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Language and terminology planning in Iran:
The challenge of English abbreviated forms in Persian

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To my husband Christian

who makes me laugh when he coins funny abbreviated forms

Abstract (English)

The extensive borrowing of English abbreviated forms into other languages is a well-known 21st century phenomenon. English abbreviated forms create challenges for translators, terminologists and language planners of other languages, especially those seeking to promote local languages, including Iran's official language policy makers. The aim of this study was to investigate the usability of abbreviation methods in Persian, particularly in the framework of the official language plan aimed at promoting this rare term formation method in Persian in order to eliminate English abbreviated forms from Persian terminologies. Persian equivalents for foreign terms approved by the Academy of Persian Language and Literature during the period of 1997 to 2013 were examined to determine the applicability of the plan and the morphological potential of Persian for constructing abbreviated forms. The results showed that the outcomes of the plan may not always be completely comparable with English abbreviated forms.

In contrast to the traditional approach to the popularity of English abbreviated forms in Persian, whereby their prevalence is attributed to Principle of Least Effort, the arguments proposed here allow issues such as linguistic schemas and prestige to be considered. This study leads to a determination of the dissimilarity in abbreviation between the two languages and suggests that the different dynamicity of abbreviation in English and Persian is not only due to differences in the structures of the languages but also because of differences in the speaking communities' cogno-morphologies and sociolinguistic characteristics. The study emphasizes that the goals of language/terminology planning should be compatible with these three factors. It is particularly important in the context of terminology planning that planners are mindful that the language of habitual use is the most important means of teaching science and technology. Most notably, this study introduces an explanation for why each language has its own term formation methods.

Abstract (German)

Die weit verbreitete Entlehnung englischer abgekürzter Formen in andere Sprachen ist ein im 21. Jahrhundert wohlbekanntes Phänomen. Englische abgekürzte Formen stellen eine Herausforderung für Übersetzer, Terminologen und Sprachplaner in anderen Sprachen dar, besonders bei denen, die die lokale Sprache fördern wollen, wie es bei Irans Verantwortlichen für die Sprachentwicklung der Fall ist. Das Ziel dieser Studie war es, die Verwendbarkeit von Abkürzungsmethoden im Persischen zu untersuchen, besonders im Rahmen des offiziellen Sprachplans, der darauf abzielt, diese im Persischen seltene Bildung von Fachausdrücken zu fördern, um englische abgekürzte Formen in persischen Terminologien zu beseitigen. Persische Äquivalente für fremde Fachausdrücke, die von der Akademie für Persische Sprache und Literatur in der Zeit von 1997 bis 2013 gutgeheißen wurden, wurden untersucht, um zu überprüfen, ob dieser Plan angesichts des morphologischen Potentials des Persischen, abgekürzte Formen zu bilden, anwendbar ist. Die Untersuchung zeigte, dass die Ergebnisse dieses Plans nicht immer mit den englischen abgekürzten Formen vergleichbar waren.

Im Gegensatz zur traditionellen Deutung der Popularität englischer abgekürzter Formen im Persischen, bei der ihr Vorherrschen dem Prinzip des geringsten Aufwandes zugeschrieben wird, erlauben die hier vorgeschlagenen Argumente die Einbeziehung linguistischer Schemata und Fragen des Prestige. Diese Studie führt zu einer Bestimmung der Unterschiedlichkeit des Abkürzens bei den beiden Sprachen und weist darauf hin, dass die unterschiedliche Dynamik des Abkürzens nicht nur auf Unterschiede in den Strukturen der beiden Sprachen zurückzuführen ist, sondern auch auf die Kognomorphologien und die soziolinguistischen Charakteristiken der beiden Sprachgemeinschaften. Die Studie betont, dass das Ziel von Sprach/Terminologieplanung mit diesen drei Faktoren kompatibel sein sollte. Es ist besonders wichtig im Kontext von Terminologieplanung, dass die Planer im Auge behalten, dass die Sprache des gewohnheitsmäßigen Gebrauchs das wichtigste Mittel ist, um Wissenschaft und Technik zu unterrichten. Diese Studie beinhaltet auch eine Erklärung dafür, warum jede Sprache ihre eigene Methode zur Bildung von Fachausdrücken hat.

