit-ta.*
Taro TOP run-PST
'Taro ran.'

That is, while (17a) reports an occurrence of a particular event at a time prior to the speech time, (17b) describes the nature of the topic referent – that Taro was engaged in the running activity – as a universal truth of the referent, but universal only with respect to a specifically bound time marked by the past tense suffix.

Topics need not be a subject, and indeed any major sentence constituent, including adverbs, may be marked topic in Japanese, as shown below.

(18) a. *Sono hon wa Taroo ga yon-de i-ru.*
that book TOP Taro NOM read-GER BE-PRS
'As for that book, Taro is reading (it).'

b. *Kyoo wa tenki ga yo-i.*
today TOP weather NOM good-PRS
'As for today, the weather is good.'

c. *Sonnani wa hayaku wa hasir-e na-i.*
that.way TOP quickly TOP run-POTEN NEG-PRS
'That quickly, (I) cannot run.'

7.4 Complex sentences

As in many Altaic languages, compound sentences in Japanese do not involve a coordinate conjunction like English *and*. Instead, clauses are connected by the use of inflected verb forms, as in (19a) below, where the *-i* ending is glossed in the HJLL series as either INF (infinitive) or ADVL (adverbal) following the Japanese term *ren'yō-kei* for the form. While the *-i* ending in the formation of compound sentences is still used today, especially in writing, the more commonly used contemporary form involves a conjunctive particle *-te* following the *-i* infinitive form, as in (19b) below. In HJLL, this combination is glossed as GER (gerundive), though the relevant Japanese forms do not have the major nominal use of English gerundive forms.

(19) a. *Hana wa sak-i, tori wa uta-u.*
flower TOP bloom-INF bird TOP sing-PRS
'Flowers bloom and birds sing.'

b. *Hana wa sa.i-te, tori wa uta-u.*
flower TOP bloom-GER bird TOP sing-PRS
'Flowers bloom and birds sing.'

Both the *-i* and *-te* forms play important roles in Japanese grammar. They are also used in clause-chaining constructions for serial events (20a), and in complex sentences (20b)–(20d), as well as in numerous compound verbs (and also in many compound nouns) such as *sak-i hokoru* (bloom-INF boast) 'be in full bloom', *sak-i tuzukeru* (bloom-INF continue) 'continue blooming', *sa.i-te iru* (bloom-GER BE) 'is blooming', and *sa.i-te kureru* (bloom-GER GIVE) 'do the favor of blooming (for me/us)'.

(20) a. *Taroo wa [ok-i/ok.i-te], [kao o ara-i/arat-te],*
Taro TOP rise-INF/rise-GER face ACC wash-INF/wash-GER
[gohan o tabe-ta].
meal ACC eat.PST
'Taro got up, washed his face, and ate a meal.'

b. *Taroo wa [sakana o tur-i] ni it-ta.*
Taro TOP fish ACC catch-INF DAT go-PST
'Taro went to catch fish.'

c. *Taroo wa [aruk-i nagara] hon o yon-da.*
Taro TOP walk-INF SIMUL book ACC read-PST
'Taro read a book while walking.'

d. *Taroo wa [Hanako ga ki-ta no] ni awa-na-katta.*
Taro TOP Hanako NOM come-PST NM DAT see-NEG-PST.
'Taro did not see (her), even though Hanako came.'

(20d) has the nominalized clause marked by the particle *no* followed by the dative *ni*, also seen in (20b) marking the purposive form. Now the *no-ni* sequence has been reanalyzed as a concessive conjunction meaning 'even though'.

7.5 Context dependency

The context dependency of sentence structure in Japanese is much more clearly pronounced than in languages like English. Indeed, it is rare that Japanese sentences express all the arguments of a verb such as a subject (or topic) and an object noun phrase included in the sentences used above for illustrative purposes. A typical dialog would take the following form, where what is inferable from the speech context is not expressed.

(21) a. Speaker A: *Tokorode, Murakami Haruki no saisin-saku yon-da ka.*
by.the.way Murakami Haruki GEN newest-work read-PST Q
'By the way, have (you) read Haruki Murakami's latest work?'

b. Speaker B: *Un, moo yon-da.*
uh-hu already read-PST
'Uh-hu, (I) already read (it)'.

In (21a) A's utterance is missing a subject noun phrase referring to the addressee, and B's response in (21b) is missing both subject and object noun phrases. In some frameworks, sentences like these are analyzed as containing zero pronouns or as involving a process of "pro drop", which deletes assumed underlying pronouns. This kind of analysis, however, ignores the role of speech context completely and incorporates information contextually available into sentence structure. In an analysis that takes seriously the dialogic relationship between speech context and sentence structure, the expressions in (21) would be considered full sentences as they are.

7.6 Predicative verbal complexes and extenders

Coding or repeating contextually determinable verb phrases, as in (21b), is less offensive than expressing contextually inferable noun phrases presumably because verb phrases have the predication function of assertion, and because they also code a wide range of other types of speech acts and of contextual information pertaining to the predication act. Declarative sentences with plain verbal endings like the one in (21b) are usable as "neutral" expressions in newspaper articles and literary works, where no specific reader is intended. In daily discourse, the plain verbal forms "explicitly" code the speaker's attitude toward the hearer; namely, that the speaker is treating the hearer as his equal or inferior in social standing, determined primarily by age, power, and familiarity. If the addressee were socially superior or if the occasion demanded formality, a polite, addressee honorific form with the suffix *-masu* would be used, as below.

(22) *Hai, moo yom-i-masi-ta.*
yes already read-INF-POL-PST
'Yes, (I have) already read (it).'

The referent honorific forms are used when the speaker wishes to show deference toward the referent of arguments – subject honorific and object honorific (or humbling) forms depending on the type of argument targeted. If (21b) were to be uttered in reference to a social superior, the following would be more appropriate:

(23) *Un, (Yamada-sensei wa) moo yom-are-ta.*
uh-hu (Yamada-professor TOP) already read-SUB.HON-PST
'Uh-hu, (Professor Yamada has) already read (it).'

This can be combined with the polite ending *-masu*, as below, where the speaker's deference is shown to both the referent of the subject noun phrase and the addressee:

(24) *Hai, (Yamada-sensei wa) moo yom-are-masi-ta.*
Yes (Yamada-professor TOP) already read-HON-POL-PST
'Yes, (Professor Yamada has) already read (it).'

As these examples show, Japanese typically employs agglutinative suffixes in the elaboration of verbal meanings associated with a predication act. The equivalents of English auxiliary verbs are either suffixes or formatives connected to verb stems and suffixed forms in varying degrees of tightness. These are hierarchically structured in a manner that expresses progressively more subjective and interpersonal meaning as one moves away from the verb-stem core toward the periphery. For example, in the following sentence a hyphen marks suffixal elements tightly bonded to the preceding form, an equal sign marks a more loosely connected formative, which permits insertion of certain elements such as the topic particle *wa*, and a space sets off those elements that are independent words following a finite predicate form, which may terminate the utterance.

(25) *(Taroo wa) ik-ase-rare-taku=na-katta rasi-i mitai des-u wa.*
(Taro TOP) go-CAUS-PASS-DESI=NEG-PST CONJEC-PRS UNCERT POLCOP-PRS SFP
'(Taro) appears to seem to not want to have been forced to go, I tell you.'

The final particle *wa* above encodes the information that the speaker is female. A male speaker would use *yo* or *da yo*, the latter a combination of the plain copula and *yo*, instead of *desu wa* above, or combinations such as *da ze* and *da zo* in rough speech.

Non-declarative Japanese sentences, on the other hand, frequently suppress auxiliary verbs, the copula, and the question particle especially in casual speech, where intonation and tone of voice provide clues in guessing the intended speech act. Casual interrogatives take the form of (26a) with a nominalization marker bearing a rising intonation, marked by the question mark in the transcription, whereas fuller versions have the interrogative particle *ka* or a combination of the polite copula and *ka*, as in (26b).

(26) a. *Moo kaeru no?*
already return NM
'Going home already?'

b. *Moo* *kaeru* *no* *(desu)* *ka*.
already return NM (POLCOP) Q
'Going home already?'

Requests are made with the aid of an auxiliary-like "supporting" verb *kureru* 'GIVE (ME THE FAVOR OF. . .)', its polite form *kudasai*, or its intimate version *tyoodai*, as seen in (27a). Again, these forms are often suppressed in a highly intimate conversation and may result in a form like (27b).

(27) a. *Hayaku* *kaet-te* *kure/kudasai/tyoodai*.
soon return-GER GIVE/GIVE.POL/GIVE.INTI
'(Please) come home soon (for me/us).'

b. *Hayaku* *kaet-te* *ne*.
soon return-GER SFP
'(Please) come home soon, won't you?'

The use of dependent forms (e.g., the gerundive *-te* form above) as independent sentences is similar to that of subjunctive forms of European languages as independent sentences, as illustrated by the English sentence below.

(28) *If you would give me five thirty-cent stamps.*

Conditionals are used as independent suggestion sentences in Japanese as well. For example, (29a) has a fuller version like (29b) with the copula as a main-clause verb, which can also be suppressed giving rise to the truncated form (29c).

(29) a. *Hayaku* *kaet-tara?*
quickly return-COND
lit. ' If return quickly.' 'Why don't you go home quickly?'

b. *Hayaku* *kaet-tara* *ikaga* *desu* *ka*.
quickly return-COND how POLCOP Q
lit. 'How is it if (you) went home quickly?'

c. *Hayaku* *kaet-tara* *ikaga?*
quickly return-COND how
'Why don't (you) go home quickly?'

Understanding Japanese utterances requires full recourse to the elements of speech context, such as the nature of the speaker and the hearer and the social relationship between them, the information "in the air" that is readily accessible to the interlocutors, and the formality of the occasion. Indeed, the difficult part of the art of

speaking Japanese is knowing how much to leave out from the utterance and how to infer what is left unsaid.

8 Conclusion

Many of the interesting topics in Japanese grammar introduced above are discussed in great detail in the Lexicon-Word formation handbook and the Syntax volume. The Historical handbook also traces developments of some of the forms and constructions introduced above. The Sociolinguistics volume gives fuller accounts of the sentence variations motivated by context and discourse genre.

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Appendix: List of abbreviations for HJLL

1	first person
2	second person
3	third person
A	agent-like argument of canonical transitive verb
ABL	ablative
ACC	accusative
ACOP	adjectival copula
ADJ	adjective
ADN	adnominal
ADV	adverb(ial(izer))
ADVL	adverbal
ADVPART	adverbial particle
AGR	agreement
AGT	agent
ALL	allative
AN	adjectival noun

ANTIP	antipassive
AP	adverbial particle, adjective phrase
APPL	applicative
ART	article
ASP	aspect
ATTR	attributive
AUX	auxiliary
AUXV	auxiliary verb
C	consonant
CAUS	causative
CLF	classifier
COHORT	cohortative
COM	comitative
COMP	complementizer
COMPL	completive
CONC	concessive
CONCL	conclusive
COND	conditional
CONJEC	conjectural
CONJCT	conjunctive
CONT	continuative
COP	copula
CVB	converb
DAT	dative
D	demonstrative
DECL	declarative
DEF	definite
DEM	demonstrative
DET	determiner
DESI	desiderative
DIST	distal
DISTR	distributive
DO	direct object
DU	dual
DUR	durative
EMPH	emphatic
ERG	ergative
ETOP	emphatic topic
EVID	evidential
EXCL	exclamatory, exclusive
EXPL	expletive
FOC	focus