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Introduction¹

This is a language and terminology planning study. It addresses one of the most crucial and common questions confronting planners of languages other than English, that is, how the impacts of global languages on local languages should be dealt with. In the other words, which language policy should be adapted: internationalization or local language promotion? Those who are against prescriptivism usually say something like *Leave Your Language Alone!* (see Hall: 1950). Those who believe in some sort of prescriptivism, or technically speaking, language planning, concur with *Do Not Leave Your Language Alone* (see Fishman: 2006). In this study I will investigate one of the impacts of English on Persian and the challenges arising thereof.

Problem statement

English abbreviated forms are entering other languages not only by means of the borrowed forms themselves, but also through the introduction or encouragement of abbreviation as a word formation method in target languages.

The overwhelming prevalence of borrowed English abbreviated forms in both the general vocabulary and academic/technical terminologies of other languages has caused significant challenges for language planners, terminologists, publishers, scientific authors and translators in recent decades. In Iran, the lack of a consensus on how to deal with English abbreviated forms has led to erraticism in Persian terminologies in and between various branches of scientific knowledge.

Iran's official language policy making body, the Academy of Persian Language and Literature, has adapted a prescriptive approach and attempted to promote the Persian language through the implementation of an official terminology plan to accelerate rarely used abbreviation methods in Persian terminologies. They ratiocinate that English abbreviated forms are borrowed because of their conciseness, and following, that the infrequency of abbreviation in Persian morphology accelerates this process. The official plan pursues the coinage of Persian abbreviated forms as equivalents for English ones.

¹ Initial findings from the study described in this dissertation were presented at the 19th European Symposium on Languages for Special Purposes (LSP) 2013, and subsequently published in LSP proceedings.

The plan's effectiveness is limited by several factors, including the small amount of outputs produced and the low chance of their establishment in the language due to their lack of popularity. Moreover, the plan is implemented through a process of case-by-case decision-making, which is time consuming and expensive.

Gap in existing research addressed by this study

Previous studies mainly consider the advantages of abbreviation in Persian, and simply present opinions encouraging the use of abbreviation. Many such studies offer lists of abbreviated forms in an attempt to inspire the speaking community to use them. Little research focuses on the high prevalence of English abbreviated forms and the low frequency of Persian ones within an integrated context composed of several complicated contributing elements, including differences in the structure of the languages, linguistic schemas of the speakers and sociolinguistic factors.

Approach, questions and aim of the study

The study first addresses the phenomenon of borrowed English abbreviated forms in a global context, and then discusses a range of practical local solutions. As such, the approaches to English abbreviated forms in a number of languages will be reviewed. Following, the theoretical basis and outcomes of the plan for abbreviation in Persian are considered in order to:

1. compare the dynamicity of abbreviation in English and Persian
2. identify the applicability of the terminology plan for encouraging abbreviation in Persian.

The aims of the study are to determine:

1. The extent to which it is morphologically possible to apply abbreviation in Persian
2. The extent to which abbreviation is necessary or advisable in Persian
3. An explanation for the difference in the dynamicity of abbreviation across languages, which may be also relevant to other term formation methods.

The importance of this study

In a theoretical sense, this study is important because it employs research- and evidence-based methodologies to examine the issue of English abbreviated forms borrowed into a local language. It does so through an in-depth analysis of relevant linguistic theories as well as the

structure and social context of the Persian language itself, rather than relying on personal opinions and beliefs either in favor of or against abbreviation.

In a practical sense, this study may help those who are encountering borrowed terms, including English abbreviated forms, in their local language. This study may assist such people, regardless of their level of decision-making responsibility, to identify a suitable strategy for dealing with borrowed items.

The results of this study are specifically relevant to language and terminology planning institutions, especially the Persian Academy of Language and Literature. The Academy invests considerable financial resources in encouraging its approximately 70 technical committees, four terminology councils and Committee for Abbreviation to spend time and effort coining Persian equivalents for English abbreviated forms.

Data source

The collections of terms approved by the Academy of Persian Language and Literature during the period of 1997 to 2013 in different fields of knowledge comprise the source of data gathering for this study.

Scope

The present study addresses abbreviated forms coined for use in Persian scientific terminologies. Instances of abbreviation in general language and appellations are not considered in this study.

Audience

The main audience of this paper is language planners, terminologists as well as lecturers, authors and translators of scientific works from all range of fields of knowledge.

The structure of the dissertation

This dissertation is organized as follows: Chapter 1 is a historical summary describing the manner in which English has crossed geographical borders and affects other languages at varying linguistic levels. It also explains some of the key concepts and terms used in the study of language and terminology planning. Chapter 2 is a short review of the history of borrowing in Persian and the policies taken to address it. Chapter 3 defines the challenge of English abbreviated forms in a number of languages, including Persian, and presents a review of relevant literature. Chapters 4 and 5 describe the methodology that I applied to compare

abbreviation in Persian with that in English, and the results of this comparison. Chapter 6 discusses the theoretical basis and outcomes of the official terminology plan seeking to encourage abbreviation in Persian. It introduces an explanation for the inequality between the dynamicity of abbreviation methods in different languages, which is likely to be true in other instances of dissimilarity between languages. It also suggests strategies to address unresolved issues that have arisen during the implementation of the plan. The final chapter summarizes the outcomes of this study in the context of the long-term and ultimate aims of terminology planning, that is, the development of knowledge in target speaking communities.

1. Language and terminology planning

1.1. Introduction

This chapter begins with an explanation of the manner in which English crosses geographical borders and is able to influence other languages at varying linguistic levels. It will review some of the consequences of the English language's contact with other languages that have attracted the attention of language planners (and of course, politicians) and led to the formulation of policies and plans to address them.

Following, through a case study, we will see how language contact may not only traverse linguistic levels but may also penetrate the societal domain of a country through a state language policy.

This chapter will also explain some of the key theoretical concepts related to language and terminology planning relevant to the main discussion of the current study.

1.2. English: a motivation for language and terminology planning in the present time

If we were to go back 2000 years, we would not find anybody who spoke English because the English language did not exist then. However, in the present era, English is a global language and plays a vital role in communication throughout the world. It is not only the official or the semi-official language of about 70 countries but also the favored foreign language in over 100 countries around the globe without having any official status or being the mother tongue of a minority. Moreover, it affects many of other languages at different linguistic levels, especially their lexicons and terminologies. Before discussing such effects, we will review some of the factors that contributed to the emergence of English as the global/world language of this era.

David Crystal (2007) believes that 'a language has traditionally become an international language for one chief reason: the power of its people - especially their political and military power.' He adds that we learn from the history that a language's structure and the size of its vocabulary, or even the religion, culture and literature behind it, are not able to cause a language to become a global language. He supports his claim by reviewing some other international languages throughout history. He notes that Greek became a language of international communication in the Middle East over 2,000 years ago because of the armies

of Alexander the Great, not because of Plato and Aristotle. The legions of the Roman Empire spread the Latin language throughout Europe; Arabic obtained its status not due to Islam but by the force of the Moorish armies from the eighth century; Spanish, Portuguese, and French were widely spoken because of the ruthlessly implementation of the colonial policies of Renaissance rulers by their armies and navies. He summarizes his argument in one sentence: ‘the history of a global language can be traced through the successful expedition of its soldier/sailor speakers.’ Similarly, a statement attributed to Weinrach cleverly characterizes language as a result of political and military power, ‘languages are dialects with an army and a navy’. Budin and Wright (1997, 247) point to the historical reality that ‘from their beginnings as languages of national unity, all of them [so-called *world languages*] were used at one time or another at least in areas of government and economics to impose varying degrees of monolingualism within their expanding spheres of influence’.

The rise of English to the global level was not an exception. Crystal discusses two factors that caused English to be widely used around the globe. On the one hand, English acquired the status of a global language because of geo-historical factors. Historically speaking, a number of English speakers travelled around the globe in the nineteenth century and developed colonial systems in Africa and the South Pacific. In keeping with the direction of British political imperialism in the nineteenth century, the British army introduced the English language to the colonies. Moreover, in the twentieth century, many newly independent countries adopted English as an official or semi-official language. As a result, English speakers spread to every continent. On the other hand, the *economic power* that accompanied the language in some English-speaking countries also resulted in its maintenance and expansion. The role of the United States is undeniable. During the twentieth century, the American superpower guaranteed the continuation of the English language’s dominance up to the present time. In addition, English has remained the global language to date due to socio-cultural reasons. The dependence on the English terminology in many international domains, such as politics, business, communication, information technology and education motivates speakers of languages other than English to learn and spread it.