FUT	future
GEN	genitive
GER	gerund(ive)
H	high (tone or pitch)
HON	honorific
HUM	humble
IMP	imperative
INCL	inclusive
IND	indicative
INDEF	indefinite
INF	infinitive
INS	instrumental
INT	intentional
INTERJEC	interjection
INTI	intimate
INTR	intransitive
IO	indirect object
IRR	irrealis
ITERA	iterative
k-irr	k-irregular (*ka-hen*)
L	low (tone or pitch)
LB	lower bigrade (*shimo nidan*)
LM	lower monograde (*shimo ichidan*)
LOC	locative
MPST	modal past
MVR	mid vowel raising
N	noun
n-irr	n-irregular (*na-hen*)
NCONJ	negative conjectual
NEC	neccessitive
NEG	negative
NM	nominalization marker
NMLZ	nominalization/nominalizer
NMNL	nominal
NOM	nominative
NONPST	nonpast
NP	noun phrase
OBJ	object
OBL	oblique
OPT	optative
P	patient-like argument of canonical transitive verb, preposition, post-position

PART	particle
PASS	passive
PCONJ	present conjectural
PERF	perfective
PL	plural
POL	polite
POLCOP	polite copula
POSS	possessive
POTEN	potential
PP	prepositional/postpositional phrase
PRED	predicative
PRF	perfect
PRS	present
PRES	presumptive
PROG	progressive
PROH	prohibitive
PROV	provisional
PROX	proximal/proximate
PST	past
PSTCONJ	past conjectural
PTCP	participle
PURP	purposive
Q	question/question particle/question marker
QD	quadrigrade (*yodan*)
QUOT	quotative
r-irr	r-irregular (*ra-hen*)
REAL	realis
RECP	reciprocal
REFL	reflexive
RES	resultative
RESP	respect
S	single argument of canonical intransitive verb, sentence
SBJ	subject
SBJV	subjunctive
SFP	sentence final particle
SG	singular
SIMUL	simultaneous
s-irr	s-irregular (*sa-hen*)
SG	singular
SPON	spontaneous
SPST	simple past
STAT	stative

TOP	topic
TR	transitive
UB	upper bigrade (*kami-nidan*)
UNCERT	uncertain
UM	upper monograde (*kami-ichidan*)
V	verb, vowel
VN	verbal noun
VOC	vocative
VOL	volitional
VP	verb phrase

Languages

ConJ	contemporary Japanese
EMC	Early Middle Chinese
EMJ	Early Middle Japanese
EOJ	Eastern Old Japanese
J-Ch	Japano-Chinese
LMC	Late Middle Chinese
LMJ	Late Middle Japanese
JPN	Japanese
MC	Middle Chinese
MJ	Middle Japanese
MK	Middle Korean
ModJ	Modern Japanese
OC	Old Chinese
OJ	Old Japanese
pJ	proto-Japanese
pK	proto-Korean
SJ	Sino-Japanese
Skt	Sanskrit

Table of contents

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Taro Kageyama and Hideki Kishimoto

Introduction

1 Goals and scope of the volume

Words are the pivotal units in the production and comprehension of language, but they are by no means unanalyzable wholes. On the contrary, most words have complex internal structures that are built on the basis of universal as well as language-particular principles of morphology. This handbook presents a comprehensive survey of the lexical phenomena and word formation processes commonly observed in contemporary Japanese, with particular emphasis on their typological characteristics and their interactions with syntax and semantics. The title of the volume could have been "Handbook of Japanese morphology", but the term "morphology" was intentionally avoided in favor of "lexicon and word formation" to make it explicit that the book goes beyond the traditional bipartition between morphology as the realm of words/morphemes and syntax as the realm of phrases/sentences. As stated in the Series Editors' introduction (p. xxix), many of the interesting topics in Japanese grammar cut across the two realms, which are, as it were, bridged by word formation processes. In fact, the majority of chapters contained in this volume show that many of the productive word formation processes in Japanese are not limited narrowly to the domain of morphology but instead function in tandem with syntactic processes, thus giving rise to myriads of interactive phenomena that should interest not only specialists on morphology but also specialists on syntax, semantics, and phonology. This book treats only incidentally phonological issues related to the lexicon, for which the reader is referred to the *Handbook of Japanese phonetics and phonology* (edited by Haruo Kubozono, 2015).

The general orientation of this handbook is not so much theory-oriented as data-oriented. Primary emphasis is placed on the description of basic and common phenomena, especially for the sake of those readers who are not familiar with Japanese, but theoretical issues debated in current theories of the lexicon, word formation, morphology, lexical semantics, and their interaction with syntax are also examined through critically reviewing major works in the previous literature.

The past and ongoing research on lexical matters in Japanese can be conveniently divided into two categories. One is the domestic tradition of philological and descriptive approaches which falls under the general rubric of older *Kokugogaku* ('native language studies' or 'traditional Japanese grammar') or more recent *Nihongogaku* ('Japanese language studies'). The central goal of this tradition is an exhaustive description of raw data based on the collection of actually occurring examples, coupled with their classification and analysis in semantic or quantitative terms. While *Kokugogaku* itself germinated as early as the 18th century in the Edo era, morphological studies that remain influential even today only started in the early

1900s. The other tradition is a theoretical approach that was initiated by linguists working in early generative frameworks, if we leave out an exceptional figure, Bernard Bloch, who analyzed Japanese phonology, morphology, and grammar based on the methodology of American structural linguistics. The fact that early publications of S.-Y. Kuroda, Susumu Kuno, and Masayoshi Shibatani, who are considered the pioneers of theoretical Japanese linguistics in the U.S.A., were addressed to morphosyntactic matters involved in complex predicate formation in syntax is highly suggestive of how intricately Japanese morphology is intertwined with syntax in the whole architecture of grammar. Almost all the chapters in this book indeed make reference, to varying degrees, to syntactic and/or lexical-semantic issues closely tied to the individual morphological topics they tackle.

2 Theoretical significance of Japanese word formation

Words (or lexical items) are often seen as minimal meaningful units of speech. Words are registered in the lexicon, but are by no means static. New words are incessantly added to the lexicon, and words are rendered obsolete as they fall out of use. Natural languages have a number of word formation rules to create complex words. Word formation rules in Japanese are much richer than those in English, and have a wider coverage, because Japanese is a language of an agglutinative type, where morphology plays an important part in forming complex predicates. Japanese has productive lexical processes, such as V-V compounding, that are 'exotic' from Western perspectives, as well as word formation rules, such as N-V compounding, that seem to be governed by some unique conditions.

Modern treatments of word formation, in particular those of morphology and the lexicon, have undergone significant changes through the history of linguistic theory. Various recent theories of word formation have their roots in the early generative approaches of the 1960s and 1970s. In the standard theory (Chomsky 1965), the lexicon played only an impoverished role as a repository for simple lexical items; compound words were derived from sentences by transformational rules (Lees 1960). On the other hand, generative semantics, which enjoyed a heyday from the 1960s until the mid 1970s, abolished the level of deep structure and instead treated even simple words as having complex sources, deriving the verb *kill*, for example, from a complex structure like 'cause to die' (McCawley 1968).

The so-called "lexicalist hypothesis" was launched by Chomsky (1970), where it was proposed that derived nominals (e.g. *destruction*), which have idiosyncratic properties, are created by lexical rules in the lexical component, while gerundive nominals (e.g. *destroying*) are formed by transformation rules in the syntactic component. The lexicalist hypothesis originally postulated that regular syntactic processes do not operate on lexical material, making a clear division of labor between

the lexicon and syntax, such that inflectional morphology, as opposed to derivational morphology, lies outside the domain of the lexicon. Later, a strong lexical hypothesis was proposed to extend the domain of word formation to inflection. Some versions of the lexical hypothesis make a further extension to give a lexical treatment even to the syntactic passive, which was generally assumed to take place in syntax (Wasow 1977; Bresnan 1982). Di Sciullo and Williams (1987) articulated "strong lexicalism", where words are defined as "syntactic atoms" whose internal structure is not accessible to any rule of syntax. In the lexical approaches, various instances of word formation are treated in terms of lexical rules, which are claimed to have distinct properties from syntactic rules. In these lexical theories – generative grammar, HPSG (Head-Driven Phrase Structure Grammar), and LFG (Lexical-Functional Grammar) – various mechanisms are proposed to account for the regularities in word formation processes.

As an agglutinative language, Japanese often creates a gigantic sequence of morphologically complex predicates whose English counterparts are realized by analytic structures such as causative and passive verbs. This gives rise to the issue of how such morphologically complex predicates in Japanese are formed. A number of different treatments are possible with morphologically complex predicates. In the early days of Japanese generative grammar (Kuroda 1965; Kuno 1973; Shibatani 1976), it was customary to derive morphologically complex words from syntactic structures via a transformational rule dubbed "verb raising". On the other hand, the morphological status of complex predicates provided a motive to give them a lexical treatment, as argued by Farmer (1984) and Miyagawa (1980) in a generative framework, by Manning, Sag and Iida (1999) in HPSG, and by Matsumoto (1996) in LFG (see also Sells 1995). Nevertheless, given that complex predicates show properties distinct from single lexical items, many researchers (Sugioka 1986; Kageyama 1982, 1993; Ito and Sugioka 2002; to name just a few) argue that in Japanese, word formation processes apply in the two domains of syntax and the lexicon (apart from the issue pertaining to inflectional morphology). Under this view, regular, productive word formations represent the syntactic type, and irregular, idiosyncratic ones represent the lexical type.

Some recent syntactic approaches assume that complex words can be created entirely in the syntax. Reincarnating the idea of prelexical syntax in generative semantics, Hale and Keyser (1993, 2002) uphold the view that decomposed verb structures are posited at the level of lexical syntax (l-syntax), where verbs are created by following the principles that are essentially the same as those governing the regular syntax. Distributed Morphology (Halle and Marantz 1993) imposes the generative engine on the syntax and claims that morphological words can be created post-syntactically. The recent Minimalist Program does not posit a clear boundary between the lexicon and syntax, and even simple verbs are assumed to have complex syntactic structures (Marantz 1997; Chomsky 1995, 2000).

Japanese is suggestive of several unique kinds of word formation taking place in the realm of the syntax, as well as in the lexicon. Kageyama (1993), for instance, suggests that compound verbs, which constitute single morphological words, can be either syntactic or lexical. For lexical compound verbs, verbs are combined and registered in the lexicon, and syntactic compound verbs have syntactic structure in which one verb is embedded under another. Light verb constructions formed on verbal nouns present another case in point. Verbal nouns have dual properties, in that they can either serve as argument complements to the light verb *suru* 'do' or as predicates in combination with *suru*. Even though argument realization patterns vary, the complex predicates have similar predicative functions regardless of their form, which raises the question of whether the predicate formation takes place at the lexical, syntactic, or LF level.

In the lexicalist hypothesis, the regularities of words should be captured by lexical rules operating in the domain of the lexicon. This view is strongly motivated by the principle of lexical integrity, which states that syntactic operations such as anaphoric binding, movement, and substitution do not affect or alter the internal structures of words (Anderson 1992). The lexical integrity principle is to a large measure observed in Japanese, but there are also some lexical phenomena that do not neatly fit into the standard version of this principle. In Japanese, there is an array of data suggesting that syntactic processes have access to word internal structures, which provides a testing ground for examining how lexical integrity should be treated in the lexicalist hypothesis. Shibatani and Kageyama (1988) show that Japanese has a novel type of post-syntactic word formation, suggesting that word formation can take place after the syntax.

In some current lexical theories (Jackendoff 1990; Grimshaw 1990; Pinker 1989, 2007; Levin and Rappaport Hovav 1995; Pustejovsky 1995), decomposed lexical representations, which are another successor to the prelexical syntactic representations in generative semantics, as well as argument structures, are used to describe linguistically important generalizations over certain well-defined classes of predicates that pattern together. In this respect, Japanese can potentially make a significant contribution because the language has a number of intriguing lexical processes, such as V-V, N-V, and N-N compounding. These are productive word formations processes in Japanese, but they are subject to certain semantic conditions, as there are a number of combinatory restrictions. For instance, Kageyama (1993, 1999) argues that the combinatory patterns of lexical compound verbs are constrained by the Transitivity Harmony Principle, which states that transitive and unergative verbs count as the same type whereas unaccusative verbs form a distinct type. For a compact review of major studies on Japanese word formation, see Kageyama (2014).

Even from the preceding brief discussion of only a few selected instances, it should be apparent that Japanese word formation often shows a number of unique properties, some of which are exotic from the standard Western viewpoint. Although we stressed the interactive relations in Japanese between morphology and syntax, we do not intend to obliterate the boundary between the two realms. There is

definitely an orderly distinction between words/morphemes and phrases/sentences, and the two domains are related to each other by certain rules of word formation that cut across them. A close inspection of the data in Japanese will thus contribute to furthering our understanding of word formation and lexical knowledge, providing a new window into the nature of human language.

3 Organization of the volume

This book comprises nineteen chapters, which are grouped into three parts according to the nature of the topics discussed.

Part I "Lexicon and vocabulary items" is intended to lay the foundation for the more advanced discussions in Part II and Part III by explaining fundamental concepts related to the Japanese vocabulary system. Chapter 1 "Vocabulary strata and word formation processes" by Taro Kageyama and Michiaki Saito introduces the basic characteristics of Japanese lexical items and major word formation processes, clarifying the nature of four vocabulary strata – (i) native Japanese, (ii) mimetic or onomatopoeic, (iii) Sino-Japanese, and (iv) foreign – and how they interact with a variety of word formation processes including prefixation, suffixation, compounding, and reduplication. Chapter 2 "Lexical categories" by Hideki Kishimoto and Satoshi Uehara discusses the inventory of Japanese lexical categories from generative and cognitive-functional perspectives, with particular focus on two unique categories, "Verbal Noun" and "Adjectival Noun". Chapter 3 "Sino-Japanese words" by Hideki Kobayashi, Kiyo Yamashita, and Taro Kageyama clarifies the distinct role Sino-Japanese words (Chinese words assimilated to Japanese) play as an independent vocabulary stratum in the Japanese lexicon. Chapter 4 "Mimetics" by Kimi Akita and Natsuko Tsujimura explains how important mimetic words (words that are supposed to represent sounds, manners of action, mental states, etc.) are in the linguistic system of Japanese and how they behave with respect to phonology, semantics, and syntax. Part I closes with Chapter 5 "The morphology of English loanwords" by Mark Irwin, which delineates the morphological properties of borrowings from English, showing how they function not only as nouns but also as verbs, adjectives, and affixes and how they participate in compounding, clipping, and other word formation processes.

Part II "Morphology and word formation" covers the major word formation processes in Japanese, revealing not only their morphology but also their semantic and syntactic characteristics. Chapter 6 "Word structure and headedness" by Takayasu Namiki and Taro Kageyama surveys the internal structures of complex words in terms of the notion "head" by dividing them into right-headed, left-headed, double-headed, and headless structures. This chapter also discusses the viability of the distinction between compounds and affixes looking at elements that have undergone grammaticalization or degrammaticalization. Chapter 7 "Noun-compounding and noun-incorporation" by Taro Kageyama shows how the compound words of the

form "Noun + Verb" are organized into a family of mutually related types ranging from tensed compound verbs to tenseless compound verbs through the intermediate category of nonfinite compounds in gerundive and prenominal forms. The discussion on N-V compound verbs is followed by discussion of compound verbs of the form "Verb + Verb", which are used pervasively in Japanese. Chapter 8 "Verb-compounding and verb-incorporation" by Taro Kageyama discusses the distinction between two types of V-V compounds, one lexical and the other syntactic, and highlights their differences in productivity, meaning, and morphological and syntactic behavior. Chapter 9 "Conversion and deverbal compound nouns" by Yoko Yumoto first clarifies the idiosyncratic behavior of verb-to-noun conversion in Japanese and then moves on to probe the semantic complexity of the compound nouns involving deverbal nouns as the head. After these discussions on a variety of compounds comes Chapter 10 "Derivational affixation in the lexicon and syntax" by Yoko Sugioka and Takane Ito, where the distinction between affixes that apply in the lexicon and those that apply in syntactic structure is brought to light with neurological evidence. The subsequent three chapters (Chapters 11 to 13) are devoted to word formation or complex predicate formation in syntactic structure. Chapter 11 "Complex predicates with *-te* gerundive verbs" by Kentaro Nakatani provides an exposition of the complex predicate formation with "auxiliary-like" verbs, Chapter 12 "Light verb constructions with verbal nouns" by Tadao Miyamoto and Hideki Kishimoto presents an overview of the semantic and syntactic properties of complex predicates composed of verbal nouns and *suru* 'do', and Chapter 13 "Inflection" by Koichi Takezawa discusses the syntactic nature of verbal and adjectival inflections. Part II concludes with Chapter 14 "Lexical integrity and the morphology-syntax interface" by Taro Kageyama, where the nature of "lexical integrity" is discussed in relation to the boundary between words and phrases as well as to how word formation interacts with syntax.

Part III "Word classes and syntactic behavior" takes up selected topics showing the close correspondence between semantic classes of words and their syntactic behavior. Chapter 15 "Lexical meaning and temporal aspect" by Wesley M. Jacobsen discusses aspect-based classifications of verbs by comparing the proposals by Haruhiko Kindaichi for Japanese and Zeno Vendler for English. Chapter 16 "Stative and existential/possessive predicates" by Hideki Kishimoto elucidates how various stative predicates in the same semantic class share the same syntactic construction and syntactic behavior. Chapter 17 "Agent nominals" by Naoyuki Ono and Chapter 18 "Complement-taking nouns" by Yuji Nishiyama are addressed to similar classes of nouns that implicate the occurrence of events and actions, the former focusing on human nouns and the latter on non-human nouns, and bring to light interesting correspondences between their meanings and the syntactic constructions they participate in. Part III closes with Chapter 19 "Idioms" by Hideki Kishimoto, where different types of idioms are distinguished by the applicability or non-applicability of a number of diagnostic tests.

Acknowledgments

We are deeply indebted to Masayoshi Shibatani as series editor and John Haig as copy-editor and translator for their constant help and constructive suggestions that have led to the completion of the whole volume. This work was supported by the fund for the collaborative research project "Syntactic, Semantic, and Morphological Characteristics of the Japanese Lexicon" (Project leader: Taro Kageyama, National Institute for Japanese Language and Linguistics, 2010–2015).

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Appendix: List of additional abbreviations for this volume

ANM	animate
ARG	argument
DIR	directional
DP	determiner phrase
DUM.COP	dummy copula
INAN	inanimate
INFL	inflection
MIM	mimetic
PREF	prefix
SUF	suffix
TP	tense phrase
VBLZ	verbalizer

I Lexicon and vocabulary items

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1 Vocabulary strata and word formation processes

1 Introduction

This chapter presents an overview of two concepts basic to analysis of the lexicon of modern Japanese, "vocabulary strata" and "word formation processes", and how they mutually interact in order to provide some background for consideration of individual problems in detail in the following chapters.

The *Nihon kokugo daijiten* (2000–2002), comprising 13 volumes, is the largest dictionary of Japanese ever printed with approximately 600,000 lexical entries and is comparable to *The Oxford English Dictionary* (OED). However, this does not mean that the total number of lexical items in Japanese is 600,000 words. Thanks to the creativity and productivity of language and to the possibility of borrowing words from other languages, an infinite number of additional new words are possible.

The lexicon is composed of a dictionary component that contains all the lexical information traditionally associated with words and morphemes, including morphological, phonological, semantic, syntactic, and stylistic properties, and word formation rules that create new words based on the stored word and morpheme information. Studies on the Japanese lexicon can be divided broadly into descriptive or philological studies, an extension of the Japanese *Kokugogaku* studies tradition, and theoretical research from a generative grammar and cognitive linguistics background. In the former tradition, under the rubric of "word composition", focus is on analyzing the constituents of compounds and derived forms and clarifying how they are combined (Saito 1992a, 2004). However, because the lexicon is treated as a complete system on its own, little attention is paid to mutual relations with other components of the grammar. This tradition began with historical research on affixation and compounding in Old Japanese and ties into research on productivity and word structure in contemporary Japanese. Lately the tradition has linked up with corpus-based lexicology research studying the contexts of word use to illuminate quantitatively sociolinguistic aspects of word use such as gender and age-related differences, dialects, and register (Saito and Ishii (eds.) 2011).

In the theoretical approach, on the other hand, focus is on the abstract "mental lexicon" a native speaker has in his mind and aims to clarify the various constraints on word formation found in Japanese in view of linguistic universals and language-specific realities. The main thrust of research within this tradition has been to locate word formation within the overall architecture of the grammar and to clarify the interactions and interfaces of morphology and syntax, semantics, and phonology. Since the boundary between morphological structure and syntactic structure is often

unclear in an agglutinative language like Japanese, it is necessary to pay attention not only to word formation in the lexicon but also to word formation in syntax. Kageyama (1982), providing an overview of the various word formation processes in Japanese from a 1980s generative grammar viewpoint, was a pioneering work that argued that word formation in Japanese not only takes place within the lexicon but is also related to syntactic structure. Inspired by this work, Sugioka (1986) investigated the interactions between morphology and syntax. As an agglutinative type language, Japanese offers concrete phenomena concerning the great theoretical issue of how to define a "word", or in other words, at what component of the grammar word formation takes place. Shibatani and Kageyama (1988), Kageyama (1993), Matsumoto (1996), and Nishiyama (1998) have gone on to develop their respective theories concerning this question.

In Section 2 of this chapter, we will first explain the vocabulary strata that make up the Japanese lexicon and the characteristics of each stratum. Vocabulary strata are essentially word classes categorized by their historical origin. In the four vocabulary strata generally distinguished, besides vocabulary indigenous to Japan (native Japanese), there are words that entered from Chinese (Sino-Japanese), words borrowed more recently from non-Chinese foreign languages (Foreign), and words that express non-linguistic sounds or cries or vividly express states or actions or physical sensations (Mimetics). In Section 3 we will examine the principal types of word formation in Japanese and their relation to the properties of these strata. It will become clear that the applicability of such word formation processes as compounding, derivation, conversion, reduplication, and clipping varies to a large extent depending on the vocabulary stratum. Finally, in Section 4 we will consider as a topic for future research how to capture the essential properties of these vocabulary strata from a synchronic point of view.

2 Vocabulary strata in contemporary Japanese

In this section we will first describe how the four types of vocabulary strata: native Japanese, Sino-Japanese, Mimetics, and Foreign, are distinguished in the modern Japanese speaker's mental lexicon (Section 2.1) and then explain the principal characteristics of each stratum (Sections 2.2–2.6).

2.1 Distinction of four vocabulary strata

Just as the English lexicon consists of foreign borrowings from French, Latin, Ancient Greek, and other languages overlaid on a basic indigenous vocabulary of Germanic origin, the Japanese lexicon also consists of a number of different vocabulary strata stacked on one another. Word categories based on historical and derivational origins are called *gosyu* or "word types" in traditional Japanese language

studies and four word types are distinguished: a) *wago* (indigenous, native Japanese words), b) *kango* (words entering from Chinese, Sino-Japanese), c) *gairaigo* (words other than *kango* entering from foreign languages since the 16th century, Foreign), and d) *konseigo* (hybrids). As an example of the thinking in traditional Japanese language studies, let us consider the typology presented by Tamamura (1984) in Table 1.

Table 1: Classification of word types in traditional Japanese grammar

Word type	Writing	Examples
1. *Wago* or native words	*hiragana* syllabary *katakana* syllabary Chinese characters	これ *kore* 'this', ある *aru* 'be' ワンワン *wanwan* 'doggy' 山 *yama* 'mountain', 高い *takai* 'tall'
2. *Kango* or Sino-Japanese words	Chinese characters	愛 *ai* 'love', 大学 *daigaku* 'university'
3. *Gairaigo* or Foreign words	*katakana* syllabary Roman alphabet	ミルク *miruku* 'milk', クラス *kurasu* 'class' PC (personal computer)
4. Hybrid words	*hiragana*, *katakana* Chinese characters	あんパン *an-pan* (Native-Foreign) 'bean-jam bun', 表玄関 *omote-genkan* (Native-S.J.) 'front entrance'

(Adapted from Tamamura 1984: 110)

Three things should be noted about Table 1. First, it associates word type with the four kinds of orthography characteristic to Japanese: *kanji* (Chinese characters), the *hiragana* syllabary, the *katakana* syllabary, and the Roman alphabet. Roughly speaking, Sino-Japanese words are in principle written with Chinese characters, Foreign words in *katakana*, and, among native Japanese words, function words like particles and conjunctions in *hiragana*. However, since each orthography generally has a characteristic perceptual image with *hiragana* having a soft, gentle image, Chinese characters a stiff, formal image, and *katakana* a stylish image, the orthography is sometimes changed depending on the non-linguistic image the writer wishes to convey.