Furthermore, the development of different methodologies for teaching and spreading English, such as Basic English, one of the most ambitious teaching methodologies, cannot be ignored either. Halliday (1978) and Goodman and Graddol (1996) believe that Basic English had an undeniable role in the emergence of English as an international language. Basic (British

American Scientific International Commercial) English was introduced by Charles Kay Ogden, English linguist and philosopher, in his book *Basic English: A General Introduction with Rules and Grammar* (1930). Basic English was a controlled language composed of 850 words and 16 verb forms aimed to serve all communicate purposes. Ogden's ambition can be summarized in his statement 'what the World needs most is about 1,000 more dead languages – and one more alive.' Although both Winston Churchill and Franklin Roosevelt were interested in promoting it (Phillipson: 2009), Basic English never developed as an international auxiliary language. Many linguists and pedagogs were opposed. Phillipson (2009: 113-114) reports on the second Carnegie Conference in 1935, intended to spread English as a world language on a basis of UK-US collaboration, with the secondary goal of counteracting the influence of Basic English. The language specialists attending the conference saw Basic English as 'both educationally ill-conceived and contaminated by an imperialist agenda, a mission to create a world language at the expense of other languages.' However, Basic English is not dead and is now used for Simple English Wikipedia pages. (In order to obtain more information about the spread of English as a global language, and the causes and effects of its spread, see Algeo: 2001, Ferguson: 2006, Crystal: 2007, Spolsky: 2004.)

Obviously, these remarks are in contrast with the opinion of those who believe large spread of English all over the world is because of its 'richness in monosyllables, easy and fluent grammatical structures, concise constructions, and a rich and varied vocabulary which are tangible examples of maximum results achieved with the least efforts', as Vicentini (2003, 55) claims. However, Vicentini and other proponents of this argument should consider the key factors that influence an adult language learner to choose a particular language; a learner would rarely choose a language for its simplicity, but rather for a more practical purpose, a language that met her or his needs.

1.3. Language contact

A more exact term for the concept of *language contact* might be *language speakers' contact* since languages usually interact via speakers' contact - in written or spoken form. The situation in which two or more languages interact in the mind of bi-/multilingual persons, at any level of proficiency, occurs afterwards.

One of the most common consequences of language contact that can be observed in almost all languages is **borrowing**. The term borrowing is a metaphor for importing lexical or

structural items from other languages or varieties. Modarresi (2008, 60-61) considers borrowing a compensation that a speaking community pays to save its own language.

Borrowing occurs, more or less, on all linguistic levels:

- **Phonological borrowing**

Phonological borrowing refers to the borrowing of sounds. For example, one of the technological phenomena in recent decades is Bluetooth, a technology which is used to exchange data over short distances. The term is pronounced /blutuθ/ in English and is easily pronounced by English speakers because the term is created within the English sound system. In phonological systems of some other languages, like German and Persian, there is no voiceless dental non-sibilant fricative sound (/θ/). In such cases, either of these may happen: 1) phonological assimilation, in which the missing sound is pronounced like a nearby sound, such as by applying /s/ instead of /θ/ as in the case of the Persian pronunciation of foreign words like *Macbeth* and *Bluetooth*; and in less probable cases 2) phonological borrowing, that is, adopting a new sound or sound pattern and adding it to the phonological repertoire of the receiving language. The latter possibility usually occurs only in borrowed words; such as the pronunciation of Bluetooth as /blutuθ/ by many German speakers in Vienna. This case is an example of phonological borrowing from English in German. As Görlach (2009, 718) cites close imitation of foreign pronunciation can be regarded as affected or prestigious depending on the sociolinguistic context.

- **Lexical borrowing**

This type of borrowing is the most well-known form of borrowing and refers to the importation of words/terms from other languages. Lexical borrowing often happens following the entrance of new concepts and phenomenon into a recipient language and culture. However, as Modarresi (2008) explains, lexical borrowing may also result from increased familiarity with the phenomenon in another culture. For example, the term *coup d'état* is borrowed into many languages without the speakers of receiving languages actually experiencing the concept carried by the term *coup d'état*. It is widely believed that *OK* is the most widely borrowed word.

- **Word/term-formation borrowing**

Every language has its own systems of coining new words/terms based on other morphemes or words. However, it is not unusual to incorporate patterns, partly or entirely,

from one language into another. Word-formation borrowing may occur after intensive borrowing and when it becomes productive, can be discussed in terms of borrowed word-formation processes (Görlach: 2009).

This type of borrowing is one of the main topics of this study and it will be discussed more in the following chapters. We will see how Persian language planners have attempted to encourage abbreviation methods in Persian following the extensiveness of borrowed English terms.

- **Grammatical borrowing**

The process of language contact may introduce syntactic items and features from one language to another. Modarresi (2008, 73-74) provides some examples of compound forms that are formed in Persian, following Arabic grammatical rules in relation to gender and number declination of names and adjectives, such as *مكة معظمه* /mække-ye moʔæzzæme/. He also cites a number of plural forms in Persian which follow Arabic plural rules, such as plural forms for originally Persian words *استاد* /ostād/, *ده* /deh/, *سبزی* /sæbzi/ and *فرمان* /færmān/.

- **Writing system borrowing**

Writing system graphemes and diacritics can be imported along with borrowed words/terms; as seen in the French word *café* borrowed into English. Borrowing does not only occur through the importation of graphemes and diacritics accompanying particular borrowed words/terms but also in the form of whole writing systems. In the other words, language families and writing system families do not necessarily coincide. The same language used by different political entities may use different writing systems. A contemporary example is Persian, which is written in the Perso-Arabic script in Iran and Afghanistan but in Cyrillic in Tajikistan. The selection of a writing system may be a question of language policy and planning after political changes. For example, many languages in Central Asia that were originally written using the Arabic alphabet began to be written in the Latin alphabet in 1920s. During the 1930s or 1940s, many Central Asian nations adopted the Cyrillic alphabet, and some of them switched back to the Latin alphabet during the 1990s or in the early 21st century (Ager: 2014).

Borrowing and **interference** (from L1 or another primary language on an L2 in the course of second language acquisition) are the two broad categories of **contact-induced language changes** (Winford: 2005).

Borrowing is not always restricted to a number of linguistic items at micro levels; rather, it may also lead to the adoption of a whole language system at macro level of speech. This can be seen when a speech community adopts a language other than its own indigenous language(s) to communicate in certain situations. Such macro level borrowing can be called **code borrowing** (i.e. language borrowing). Code borrowing could be used in one certain domain (such as educational system) or more, or even as an official language as in Rwanda. After 1996 genocide, Rwandan government announced English as the third official language beside Kinyarwanda, which is the indigenous language of Rwanda and French, which is the Belgian colonial language since the 1920s.

At the primary level, code borrowing usually results in **language shift** and reduces the domains of native languages. Later on, in extreme cases, a potential outcome of code borrowing is the gradual disappearance of native language(s) from all domains. **Language death** happens when no native or fluent speaker of a particular language community is left.

In the following section, I will examine a *possible* example of code borrowing in our era.

1.3.1. Afghanistan: A case study and some preliminary definitions

Afghanistan's education system has followed various political systems and witnessed many changes in recent decades. During the presence of the Soviet Union in 1980s, its political system approached communism. The hard-line Islamist Taliban ruled the country from 1996 until 2001 and Afghanistan became a primarily fundamentalist state. The American invasion of Afghanistan and the overthrow of the Taliban have transformed the country yet again. The US military forces and the local administrators mainly communicate through English, with or without the assistance of translators and interpreters. This can be regarded as the first step of a *face-to-face* contact between the indigenous languages of the state and the global language. (I call it *face-to-face* contact because in such cases, language contact happens directly through the speakers of the languages, and not by means of writing or reading, which may not involve personal interaction between parties). The political consequences of the American invasion and the linguistic consequences of this language contact substantially depend on the country's socio-economical situation and, of course, ideologies of Afghan policy makers.

Swaan (2010) believes English is ‘the hub of the linguistic galaxy’ and like a black hole devours all languages that come within its reach. Swaan notes that although through language contact, one or both of the languages may change, language learning mostly occurs upward.