A second point to note about Table 1 is that the category of hybrid words is given the same status as native Japanese, Sino-Japanese, and foreign words. Since the category termed "hybrid" designates words that arise as a result of word formation processes like compounding or derivation, there is no need to posit hybrid as an independent category from the perspective of analyzing modern Japanese.

The third point to note about Table 1 is that mimetics like *wanwan* 'a dog's bark, a doggy' are included in the *wago* category. This type of word is often referred to by the term *onomatope*, 'onomatopoeia', from the French *onomatopée*. Originally, *onomatopée* referred to words mimicking non-linguistic sounds and are sometimes

taken as being "primitive" or "childish" in Western linguistics. In Japanese, however, the range of words covered by the term *onomatope* is much broader than simple onomatopoeia mimicking sounds of nature or the voices of human or animals; it also includes phenomimes (*gitaigo*), which capture the appearance or form of an action or happening or the state or properties of some object and psychomimes (*gijōgo*), which express physical sensations and psychological states. As a term to capture all of these uses and meanings inclusively, the English terms "mimetics" or "mimetic words" are generally used. Since, like the native Japanese stratum, most mimetics are considered to have been present in Japanese from ancient times, before the introduction of Chinese characters, traditional Japanese language studies do not posit an independent category of "mimetics". However, mimetics are not limited to the category of native Japanese words. In fact, there are many types, including some, like *bikkuri* 'surprised', that violate a basic phonological constraint on native words that they should not begin with a voiced obstruent and some, like *seisei-suru* 'feel relieved', in which a Sino-Japanese morpheme is reduplicated. Furthermore, mimetics often differ from other strata in their phonological, morphological, and syntactic behavior (see Chapter 4 [Akita and Tsujimura, this volume]). For these reasons, it is common to treat mimetics as a single class (McCawley 1968; Shibatani 1990; Itô and Mester 1999; Nishio 2002; Irwin 2011; among others).

Defining word types from a purely historical standpoint has many difficulties and is not very useful in analyzing contemporary Japanese. Even though a word may historically originate as a foreign borrowing, in many cases it has been completely assimilated as a fully Japanese word from the perspective of a modern Japanese speaker. For example, *tya* 'tea' is a word that entered Japanese from Chinese and *syake* 'salmon' from Ainu and their word initial palatal consonants [tʃ] and [ʃ] did not originally exist in Japanese. However, these are ancient borrowings and, to a modern Japanese speaker, are fully assimilated into Japanese. For example, *tya* takes the beautific prefix *o-* becoming *o-tya* and when *syake* is compounded as in *beni-zyake* 'red salmon', it undergoes *rendaku* or sequential consonant voicing. The prefixing of *o-* and sequential voicing of consonants are phenomena that normally only occur with native Japanese words.

As seen in the examples of *tya* and *syake*, it is not uncommon for a single given word to simultaneously have characteristics of multiple vocabulary strata. With this caveat, however, we will examine in this section the archetypical characteristics found in the four vocabulary strata: i) *wago* 'Native', ii) *kango* 'Sino-Japanese', iii) *gairaigo* 'Foreign', and iv) Mimetic. Figure 1 illustrates the temporal flow showing the era since which each vocabulary stratum has been a part of Japanese. In contrast to native words and mimetics, or at least a portion of them, that were part of Japanese before the introduction of writing (Chinese characters), Sino-Japanese entered from the middle of the 8th century and foreign words from the 16th century.

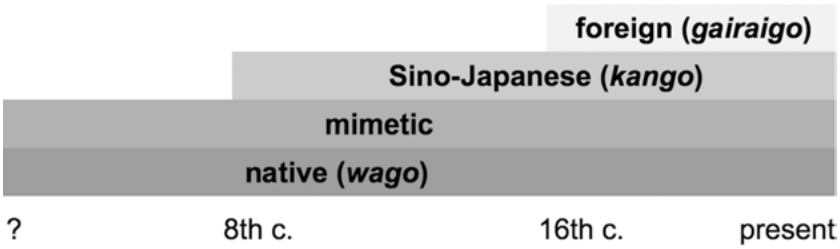

Figure 1: Historical view of vocabulary strata

Besides the historical view, what evidence is there for a distinction of vocabulary strata in the analysis of modern Japanese? The differences a Japanese speaker feels are not just phonological and morphological characteristics of the strata. Germanic-Latinate pairs like *cow-beef* and *pig-pork* are found in English, but Japanese is even richer in having near-synonym sets of items from different vocabulary strata and the difference in strata occasions a predictable difference in the meanings of the synonyms in those sets. Consider the examples in (1).

(1) a. *yado* 'lodging' (native), *ryokan* 'inn' (S-J), *hoteru* 'hotel' (foreign)

b. *akari* 'illumination' (native), *dentoo* 'electric lamp' (S-J), *raito* 'light' (foreign)

c. *inu* 'dog' (native), *(keisatu-)ken* '(police-)dog' (S-J), *doggu(-huudo)* 'dog(-food)' (foreign), *wanwan* 'bow wow' (mimetic)

The words given in each set (1a, b, and c) are close in meaning, but they are not completely synonymous. In (1a) the native word *yado* denotes the general concept of lodging, inclusive of Japanese-style lodging (Sino-Japanese *ryokan*) and Western-style (foreign *hoteru*). Similarly, *akari* in (1b) denotes a general concept that includes the S-J *dentoo* and the foreign *raito*. Speaking more generally, when dividing the conceptual level of a noun into "superordinate concept → class concept → subordinate concept", the class concept, which forms the standard for noun categorization, is generally denoted by a simple native word, as in *hi* 'sun', *kaze* 'wind', *ame* 'rain', or *uma* 'horse', *inu* 'dog', *saru* 'monkey' and a subordinate concept is often shown either by a compound native word having the structure (specific difference + class concept) as in *haru-kaze* 'spring breeze', *hama-kaze* 'beach wind', *soyo-kaze* 'refreshing breeze' or by a derived native word like *ko-inu* 'puppy' (Morioka 1970). The characteristic that the native word shows the basic or general concept also applies in the case of verbs and adjectives.

If we posit the four vocabulary strata of Native, Sino-Japanese, Foreign, and Mimetic, we can regard the category of hybrid words, which was problematic for traditional Japanese language studies, as a combination of different strata. The

theoretically possible 12 combinatorial patterns (compounds) of the different strata shown in Table 2 are all attested in reality.

Table 2: Patterns of hybrid words

right-hand left-hand	**Native**	**Sino-Japanese**	**Foreign**	**Mimetic**
Native	—	**common** *nikai-date* 'two-storied'	**common** *mado-garasu* 'window pane'	**common** *hara-peko* (stomach-empty) 'hungry'
Sino-Japanese	**common** *kiroku-yaburi* 'record-breaking'	—	**common** *zyuutaku-roon* 'housing loan'	**not common** *nekki-munmun* (heat-steamy) 'hot and stifling'
Foreign	**common** *amatyua-zumoo* 'amateur *sumo*'	**common** *terebi-bangumi* 'TV program'	—	**rare** *pan-tira* (panty-showing) 'panty shot'
Mimetic	**common** *garagara-hebi* 'rattlesnake'	**common** *tintin-densya* 'tinkling train'	**common** *bikkuri-man* (surprise-man) 'Bikkuriman'	—

The designations of "common", "not common", and "rare" suggest differences in the productivity of each pattern. Especially notable is the fact that the pattern of a mimetic in the right, head, position and a Sino-Japanese or foreign element in the left, modifier, position lacks productivity. Since, as a general rule, the rightmost (last) element in either syntactic or morphological structure in Japanese is the head, we can make the generalization that mimetics resist becoming heads. This generalization reflects the fact that mimetics archetypically function adverbially (McCawley 1968) and that compounds with adverbial heads are generally rare.

Below we will examine the principal characteristics of the native stratum in Section 2.2, of the Sino-Japanese stratum in Section 2.3, the foreign stratum in Section 2.4, and the mimetic stratum in Section 2.5.

2.2 Native stratum: *Wago*

Words in the native stratum, also called *wago*, are words peculiar to Japanese and form the core of the Japanese lexicon. The *wa* of *wago* originates from ancient Chinese 倭 (*wǒ*; ancient Chinese name for Japan) and the *go* 語 ('word') also comes from Chinese, so the term *wago* itself is from Chinese. The term *Yamato kotoba*

'Yamato language' (*Yamato* being an old name for Japan) is also used to refer to words that are originally Japanese. In the modern orthography, *wago* are generally written in *hiragana* or in a mixture of *kanji* and *hiragana*.

Wago have the following phonological characteristics (Tamamura 1984: 15–23; Labrune 2012: 16; and others).

(2) a. The basic prosodic unit is V (vowel only) or CV (consonant + vowel).
b. Absence of voiced obstruents /b, d, g, z/ or /r/ in word-initial position.
c. Absence of word-internal hiatus (consecutive vowels)
d. Absence of /h/ in word-internal position
e. Absence of palatalized consonants at word-initial position
f. Absence of syllabic nasal /N/ (called *hatsu-on* in traditional grammar)
g. Absence of geminated consonants (called *soku-on* in traditional grammar)
h. Scarcity of the /e/ vowel
i. Occurrence of sequential voicing or *rendaku* in nominal compounds

In terms of the length of a single word, measured by the number of mora it has, originally simple words in *wago* fundamentally had one mora, as in *me* 'eye', *te* 'hand', *ha* 'tooth', *ya* 'arrow', and *ke* 'hair', or two moras, as in *asi* 'foot', *koto* 'thing', *aru* 'exist (inanimate)', *hasi* 'bridge'. Words of three or more moras are often complex (compound, derived) words. Since single mora words are felt to be phonetically unstable, there is a strong tendency for single mora words like *ko* 'child', *ta* 'field', *na* 'name', or *ha* 'leaf' to be augmented phonetically or morphologically, as in *kodomo* 'child', *tanbo* 'field', *namae* 'name', or *happa* 'leaf'.

Grammatically, *wago* have the properties necessary to determine the framework of the syntactic structure and the native stratum is the only one that includes all parts of speech including lexical and functional categories. Parts of speech and *wago* examples are given in (3).

(3) a. Noun (N): *hako* 'box', *ki* 'tree', *me* 'eye', *kokoro* 'heart', *sakana* 'fish'
b. Verb (V): *asob-u* 'play', *su-ru* 'do', *yabur-u* 'tear' (tr.), *yabure-ru* 'tear' (intr.)
c. Verbal Noun (VN): [compounds] *kasi-kari* 'borrowing and lending', *tati-yomi* 'browsing in a bookshop'
d. Adjective (A): *maru-i* 'round', *yawaraka-i* 'soft', *kayu-i* 'itchy'
e. Adjectival Noun (AN): *odayaka-na* 'gentle', *makka-na* 'bright red'
f. Modal auxiliary (AUX): *rasii* 'it appears', *daroo* 'probably, I think', *yooda* 'it looks like', *sooda* 'I hear'

g. Adverbial (Adv): *kinoo* 'yesterday', *haya-ku* 'quickly'

h. Conjunction: *sosite* 'and', *sikasi* 'but', *oyobi* 'and'

i. Particle: *ga* (nominative), *no* (genitive), *o* (accusative), *kara* 'from', *to* 'with'

Like verbs in English, *wago* verbs show tense through inflectional endings affixed to the verb itself. Japanese does not mark person or number agreement. *Wago* verbs are divided into those with vowel-final stems, such as *tabe-* 'eat' and *koware-* 'break', and those with consonant-final stems, such as *nom-* 'drink' and *wakar-* 'understand'. Using *tabe-* 'eat' as an example of vowel-final stem verbs and *nom-* 'drink' as an example of consonant-final stem verbs, verbal conjugational forms are illustrated in Table 3 (this table is not an exhaustive list of all conjugational forms). For reference, the conjugation of the irregular verb *suru* 'do' is also included in Table 3.

Table 3: Verb inflections

	A. vowel-ending stem (*tabe-* 'eat')	**B. consonant-ending stem (*nom-* 'drink')**	**C. irregular verb *su-* 'do'**
1. Past	*tabe-ta*	*non-da*	*si-ta*
2. Non-past	*tabe-ru*	*nom-u*	*su-ru*
3. Infinitive (*ren'yō*)	*tabe*	*nomi*	*si*
4. Gerundive	*tabe-te*	*non-de*	*si-te*
5. Irrealis (*mizen*)	*tabe-* (e.g. *tabe-nai* 'eat-not')	*nom-a* (e.g. *nom-a-nai* 'drink-not')	*si-* (e.g. *si-nai* 'do-not')
6. Hypothetical (*katei*)	*tabe-reba*	*nom-eba*	*su-reba*
7. Cohortative	*tabe-yoo*	*nom-oo*	*si-yoo*
8. Imperative	*tabe-ro*	*nom-e*	*si-ro*

Returning to the list of lexical categories in (3), two categories that do not exist in English or other European languages should be noted: (3c) Verbal Noun (VN) and (3e) Adjectival Noun (AN). Theoretical issues concerning lexical categories will be taken up in Chapter 2 (Kishimoto and Uehara, this volume). The term Verbal Noun is due to Martin (1975) and is widely used in generative and cognitive studies on Japanese morphology. VN is a hybrid category that has the morphology of a noun on one hand but also has verbal functions in that it takes arguments (subject, object) and assigns cases. For example, *tati-yomi* [standing-reading] 'browsing in a bookshop' does not allow direct suffixation of tense endings as in **tati-yom-u* [standing-reading-PRS] or **tati-yon-da* [standing-reading-PST], but must be followed by the verb *suru* in order to express tense. Since *suru* takes the conjugational forms shown in column C of Table 3, *tati-yomi* conjugates as *tati-yomi-su-ru* [standing-reading-do-

PRS] and *tati-yomi-si-ta* [standing-reading-do-PST]. The category VN is thought to have been introduced through Sino-Japanese (*kango*) historically, but, as described later, in contemporary Japanese the category has spread to all vocabulary strata: *wago*, *kango*, foreign, and mimetics. The construction made up of a VN and *suru* is called a "light verb construction" and is discussed in detail in Chapter 12 (Miyamoto and Kishimoto, this volume).

Another hybrid category is that of (3e), Adjectival Noun (AN), which is morphologically a noun but syntactically functions as an adjective. The term Adjectival Noun is due to Martin (1975) and is used by Kageyama (1982, 1993), but Teramura (1982) calls this category *meishiteki-keiyōshi* 'Nominal Adjective'. In traditional Japanese grammar this category is called *keiyōdōshi* 'Adjectival Verb', but this term is based on the conjugational patterns of classical Japanese and is considered inappropriate for modern Japanese. In the same way that verbs and VNs differ, the inflections of normal adjectives and ANs also differ. Japanese adjectives inflect directly, as in Column A of Table 4. As shown in Column B, inflectional endings different from those of adjectives attach to ANs. Unlike verb stems, adjective and AN stems do not vary depending on inflectional endings. A pure adjective has no morphological difference in form between predicative and adnominal use; both forms end in *-i* in the non-past. ANs, however, have the characteristic that they attach *-da* for predicative use and *-na* for adnominal use (rows 2 and 3 in Table 4). See Chapter 2 (Kishimoto and Uehara, this volume), Chapter 13 (Takezawa, this volume), and Chapter 14 (Kageyama, this volume) for detailed discussion on the status of adjectives and ANs.

Table 4: Adjective and AN inflections

	A. Adjective (stem *waka-* 'young')	**B. Adjectival Noun (stem *sawayaka-* 'fresh')**
1. Past	*waka-katta*	*sawayaka-datta*
2. Non-past (or Present)	*waka-i*	*sawayaka-da*
3. adnominal (*rentai*)	*waka-i*	*sawayaka-na*
4. adverbal (*ren'yō*)	*waka-ku*	*sawayaka-ni*

Wago make up the basic vocabulary in Japanese and most nouns denoting fundamental concepts like body parts, natural objects, and natural phenomena are *wago*. The fact that most *wago* are basic words of few moras means that a single word designates a broad semantic range. As a result, for instance, the word *a-u* is written with a variety of different *kanji*: 会う, 合う, 遭う, and 逢う. The phenomenon known as *ijidōkun* (expressing the same meaning with different Chinese characters) in traditional Japanese language studies is, from a semantics viewpoint, a case of polysemy where one word expresses several, related, meanings or else is reduced to the phenomenon of homonymy where words with different meanings have the same pronunciation. While on the one hand, there are many cases like 丘 and 岡

(both *oka* 'hill') and 寂しい and 淋しい (both *sabisii* 'lonely') where hardly any clear meaning difference is perceived, there are also cases where the differences in *kanji* are linked to differences in meaning and use. For example, in the case of the *kanji* used for writing *a-u* (会う 'meet (with)', 合う 'match, suit', and 遭う 'encounter'), each can probably be regarded as a separate lexical item with a different meaning. How orthography is related to the linguistic properties of words in Japanese remains to be accounted for (see Nagano and Shimada (2014) for related discussion on the role of *kanji* as representations of lexemes).

Concerning productivity in word formation, *wago* are generally said to be less productive than *kango*, referencing the fact that it is difficult to make long compounds with *wago*. However, several researchers (Tamamura 1975; Saito 1992b; Nishio 2002) have pointed out that this observation is not completely correct. Fresh *wago* compounds are commonly found in specialized fields such as the stock market, for example, where specialized terminology like *taka-domari* [high-stop] 'a stock retains a high price without falling' or *soko-gatai* [bottom-firm] 'the market looks like it could go lower but it does not' are *wago* compounds. Also, the suffix *-sa*, for instance, which nominalizes an adjective or adjectival noun, is widely used not just with *wago* but also with words form the *kango*, foreign, and mimetic strata. Furthermore, this *-sa* has the characteristic that it can even attach to a syntactic clause, as in *sinsya o kaita-sa ni* 'out of desire to buy a new car' (Kageyama 1982; Sugioka 1986; Chapter 10 [Sugioka and Ito, this volume]).

2.3 Sino-Japanese stratum: *Kango*

The difference between the *wago* and *kango* strata in Japanese is similar to the difference between the Germanic stratum and the Latinate (French) stratum in English. In English, the base vocabulary was Germanic and from the 11th through the 15th centuries a vast number of words of Latin origin entered by way of French. Similarly, in Japanese as well, *kango* were piled on a *wago* base stratum from the 8th century on. Just as French was assimilated into English being thought more cultured and refined, in the case of Japanese as well, *kango* entered from China, which had a more advanced culture at the time. Because of this cultural background, *wago*, like Germanic words in English, give an impression of friendliness and ordinariness and belong to a neutral or colloquial register. On the other hand, *kango*, like French- or Latin-origin vocabulary in English, similarly have, on the whole, a stiff, formal atmosphere to them. For example, corresponding to the English pair "buy" and "purchase", Japanese has *kau* and *koonyuu-suru* and corresponding to "build" and "construct", Japanese has *tateru* and *kentiku-suru*.

Kango have the phonological characteristics shown in (4) (cf. Tamamura 1984; Labrune 2012; among others).

(4) a. Occurrence of palatalized consonants
b. Occurrence of voiced obstruments and /r/ at word-initial position
c. Occurrence of moraic nasals /N/ or *hatsu-on* as the coda of a mora
d. Occurrence of long vowels.
e. Occurrence of geminate consonants or *soku-on*
f. Absence of non-geminated /p/
g. Rarity of sequential voicing or *rendaku*

The phonological characteristics of *kango* listed in (4) are not found in the *wago* characteristics listed in (2).

Regarding lexical categories as well, *kango* differ greatly from *wago*. As described above, a defining feature of *wago* verbs and adjectives is that they inflect directly for tense as in *tabe-ru* [eat-PRS] 'eat(s)', *tabe-ta* [eat-PST] 'ate' and *akaru-i* [bright-PRS] 'is bright', *akaru-katta* [bright-PST] 'was bright'. *Kango* alone do not include a conjugable predicate form that can inflect for tense (foreign words and mimetics share this behavior). Since in general, borrowings from foreign languages enter as a noun concept (a kind of quote), even though the word may have been a verb or adjective in the donor language, it can be thought that when it enters Japanese, it is borrowed as a "noun" while retaining its predicating function, becoming the hybrid category VN (Kageyama 1982). VNs are archetypically *kango* and since they require the addition of *suru* to show tense, in traditional Japanese grammar it is customary to call VNs "*suru*-inflected Sino-Japanese nouns". From a linguistic point of view, however, this must be said to be doubly a misnomer. First, as shown by the example of *tati-yomi* in Section 2.2, not all VNs are Sino-Japanese, and second, as shown by examples (5b) and (5c) they need not always be accompanied by *suru*, being capable of taking subjects and objects alone (Shibatani and Kageyama 1988; Kageyama 1993).

(5) a. *Syatyoo* *wa* *Itaria-sei* *no* *kuruma* *o*
company.president TOP Italian-made GEN car ACC
koonyuu-si-ta. (with *suru* support)
purchase-do-PST
'The president of the company purchased an Italian car.'

b. *Syatyoo* *ga* *Itaria-sei* *no* *kuruma* *o*
company.president NOM Italian-made GEN car ACC
koonyuu *no* *sai* *ni* (without *suru* support)
purchase GEN occasion on
'When the president of the company purchased an Italian car, ...'

c. *Itaria-sei* *no* *kuruma* *o* *go-koonyuu* *no*
Italian-made GEN car ACC HON-purchase GEN
okyakusama *wa* (without *suru* support)
customer TOP
'the customer who purchased an Italian car. . .'

Further, as shown in (5c), a VN can take the subject honorification prefix *go-*.

In addition to noun, VN, and AN, *kango* parts of speech include numeral classifiers used when counting things, such as *-ri/nin* 'persons', *-hiki* 'animals', *-satu* 'volumes', *-mai* 'sheets', and *-dai* 'machines', adverbs like *totuzen* 'suddenly', *issai* 'never do', *kekkyoku* 'in the end', and *motiron* 'of course', and even conjunctions like *naisi* 'from . . . to . . .' and exclamations (interjections) like *tikusyoo* 'Damn!' and *banzai* 'hooray'.

One morphological characteristic of *kango* is that they come in units of a much wider variety of sizes than *wago*, from bound morphemes that cannot stand alone (root, suffix, prefix), through stand-alone words to a unit that is larger than a normal word but smaller than a phrase, termed "word plus" (Kageyama 2001b; Chapter 14 [Kageyama, this volume]). *Kango* are usually written in *kanji*, but those written with a single *kanji* are mostly bound morphemes. For example, except for a few fixed phrases like *gaku ga aru* 'have an education, be refined' and *gaku o tukeru* 'acquire an education, become refined', 学 *gaku* normally does not stand alone but occurs as part of a compound of two or more characters as in *gakkoo* [*gaku* + *koo*] 'school' or *daigaku* [*dai* + *gaku*] 'college, university'. However, there are also two-character *kango* like *koku-sai* 'international', *sek-kyoku* 'positive', *hon-kaku* 'orthodox', or *bap-pon* 'drastic' that cannot stand alone as free morphemes and require affixation of another *kango* morpheme to form a stand-alone word. Interestingly, when these two-character bound roots form a complex word with another element, they can only occur as the left-hand, modifying, part of the complex as in *kokusai-sei* 'internationalism, internationality', *sekkyoku-teki* 'affirmative', *honkaku-ha* 'fundamentalists', or *bappon-kaikaku* 'drastic reform'. They cannot be moved to the right-hand position to form compounds or derived words as shown by **isi-sekkyoku* 'intention-positive' or **hi-honkaku* 'un-orthodox'.