Time will tell as to whether Swaan’s proposition is true in the case of Afghanistan; but even now, some early indications in favour of his theory have emerged in the Afghanistan’s educational system. In June 2012, at a three-day seminar titled *a National Call for Higher Educational, Vocational System Reform and Employment in Afghanistan*, Afghan President Hamid Karzai announced a new policy for the language of higher education in Afghanistan, urging Afghan universities to offer medical and engineering courses in English. He cited lack of access to educational material and books as the main factor hindering economic development in Afghanistan (Sajad: 2012). Higher education courses are usually conducted in Dari (also called Afghan Persian) at Kabul University and other major universities of Afghanistan. Dari is, alongside Pashto, an official language of the state, and is the native language of almost half of the population. Uzbeki and Turkmen, Baluchi, Pashai, Nuristani and Pamiri (alsana) are third official languages in areas where the majority speaks them.

Karzai’s call for the introduction of English as the medium of education in university medical and engineering faculties was followed by a public discussion of the policy’s pros and cons. Those who agreed with the idea of teaching in English argued that we should accept that nowadays, scientific studies and their results are mainly published in English and that not all are translated into Dari. Proponents of this view suggested that the policy would help students to learn the current language of science and have access to more learning resources. While accepting that learning a new language is not always easy, supporters of the policy emphasized the crucial role of English in improving Afghanistan’s status in the science and technology field.

The opponents of Karzai’s policy, on the other hand, accused the government of intensifying an already dangerous brain drain caused by decades of war and conflict in the country (Afghan Brain Drain Fears over Education Reforms: Proposal Likely to Make Situation Worse: 2012). Furthermore, some argued that the policy would enfeeble native languages that are inseparable components of Afghanistan’s national identity. Opponents of the policy added that, according to Afghanistan constitution, the government is obliged to make effective plans to foster and develop all languages of Afghanistan. The argument was also made that the policy may have the effect of depriving those who have not mastered the English language

from studying medicine or engineering. Professor Abdul Hameed Layaan, Dean of the Kabul Faculty of Engineering, indicated that many Afghan university students acquire only a very basic English proficiency. In his opinion, the implementation of Karzai's plan would discriminate against students from rural areas due to the low quality or lack of English teaching at schools in those areas (Rouyee: 2012).

From the above-mentioned language policy proposed for the higher education system of Afghanistan, we can extract some of the main concepts of language planning in general.

Firstly, while Karzai stated the government's general intention that medical and engineering lectures would be conducted in English, the spokesperson for the Ministry of Education explicitly pointed out a lack of a specific budget or plan to prepare the infrastructure for this policy (Rouyee: 2012). Therefore, at present time, there is a goal but not a plan for implementing it. This statement of the intention only, without accompanying practical plans, is called **language policy**. A language policy alone may or may not lead to any change. However, as soon as practical steps are taken to influence the current situation, a government has engaged in **language planning** and we may expect result(s). Language planning is defined variously by many scholars. After examining twelve such definitions, Cooper (1989, 45) in his oft-cited book, *Language Planning and Social Change*, defines it as 'deliberate efforts to influence the behavior of others with respect to the acquisition, structure, or functional allocation of their language codes.'² Some experts emphasize the political approaches of language planning. According to Cillia and Busch (2006), language planning refers to conscious political activities aimed at influencing social communication systems in order to introduce desirable changes or to avoid undesirable ones. In this manner, it would not be without merit to propose that language planning is a misleading term. In the other words, while language planning may seem to be about languages, it is actually an attempt to change (or prevent to change) societies. It is more planning for a polity using *the excuse of a language* than *for a language*. As Cooper (1989, 182) states, to plan language is to plan society. Shohamy (2006, 148) argues that language policies frequently result in the violation of democratic principles and personal rights.

² Cooper's definition suffices for the purpose of this section, but I will modify and widen this definition in the forthcoming *Policy makers and language planners* section.

Language planning has different manifestations. Cooper (1989, 45) introduces the term **acquisition planning** for ‘organized efforts to promote the learning of a language’. The promotion of English may be one of the goals of acquisition planning in Afghanistan.

Secondly, Karzai’s call for universities to conduct lectures in English in important fields of study can be considered an initial step in the designation of English as a language to be used officially in the education system or the public sector. His policy reflects **status management**, which according to Spolsky and Lambert (2009, 455), ‘usually refers to the designation of languages as official for use in the public sector and in the education system.’ If the government has a plan to raise English to the status of a mode of communication in the education system, even though it has no official status in the Afghanistan Constitution, the plan can also be considered a kind of **status planning**. The **status** of a language or language variety is its standing relative to other languages or varieties and depends on the number and nature of the language domains. Within the language ecology of a society, a **high status language** (H) is essentially the public language of the state and **low status languages** (L) are used in domestic contexts (Ager: 2005).