Regarding the length of *kango* in terms of mora, although there are a few one-more *kango* words like *tya* 'tea' that can be used independently, most are composed of two or more mora. According to Nakano (1973), the vast majority of words used in newspapers are four mora long. Since a single *kanji* is one or two mora long, a *kango* **n** characters long should vary in length from **n** to **2n** moras in length. However, according to Tamamura (1984), of the 2,029 distinct characters in the *Tōyō Kanji Onkunhyō* [List of Sino-Japanese and native readings for tōyō characters], only 488 characters or 24.05% had Sino-Japanese readings of one mora. That is, more than three-fourths of the characters have Sino-Japanese readings of two moras and thus $2 \times 2 = 4$ moras (i.e. two character) words are also common.

Since Chinese tones are not represented in the *kanji* orthography, even cases that are differentiated by the four tones in Chinese end up with the same accent coming into Japanese. In addition, because Japanese has the simple open syllable structure of V or CV, the original syllable structure of Chinese is considerably simplified when borrowed into Japanese. As a result of these phonological constraints, a large number of homophonous *kango* words have developed. Hayashi (ed.) (1982) lists a large number of homophonous words with different meanings culled from the list of homophonous words compiled by the Kokuritsu Kokugo Kenkyūjo (1961), all of which are *kango*. The string *koosyoo* had the greatest number of different meanings, being the pronunciation for 28 homophonous words, all written with different *kanji* compounds, for example 交渉 'negotiation', 口承 'pass on orally', 校章 'school emblem', 公称 'public name' and 公証 'notarization', among others.

Kango also contrast with *wago* in the semantic fields they cover. According to Miyajima (1980), in contrast to *wago*, which are more common in basic vocabulary like natural objects or natural phenomena, in other fields, especially those referring to human intellectual activity, *kango* are preponderant. Morioka (1970) found that words designating superordinate concepts like *doobutu* 'animal', *syokubutu* 'vegetable' or *seibutu* 'animate object', *museibutu* 'inanimate object', rather than class concepts, were nearly all *kango* and that some words designating class concepts, like *zoo* 'elephant', *kirin* 'giraffe' or *ringo* 'apple', *mikan* 'mandarin orange', were also *kango*. However, this does not mean that there are no *wago* denoting abstract concepts. The opposition between *mono*, which shows tangible or intangible objects, and *koto*, which shows events, actions, or states, is the most basic concept for classifying Japanese nouns.

Kango are often said to be more productive in word formation than *wago*. For instance, (6a) is an existing *kango* noun in Japanese and by adding various *kango* elements to it, a longer, more complex word can be created. The examples in (6b) and (6c) do not actually exist, but they are completely natural as Japanese words.

(6) a. *danzyo.koyoo.kikai.kintoo.hoo*
male.female.employment.opportunity.equality.law
'Equal Employment Opportunity Law'

b. [[*danzyo.koyoo.kikai.kintoo.hoo*] *kanren.jikoo*] (right iteration)
[[male.female.employment.opportunity.equality.law] related.matters]
'matters relevant to the Equal Employment Opportunity Law'

c. [[*kaisei* [*danzyo.koyoo.kikai.kintoo.hoo*]] (left iteration)
[[revision [male.female.employment.opportunity.equality.law]]
'Revised Equal Employment Opportunity Law'

It is possible to continue to extend (6b) and (6c) even further. However, it is impossible to create such long, complex words with *wago* alone, foreign words alone, or mimetics alone.

It is necessary here to give some attention to the meanings of the terms "word formation ability" or "productivity". In theoretical research in morphology, the terms "productivity" and "creativity" are distinguished and are used in roughly the following meanings (Lyons 1977; Bauer 2001; Kageyama 2010; among others).

(7) a. productivity: a design-feature of the language system

b. creativity: the language-user's ability to extend the system by means of motivated, but unpredictable, principles of abstraction and comparison (Lyons 1977: 549; cf. also Bauer 2001: 63)

"Productivity" is the ability to make a new word with a given rule based on a given morphological structure, both of which are determined by the morphology of the language under consideration, and is thought to be one of the abstract mechanisms of human language. "Creativity", on the other hand, is the coining of a neologism taking an existing word as a model, in response to the needs of metaphoric expression or social demands. Since the speaker's expressiveness is motivation for creation of the neologism in this case, people hearing such a coinage for the first time are often impressed by "an unusual way of putting things" or "an interesting, effective expression".

Bearing this distinction in mind, creative formation of neologisms is common with both *kango* and *wago*. Just as modeled on the S-J *koku-sai* lit. 'spanning multiple countries' or 'international', the neologisms *gaku-sai* 'spanning multiple academic fields', *syuu-sai* 'spanning multiple states', and *min-sai* 'exchanges across national borders by multiple citizens groups' have appeared, in *wago* as well a variety of expressions made up of compounds of the pattern *X-irazu* 'the state of X's being unnecessary' can be found, such as *isya-irazu* 'no doctor needed', *neko-irazu* 'no cat needed (rat poison)', *kusuri-irazu* 'no medicine needed', *kasa-irazu* 'no umbrella needed', *tuuyaku-irazu* 'no translation needed', and *pasokon-irazu* 'no personal computer needed'. This sort of neologism formation often stems from a need for naming in social life and deeply involves analogies with existing words.

Compared to these, the long expressions in (6) would not impress a Japanese speaker as being "interesting" or "out of the ordinary" as Japanese expressions. The sort of long, complicated complex words as in (6) are straightforwardly understood, even at first sight, and are interpreted as natural Japanese linguistic structures. Complicated complex words like (6a, b, c) are not arbitrarily created by analogy to existing words, but are the product of a linguistic property inherent in human language called the iterative application of compounding rules. Productivity, the unlimited creation of complex words, is a property of *kango*. Compounds and derived *kango* will be considered in detail in Chapter 3 (Kobayashi, Yamashita, and Kageyama, this volume).

2.4 Foreign stratum: *Gairaigo*

The term *gairaigo* literally means 'words coming from foreign countries', but in the analysis of modern Japanese it refers to borrowings into Japanese from languages other than Chinese since the 16th century, especially in the 19th century, that have a low degree of assimilation into Japanese, in particular, borrowings from western European languages like English, French, German, Italian, and Dutch.

Gairaigo differ greatly from native words in their phonological characteristics: including segments and sequences not found in native words, such as [*wi*, *wo*, *ʃe*, *tʃe*, *tsa*, *tso*, *ti*, *fi*, *fo*, *va*, *vi*, *vo*], allowing geminate voiced obstruents blocked by the phonotactics of native words, as in *baggu* 'bag' and *beddo* 'bed', and allowing /p/ in word-initial position, as in *pasu* 'pass' and *puran* 'plan'. Sequential voicing (*rendaku*) also does not occur with foreign words.

According to Nakano (1973) there are many frequently occurring foreign words with four or five moras, and the fact that the number of moras is greater than in other word types is a feature of foreign words. The reason foreign words are many mora long stems from the fact that the basic syllable structure of Japanese is CV and in order to fit a word from a language like English that allows consonant clusters into the CV pattern, a vowel must be added after each consonant. For example, the word "strike" is only one syllable in English, but when imported into Japanese as *sutoraiku* 'strike in baseball or bowling games' or *sutoraiki* 'labor strike', it becomes five mora long. Clipping often occurs with long foreign words, as it does with long *kango*, but of the words *sutoraiku* and *sutoraiki*, only the latter can be shortened to *suto*; the baseball *sutoraiku* never becomes *suto*. Clipping is discussed in more detail in Section 3.5 and Chapter 5 (Irwin, this volume).

Regarding the semantic fields shown by foreign nouns, as is only natural, they are particularly common for items originating in the West as in clothing (*sukaato* 'skirt', *burausu* 'blouse', *poketto* 'pocket'), machinery (*kamera* 'camera', *terebi* 'television', *razio* 'radio'), materials (*garasu* 'glass', *gomu* 'rubber', *buriki* 'tin') and food (*koohii* 'coffee', *pan* 'bread', *bataa* 'butter') (Miyajima 1980). A great number of these "*katakana* words" have been introduced in specialized fields like science, academics, the arts, economics, and politics and their unnecessary overuse by politicians and the mass media has become a social problem.

Earlier, when discussing word formation with *kango*, we said that creating a neologism in response to expressive need should be distinguished from making long complex words through the iterative application of compounding rules. Research on the lexicon in Japan has overwhelmingly treated the former type of new word creation as "productivity", and Miyajima (1977), Nomura (1984), and Ishino (1992), for example, have pointed to the growth in the number of foreign words in comparison with *wago* and *kango*. In contrast to this, foreign words have almost no rule-governed "productivity" in the sense of creating long complex words. For example, the foreign *tuubaifoo* 'two-by-four [2 × 4]' may appear complex at first

glance, but this is a borrowing from English, including even the preposition, and from a Japanese language view, is simply a single, simple word. When making compounds with this word as a base, it can appear in the left-hand, modifying position as in *tuubaifoo-koohoo* 'two-by-four construction method' and *tuubaifoo-zyuutaku* 'two-by-four housing', but no examples are found with it in the right-hand, head position. Furthermore, it is difficult to expand on it with foreign elements alone; a *kango* is needed in the right-hand, head position.

Finally, concerning parts of speech, foreign words, like *kango*, are basically brought in as nouns. For example, the English verb "sign" has been borrowed into Japanese as *sain*, but it is used either as a noun, as in *sain o morau* 'get a signature', or as a VN, as in *sain-suru* 'sign one's name' (Nishio 2002). As shown by the noun *abekku* 'dating couple' from the French preposition *avec* 'with' and the VN *suruu (-suru)* 'ignore, refuse to have anything to do with' from English "through", even a word that is a preposition in the donor language becomes a noun when it enters Japanese. Adjectives become ANs as shown by "elegant" becoming *ereganto-na* and "serious" becoming *siriasu-na*. In addition, phrases in English are borrowed as ANs or VNs, as in "give up" becoming *gibu-appu (-suru)* and "at home" becoming *atto-hoomu (-na)*. Furthermore, foreign words are never used as function words like adverbs or conjunctions. Loanwords from English are more fully discussed in Chapter 5 (Irwin, this volume).

2.5 Mimetic stratum

That words belonging to the mimetic stratum have special morphophonological properties compared with the other strata has long been known. Tamori and Schourup (1999), dividing Japanese mimetics into those with one-mora bases and those with two-mora bases, list the following characteristics (C = consonant, V = vowel, Q = moraic consonant, N = moraic nasal)

(8) Phonological structure of one-mora base mimetic morphemes

a. CV: *hu(to), tu(to)*

b. i. CVQ: *kaQ, saQ, haQ, huQ, hoQ*
ii. CVN: *kaN, koN, tyoN, baN, poN, waN*

c. CVV: *kaa, gaa, gyuu, guu, saa, zaa*

d. i. CVVQ: *kaaQ, saaQ, suuQ, baaQ, paaQ*
ii. CVVN: *kaaN, gaaN, kiiN, goon, baaN*

e. i. CVQ-CVQ: *kyaQ-kyaQ, kyuQ-kyuQ, kuQ-kuQ*
ii. CVN-CVN: *kaN-kaN, baN-baN, paN-paN, boN-boN*
iii. CVV-CVV: *kaa-kaa, gaa-gaa, kyaa-kyaa*

(9) Phonological structure of two-mora base mimetic morphemes

a. CV(C)V: *gaba, gui, soyo, hata, hisi, pui*

b. i. CVCVQ: *gusaQ, koroQ, pataQ, basaQ, paraQ*
ii. CVCV*ri*: *gusari, korori, basari, patari, pokiri*

c. CVCVN: *kotuN, goroN, dokiN, bataN, potoN*

d. i. CVQCV: *doQka, haQsi, suQku*
ii. CVNCV: *muNzu, zaNbu*

e. i. CVQCV*ri*: *gaQkuri, guQtari, baQsari, baQtari*
ii. CVNCV*ri*: *geNnari, koNgari, huNwari, boNyari*

Included in these are a wide variety of mimetic words ranging from those that are sound symbolic, mimicking actual sounds, to those that express an occurrence or the manner of an action.