While even well-defined status and acquisition planning does not necessarily guarantee any outcomes, we can be sure that if Karzai’s language policy for Afghanistan is implemented, it will decrease the status of official and non-official languages spoken in the country and raise the status of English. In the longer term, it might lead to Afghans’ total loss of ability to use Persian in particular fields due to a deficiency in the vocabulary necessary for professional communication. This situation is called **domain loss** (Laurén, Myking and Picht: 2006). Acquisition planning is one of the major strategies employed to influence the status of a language.

Thirdly, Karzai explicitly announced that the cabinet agreed with this policy because it would advance the economic development of the state; but he did not mention the disputes between the speakers of Dari and Pashto. Discussions about the word *university* in 2008 finally ended when the words *Balkh University* in Dari, Pashto and English were displayed on a sign over the entrance of the university campus (Photo 1.1). The conflict between an authority in the government and some members of parliament in September 2012 over the use of the Persian words for *university* and *university student* (and not the Pashto words) is another example of such conflict. There may be non-announced plans to gradually eliminate this conflict through the use of English as the medium of instruction. Such a plan would be considered an example

of the notion that Shohamy (2006, 29) describes, namely that language is the major tool for manipulating and controlling the social order of nation-states since language policy and planning always seek to manipulate the language behavior of societies.

Another factor that may have influenced the policy is the vicissitudes in the relationship between Afghanistan and Iran. While one cannot be sure of the hidden agenda behind Karzai's policy, we can usually identify some social and political goals in language policies. Schiffman (1996, 2) differentiates between 'the policy as stated' (**overt language policy**) and 'the policy as it actually works at the practical level' (**covert language policy**).

Photo 1.1- Balkh University (resource: www.bbc.co.uk)



Rabin (1971) offers a tentative classification of the language planning aims:

- '1. *extra-linguistic aims* deal with the use of a certain language or competing languages in a society, like selection of one language as the medium of instruction;
2. *semilinguistic aims* are combinations of language use and modifications in the linguistic system, such as to change a writing system or its features, spelling or pronunciation;
3. *linguistic aims* concern standardization of vocabulary, structure (phonology, morphology and syntax) and style.'

Finally, the President Karzai named Afghanistan's neighboring countries - India, Iran and Pakistan - as examples of countries that have made extensive advances in 'important fields', including medicine, through such an international focus on learning (Rouyee: 2012). It should be noted that the situation in Iran is different from India and Pakistan. Despite using many English resources, the medium of instruction in Iran at all educational levels is Persian, the sole official language of the country. Iran also follows **corpus planning** to develop the

national terminology. Corpus planning refers to the prescriptive intervention in the forms of a language, whereby planning decisions are made to engineer changes in the structure of the language (Ferguson: 2006).

Although corpus planning is targeted towards the structure of language, the boundaries between corpus planning, status planning and acquisition planning are fluid and all are usually at the service of one single language policy. As Kaplan and Baldauf (1997) point out, status planning and corpus planning are not separable and: ‘any change in the character of a language is likely to result in a change in the use environment, and any change in the use environment is likely to induce a change in the character of a language.’ On the other hand, language policy proper is often the result of policy makers’ ideologies about language and its functions in the community as well as the community itself.

Contact with a ‘foreign’ language may lead to different reactions in different locations. Some countries welcome foreign languages warmly, some react conservatively and some react at various levels in between. Interestingly, both Afghan and Iranian administrations succeed in advancing their economic development, but apparently through adopting two completely opposed language policies. The former tends to give English the status of a medium of higher education for some academic disciplines while the latter wishes to develop national terminology and preserve the official and national language against borrowed English terms. Using Cobarrubias’s (1983) terms for the taxonomy of typical ideologies initiating language policy in a certain community, the aforementioned Afghan language policy tends towards **internationalism** while Iran’s has a tendency towards **vernacularization**. Internationalism seeks more practical goals through the adoption of global languages like English and French to facilitate international communication, whilst vernacularization pursues the restoration and modernization of an indigenous language. Cobarrubias’s (1983, 63-66) taxonomy includes four typical ideologies underling language planning: linguistic assimilation, linguistic pluralism, vernacularization, and internationalism. He acknowledges that while these ideologies are the most frequently occurring ones, the categorization is not exhaustive. This study argues that one should accept that nationalism is one of the major incentives for vernacularization.