The problem of sound symbolism found with expressions that mimic non-linguistic sounds has long been studied. For example, as seen in the pairs *kataQ* 'something hard falling' and *gataQ* 'something heavy falling', *karakara* 'clatter' and *garagara* 'rattle', *sarasara* 'rustle' and *zarazara* 'rattle', where there is an opposition in the initial consonant between voiceless and voiced, the voiceless alternative is linked with an image of "lightness" and the voiced one with an image of 'heaviness" (Izumi 1976). Tamori and Schourup (1999) say that the suffix *-ri* conveys a "relaxed feeling" or "completion", a word-final geminate consonant conveys "instantaneity", "a sense of speed", or "abrupt ending", a moraic nasal added to the end of the word conveys "resonance", a long vowel in an onomatopoeic word shows a "physically drawn out sound in the world of nature", and repetition signals "repetition or continuation of an action". Similar sound-meaning correspondences in mimetic words are also investigated by Hamano (1998).

Do mimetics have lexical categories? As McCawley (1968) points out, mimetics are basically adverbs, but they have verb-like, adjective-like, and noun-like functions as well. According to Kageyama (2007), as shown in (10), grammatical function changes with a change in the location of accent (capital letters represent high-pitched moras), at least in the Kansai dialect.

(10) *garagara*

a. verbal: *Nodo ga GAragara suru.* 'My throat feels irritated.'

b. adverbial: *Iwa ga GAragara to kuzureta*. 'Large boulders came rumbling down.'

c. adjectival: *Eigakan wa garagaRA datta.* 'The movie theatre was almost empty.'

d. nominal: *Akatyan ni GARAGARA o ageta*. 'I gave the baby a rattle.'

When the first mora is high, as in *GAragara* in (10a) and (10b), the word has a verbal or adverbial function and expresses the dynamic aspect of the situation. When, on the other hand, the last mora is high or the word had a uniform high pitch as in (10c) and (10d), it takes on an adjectival or nominal use and expresses a static aspect. This kind of difference suggests that mimetics do have lexical categories. However, as with foreign words, the mimetic stratum does not have functional categories like conjunction or particle. A comprehensive discussion of mimetics is given in Chapter 4 (Akita and Tsujimura, this volume).

2.6 Quantitative change of vocabulary strata

As a conclusion to the discussion of vocabulary strata, we touch upon the quantitative distribution of the four vocabulary strata. What proportion of the modern Japanese lexicon does each stratum occupy? Also, can any changes in proportion be seen over the relatively short time period of a few decades? There are differences between spoken and written language in the quantitative makeup of the word types; within spoken language further differences arise depending on whether we look at private or public speech; and within written language there are differences depending on whether the materials for analysis are newspapers, magazines, or textbooks. As one example of change over time, we compare two surveys of words used in magazines taken close to 40 years apart and examine how the distribution of the vocabulary strata has changed (note: the mimetic stratum is included in the *wago* count).

Table 5: Change in the distribution of vocabulary strata in magazine articles

		wago	**S.-J.**	**foreign**	**hybrid**
90 magazines surveyed in 1956	type count	36.7%	47.5%	9.8%	6.0%
	token count	53.9%	41.3%	2.9%	1.9%
70 magazines surveyed in 1994	type count	27.9%	36.3%	29.7%	6.1%
	token count	41.6%	45.9%	10.6%	2.0%

Table 5 compares the distribution of vocabulary strata found in two lexical surveys conducted by the Kokuritsu Kokugo Kenkyūjo (1964, 2006). The most striking result in Table 5 is the fact that the proportion of foreign words has roughly tripled over a period of 40 years. In the survey results from 1994, the proportion foreign words occupy of the total number of distinct words (type counts) has outstripped *wago*, confirming with real numbers the intuitive feeling of native speakers that there has been a recent trend toward increasing use of foreign words. However, looking at the results more closely, in both surveys the total of foreign words used as a proportion of total words (token counts) is no more than one-third the proportion of distinct words occupied by foreign words (type counts). In other words, while there is a rich

variety of foreign words, the number of basic, repeatedly used words is small. The increase in the number of foreign words has been called "a deluge of foreign words", but this is no more than a metaphor capturing superficially and impressionistically the phenomenon of a teeming variety of foreign words being used. However, a tendency for a portion of Western words to be absorbed as basic vocabulary does seem to be progressing, as with the use of *toraburu* 'trouble' to comprehensively include the meanings of *momegoto* 'friction between people', *isakai* 'dispute', *huwa* 'discord', *kosyoo* 'out of order', *huguai* 'flaw', and *syoogai* 'obstacle' (Saito and Ishii (eds.) 2011: 44–45). *Wago* show precisely the opposite distribution to foreign words. In both surveys the proportion occupied by *wago* of total words used is higher than the proportion of distinct words. This is because the native stratum includes a large number of basic vocabulary. It is particularly worth noting that in the 1956 survey, *wago* had the highest proportion of total words of the three strata (but were overtaken by *kango* in 1994).

This section has provided an overview of the characteristics of each of the four vocabulary strata. Particularly important for word formation is the type of parts of speech. Given that *wago* included all parts of speech, including both lexical and functional categories, it can be considered the stratum that forms the base of the Japanese lexicon. The stratum with the next largest number of part of speech categories is *kango*. Not having particles and unable to directly inflect for tense, *kango* cannot be said to be completely assimilated into the grammar of Japanese, but the productivity of *kango* in word formation has contributed to giving Japanese its rich vocabulary. Next come foreign words. In terms of parts of speech, foreign words are close to *kango*, but since the foreign stratum does not including adverbs or conjunctions, the degree of assimilation of foreign words is lower than *kango*. Finally come the mimetics which, not having any clear distinction of parts of speech, is weak in terms of syntactic assimilation to Japanese compared to the other strata.

3 Word formation processes in contemporary Japanese

In this section we will describe what sorts of word formation processes Japanese has, giving examples from the four types of vocabulary strata. Looking at the languages of the world, word formation processes may be of the concatenative morphology type, arranging words and morphemes in a linear way, or they may be of the non-concatenative morphology type to which linear alignment does not apply. To illustrate the former type with an example from English, if *high* and *school* are put together in a linear fashion, *high school* results. Addition of *graduation* gives *high school graduation*, forming new words through simple concatenation and the interpretation of the word is derived compositionally from its structural composition.

In contrast to this, in English such phenomena as mutation, which derives a new form through a change of vowel in *sing–sang* or *foot–feet*; reduplication, as in *bye-bye* in which the same form is repeated; and clipping, as in the shortening of *information* to *info*, belong to non-concatenative morphology. In Japanese word formation through vowel changes (mutation) is not common, but otherwise nearly the same processes of word formation are found as in English.

In the following, after outlining the basic morphological properties of Japanese word formation from the standpoints of "word-based" and "morpheme-based" morphology (Section 3.1), we will describe compounding (3.2) and affixation (also called "derivation") (3.3) as examples of concatenative morphology, followed by a brief consideration of conversion (in particular, nominalization of the *ren'yō* or infinitive form of a *wago* verb) (3.4) concerning which opinions regarding categorization as concatenative or non-contatenative morphology is divided. Next will be a brief look at processes belonging to non-concatenative morphology, including reduplication (3.5), clipping (3.6), blending (3.7), acronym and initialism (3.8), and, as a special example, transposition (3.9).

3.1 Words and bound morphemes in word formation

In general theories of morphology, two major approaches have been proposed as to what kind of linguistic unit constitutes the base for word formation. Does word formation operate on words or on morphemes? In the "word-based" morphology theory of Aronoff (1976), regular, rule-based word formation applies at the level of the word, an independently occurring unit, as exemplified by the English compound word *basketball* (< independent word *basket* + independent word *ball*) and the derived word *quickly* (< independent word *quick* + suffix *-ly*), and complex words composed of non-independent morphemes are not formed by word formation rules but have an internal structure that is captured through word analysis, as in *re-mit*, *sub-mit*, and *trans-mit*. The motivation for this approach lies in the observation that compounds in English are basically formed of a combination of two independent words. The theory of word-based morphology contrasts with the theory of "morpheme-based" morphology (Halle 1973), an approach stemming from structural linguistics, where word formation may operate over bound morphemes, so that the *X-mit* words mentioned above, for example, are handled by a rule of word formation that attaches the prefix *X* to the base *mit* (meaning 'send'). In Japanese, it is not only full-fledged free-standing words that make compounds, but non-free morphemes ("bound roots") also participate highly productively in the formation of complex words, as will be shown below. A full description of the Japanese word formation system will thus call for an integration of the merits of both approaches.

Japanese words are traditionally classified into two groups, inflecting words (*yōgen* lit. 'predicate words') and non-inflecting words (*taigen* lit. 'nominal words').

Non-inflecting words, in particular nouns, are generally free-standing units and participate in word formation in their dictionary forms. Thus two independent nouns, *pasokon* 'personal computer' and *desuku* 'desk', both in the Foreign stratum, are combined into the compound *pasokon-desuku* 'PC desk' without any morphological change. *Wago* compound nouns also appear at first glance to be composed of two independent words. For example, the compound *ame-onna* 'a woman who is supposed to bring rainy weather whenever she comes' appears to be a simple combination of the two words *ame* 'rain' and *onna* 'woman'. However, in the compounds *ama-asi* 'the way it rains' from *ame* 'rain' + *asi* 'leg', *saka-ya* 'liquor store' from *sake* 'liquor' + *ya* 'shop', and *ko-kage* 'shade of a tree' from *ki* 'tree' + *kage* 'shade', the final vowels of the first elements, *-e* and *-i*, have changed to *-a* and *-o*, respectively, and the variant forms *ama-*, *saka-*, and *ko-* only appear as the first members of compound words. There are also many cases where a phonological change in the initial segment of the second element occurs, for example insertion of *-s-* in *haru-same* 'spring rains' from *haru* 'spring' + *ame* 'rain' and voicing of an unvoiced consonant (so-called *rendaku*) as in *tabi-datu* from *tabi* 'journey' + *tatu* 'set out'. Again the variants *same* for 'rain' and *datu* for 'set out' do not function as independent words. There are many proposed explanations for these phonological alternations, including historical studies, but whatever the explanation, these phonological phenomena serve the role of giving the two joined elements of the compound a phonetic unity. Since such phonological changes generally arise at the level of tightly bound morphemes, it can be thought that *wago* compounds that appear to be two words joined together are actually not "word + word" but are really "bound morpheme (root) + bound morpheme (root)".

The bound status of compounding elements is even more apparent in inflecting words, i.e. verbs and adjectives in the *wago* stratum. It is a general rule of Japanese morphology that native verbs and adjectives undergo compounding, derivation, and other kinds of word formation in specific bound forms that are stripped of inflectional endings. When adjectives occur in the left-hand position of complex words, they appear as bare "stems", such as *waka-* 'young' in the compound *waka-mono* [young$_{\text{STEM}}$-person] 'youngster' or *atataka-* 'warm' in the derived noun *atataka-mi* [warm$_{\text{STEM}}$-SUF] 'warmth' (adjectival stems are generally bound and can stand alone only in a special use as exclamations in colloquial speech, as in *Waka!* 'Oh, he/she is so young!'). The bases of verbs for word formation, on the other hand, are twofold. When they appear as the left-hand member of a compound, the infinitive (or *ren'yō*) forms serve as bases, such as *tabe* 'eat' in *tabe-mono* [eat$_{\text{INF}}$-thing] 'food' and *nomi* 'drink' in *nomi-mono* [drink$_{\text{INF}}$-thing] 'drinks'. Most verb infinitives are also bound except for cases that are lexicalized as nouns, as in *tutumi* 'package' (< *tutum-u* 'to wrap'). When verbs undergo suffixation, on the other hand, the bare stems serve as the base, as in *nom-* 'drink' for *nom-ase(ru)* [drink$_{\text{STEM}}$-causative suf. (PRS)] 'make someone drink' or *yorokob-* 'be delighted' for *yorokob-asi(i)* [be.delighted$_{\text{STEM}}$-SUF (PRS)] 'delightful'. It is not known why verb infinitives are exploited in the left-

hand position of compounds. Incidentally, inflectional or conjugational endings are invariably attached to stems for both verbs and adjectives, as in *nom-u* 'drink' [drink$_{\text{STEM}}$-PRS] (< *nom-* + *-ru*) and *yasasi-i* 'be kind' [kind$_{\text{STEM}}$-PRS].

The combining forms of verbs and adjectives are summarized in Table 6, and the possible combinations of bound and free morphemes available in Japanese complex words are surveyed in Table 7.

Table 6: Bases of verbs and adjectives for word formation

	verbs as bases	**adjectives as bases**
compounding	infinitive (or *ren'yō*) + X	stem + X
suffixation	stem + suffix	stem + suffix

Table 7: Combinations of bound and free morphemes

	compounding	**derivation**
free + free	*pasokon-desuku* [PC$_{\text{N}}$-desk$_{\text{N}}$]	—
bound + bound	*ama-gasa* [rain$_{\text{N}}$-shade$_{\text{N}}$] 'umbrella', *rai-niti* [come$_{\text{VN}}$ (S-J)-Japan$_{\text{N}}$ (S-J)] 'visit to Japan' (cf. Section 3.2)	*saka-ya* [liquor$_{\text{N}}$-SUF] 'liquor shop', *atataka-mi* [warm$_{\text{A-STEM}}$-SUF] 'warmth'
free + bound	*mizu-maki* [water$_{\text{N}}$-sprinkle$_{\text{V-INF}}$] 'watering'	*sinsi-rasi(i)* [gentleman$_{\text{N}}$-SUF (PRS)] 'gentlemanly'
bound + free	*nomi-mono* [drink$_{\text{V-INF}}$-thing$_{\text{N}}$] 'drinks', *huru-hon* [old$_{\text{STEM}}$-book$_{\text{N}}$] 'used book'	*ma-minami* [PREF-south$_{\text{N}}$] 'due south'

Although the stems and infinitives are, in principle, morphologically bound, when we show their lexical categories they are simply labeled V and A, respectively, and their morphological status will be tagged only when necessary, as in V$_{\text{INF}}$ and A$_{\text{STEM}}$. Furthermore, inflectional endings will be sometimes shown in parentheses, as in *nom(u)* 'drink' and *yasasi(i)* 'be kind', to represent their inflectional status.

3.2 Compounding

Compounds are often characterized as a word composed of more than one word (or free morpheme), but Japanese exhibits compounding of two bound morphemes as well. A productive example is found in two-character Sino-Japanese VNs of the pattern "verbal morpheme + nominal morpheme". Such VNs range from those that are highly productively expandable to those of low productivity, but as one example of high productivity, we can point to the pattern *rai-X* meaning 'come to some country

or city' (Sibata 1978). As long as there is a place name that can be represented by a single character "X", the possibilities are unlimited. All of these can be used with *suru* 'do' suffixed.

(11) a. Cities: *rai-han* 来阪 'come to Osaka', *rai-sin* 来神 'come to Kobe or Kanagawa', *rai-yoo* 来葉 'come to Chiba', *rai-huku* 来福 'come to Fukuoka or Fukushima', *rai-satu* 来札 'come to Sapporo'

b. Countries and states: *rai-niti* 来日 'come to Japan', *rai-bei* 来米 'come to the U.S.A.', *rai-hutu* 来仏 'come to France', *rai-ei* 来英 'come to England', *rai-goo* 来豪 'come to Australia', *rai-in* 来印 'come to India', *rai-hu* 来布 'come to Hawai'i', *rai-ka* 来加 'come to California'

On the other hand, two-character words of the pattern "*satu* 'kill' + noun (target of killing)" are not very productive. Words of this pattern include *sak-kin* [kill-microbe] 'sterilize', *satu-zin* [kill-person] 'murder', *sas-so* [kill-rat], and *sat-tyuu* [kill-insect], but of these only *sak-kin* can function as a verb by attaching *suru* as in *sakkin-suru* 'sterilize'. Since *satuzin* 'murder' can be used in a collocation like *satuzin o okasu* 'commit murder', but not with *suru* as **satuzin-suru*, it is considered to be a noun, not a VN. Furthermore, *sasso* and *sattyuu* are bound roots and in order to stand as a word require support from a following element as in *sasso-zai* [kill.rat-drug] 'rat poison' or *sattyuu-ki* [kill.insect-container] 'bug zapper'. In spite of the limited productivity, it is clear that VNs of the form *satu-X* involve a morphologically transparent structure comprising two bound morphemes. The internal structure of *kango* and their productivity will be further discussed in Chapter 3 (Kobayashi, Yamashita, and Kageyama, this volume).

As we saw above, both independent words and non-independent bound roots can participate to varying degrees in word formation in Japanese. Bearing this fact in mind, let us examine some concrete examples of compounding. In compounds of the pattern "X-Y", the part of speech of the compound as a whole is archetypically determined by lexical category of the element that comes after. For example, in *hude-bako* 'pencil box' (N-N), *nage-nawa* 'lasso' (V-N), and *naga-banasi* 'long talk' (A-N), the categories of the first element are all different (N, V, and A), but, since the second elements are all N, the whole combination is a compound noun. Rephrasing, the right-hand element is the head that determines the lexical category of the whole compound (there are also quite a few examples that do not follow this "right-hand head rule" and they will be discussed in Chapter 6 [Namiki and Kageyama, this volume]).

The examples given in (12) through (14) all have right-hand heads that determine the category of the compound and transparent internal semantic relations.

(12) Compound nouns

a. Native: N-N *hude-bako* 'pencil box', V_{INF}-N *nage-nawa* [throw-rope] 'lasso' A_{STEM}-N *naga-banasi* 'long talk'

b. Sino-Japanese: *zen-zitu* [previous$_{BOUND}$-day$_{BOUND}$] 'previous day', *koo-en* [public$_{BOUND}$-garden$_{BOUND}$] 'park', *denki-zidoosya* [electric-car], *yuumei-haiyuu* [famous-actor], *kokusai-kankei* [international$_{BOUND}$-relation]

c. Foreign: *geemu-sentaa* [game-center] 'amusement arcade', *onrain-geemu* 'online game', *sohuto-tenisu* [soft-tennis] 'soft-ball tennis'

d. Mimetics: *garagara-pon* [rattle-pop] 'lottery wheel', *don-pati* [bang-flick] 'gun battle'

(13) Compound verbs/VNs

a. Native: N-V *nami-ut(u)* [wave-hit] 'to wave, ripple', V_{INF}-V *nagare-oti(ru)* [flow-fall] 'to flow down', Adv-V *saki-basir(u)* [ahead-run] 'to jump the gun'

b. Sino-Japanese: *syuk-ka (suru)* [break.out$_{BOUND}$-fire$_{BOUND}$ (do)] 'outbreak of fire', *doku-syo (suru)* [read$_{BOUND}$-book$_{BOUND}$ (do)] 'book-reading', *enkaku-soosa (suru)* [remote-control (do)] 'remote control'

c. Foreign: *reberu-appu (suru)* [level-up (do)] 'improve'

(14) Compound adjectives/ANs

a. Native: N-A *hara-guro(i)* [heart-black] 'black-hearted', A_{STEM}-A *hoso-naga(i)* [thin-long] 'long and narrow', V_{INF}-A *musi-atu(i)* [steam-hot] 'sultry', N-AN *hude-mame* [pen-be.diligent] 'be a good correspondent'

b. Sino-Japanese: N-AN *isi-hakuzyaku* [will-weak] 'weak-willed', VN-AN *kokyuu-konnan* [breathing-hard] 'difficult breathing'

As contrasted with the examples of hybrid compounds combining words of different vocabulary strata given in Table 2, the examples presented in (12), (13), and (14) are intended to illustrate combinations from the same vocabulary stratum, i.e. *wago* + *wago, kango* + *kango*, foreign + foreign, and mimetic + mimetic. Considering the vocabulary strata involved, while compound nouns (12) allow all four strata, since mimetics do not function alone as predicates, they do not appear in compounds that do function as predicates, namely compound verbs or VNs (13) or compound adjectives or ANs (14), which are restricted to the *wago*, *kango*, and foreign strata.

According to Lieber (1992), in English, compound nouns are plentiful but the productivity of verb-based compounds is low. Compared to this, it is a characteristic of Japanese that not only are compound nouns productive but also compound verbs and compound adjectives are also highly productive as categories that can stand

alone as predicates (Kageyama 2009). Moreover, as shown in (13a), a wide variety of categories can come before the V head in compound verbs, such as N in *nami-utu* 'wave, beat fast', V in *nagare-otiru* 'flow down', and Adv in *saki-basiru* 'be impertinent', and as seen in (14a), a variety of categories can also appear before the A head in compound adjectives, such as N in *hara-guroi* 'black-hearted', A (stem) in *hoso-nagai* 'long and slender', and V (inf.) in *musi-atui* 'sultry'. This word formation pattern seen in compound verbs and compound adjectives has been characteristic of Japanese since the time of Old Japanese (Sakakura 1966). Compound verbs of the pattern N-V will be discussed in Chapter 7 (Kageyama, this volume), the V-V pattern in Chapter 8 (Kageyama, this volume), and compound nouns will be covered in Chapter 9 (Yumoto, this volume).

3.3 Affixation

Because Japanese does not have infixes, derivational affixes are limited to prefixes and suffixes. Let us examine the use of prefixes and suffixes with concrete examples from each of the four vocabulary strata. Examples of prefixes include the following.

(15) a. Native prefixes: ***ka****-yowa(i)* [PREF-feeble] 'very feeble', ***bun****-nagur(u)* [PREF-beat] 'knock hard', ***hik****-kukur(u)* [PREF-tie] 'tie up', ***o****-tegami* [PREF-letter] 'your letter', ***ma****-ue* [PREF-above] 'right above', ***nise****-daia* [PREF-diamond] 'false diamond', ***mono****-sizuka* [PREF-quiet] 'very quiet'

b. Sino-Japanese prefixes: ***zen****-sekai* [PREF-world] 'all the world', ***tyoo****-oogata* [PREF-large.size] 'super large size', ***han****-tokeimawari* [PREF-clockwise] 'counter-clockwise', ***gen****-syatyoo* [PREF-company.president] 'current company president', ***zen****-daitooryoo* [PREF-president] 'ex-president', ***mai****-getuyoobi* [PREF-monday] 'every Monday', ***mu****-kiryoku* [PREF-vigor] 'apathetic', ***moo****-hantai* [PREF-opposition] 'fierce opposition', ***mi****-kaiketu* [PREF-solve] 'unsolved'

c. Foreign: ***noo****-bura* [no-bra] 'braless', ***mai****-kaa* [my-car] 'private car', ***hai****-tensyon* [high-tension] 'very excited', ***mini****-taiken* [PREF-experience] 'small experience'

d. Mimetic: ***doka****-yuki* [PREF-snow] 'heavy snowfall', ***zuba****-nuke(ru)* [PREF-stand.out] 'far excel', ***bura****-sagar(u)* [PREF-hang] 'dangle loosely'

As a rule, prefixes add some new meaning to the base but do not change lexical category. Among the *kango*, the negative prefixes *mu-* 'not, no' in *mu-sekinin(-na)* [no-responsibility] 'irresponsible' and *mu-kiryoku(-na)* [no-vigor] 'apathetic' and *hu-* 'un-' in *hu-kigen(-na)* [NEG-temper] 'sullen' are generally assumed to change