Two key questions arise from this discussion: who are policy makers and language planners, and what are their aims? I will discuss these issues briefly below.

1.4. Policy makers and language planners

Any linguistic or non-linguistic variable that triggers a person to think about a solution can form the core of a language policy and planning. Depending on the initiator's aim, her or his social and political stance, as well as their collaborators and the power that they can exercise, policy makers and language planners might range from the individual to the governmental level. One of the categorization systems used to describe this phenomenon is suggested by Tessa Carroll (2001, 24). She categorizes language planners into three groups:

- ‘1. government departments or agencies, which essentially play bureaucratic roles;
2. language academies, which have a cultural and literary focus;
3. organizations, interest groups, and individuals who are able to influence policy-makers in the interests of their particular linguistic cause, or work with them to promote agreed policies.’

For our purposes here, I will adopt this categorization in general with some added comments. My first critique of Carroll's system relates to the roles of governments. The activities of a government might extend beyond a purely bureaucratic role. In addition to their bureaucratic role, governments also frequently make macro-decisions to streamline language practices in a desired political direction, issue rules and regulations on the languages allowed to function in particular domains, and support, ignore or suppress language activists' efforts.

My second critique is about language academies' focus. It is not a rare practice for governments to establish language planning bodies, such as academies, and for their political units to pursue their political aims in this way. The establishment of such institutes by governments of recently-independent countries to support newly-recognized official languages is a good example of the political function of languages and the political role of some language planning bodies. On the other hand, some language planning bodies do not restrict their focus only to cultural and literary affairs but also play a role in the world of politics, and hence, language policy directions which they follow overtly or covertly. Moreover, it cannot be denied that cultural and literary affairs usually have political tendencies.

Finally, organizations, interest groups, and individuals can certainly be regarded as potential policy-makers and language planners, albeit on a smaller scale. However, if we restrict this category to those who are able to influence policy-makers, we will neglect to consider those who carry out language related activities and have a voice in society yet do not influence

policy-makers. This study argues that the activities of persons and organizations who wield influence on a small scale, even as small as their personal domain, should still fall within the umbrella term of language policy and planning. There is evidence of some individual activities which have snow-balled and formed a larger movement. It is not easy to ascertain at which stage such activities should be called examples of language policy and planning: from the very beginning of the formation of an idea or only after being able to influence policy-makers and gain their cooperation? Cooper (1989) reviews Ben Yehuda's individual efforts in Palestine. Ben Yehuda was a Russian Jewish journalist who moved to Palestine in 1881 and started to promote Hebrew as a language in all domains of the community from his own home. He used only Hebrew at home and attracted little attention at the beginning, but his efforts culminated in the revival of Hebrew as a vernacular language after being a liturgical and literary language only since about the year 200.

There is another noteworthy point here. Earlier in this section, I quoted Cooper's definition of language planning as 'deliberate efforts to influence the behavior of others with respect to the acquisition, structure, or functional allocation of their language codes'. Considering the role of individual efforts, which have been at the core of some linguistic movements, and given it is sometimes difficult to predict the policy which one person may drive, I would prefer to expand Cooper's definition of language planning so that it covers all deliberate efforts to influence not only the behavior of others but also one's own linguistic behavior as well.

Policy makers and language planners can be observed at the international level too. For instance, the determination of working language(s) for United Nations' (UN) delegates was a language planning question. The UN is an international organization with about 200 members that have different national and official languages. Hence, it was necessary to agree upon a limited number of common languages in which to communicate. The result of consultations and discussions was the conclusion that UN originally came into being with English and French as working languages. Subsequently, four other languages (Arabic, Chinese, Russian and Spanish) were added as official languages of the organization. Practically, this means that delegates may speak in any of the six official languages and that UN documents are often issued in all six languages.

Another international organization whose policy is a successful example in supporting linguistic and cultural diversity is European Union (EU). According to its official website, multilingualism is central to the EU's cultural diversity and hence, at the present time, the EU

has more than 20 official languages. Entire EU documents are available in all official languages and members of European Parliament are welcome to use any of EU's official languages to give speeches. The EU enjoys one of the largest translation services in the world. Obviously, the provision of the necessary facilities to support this policy requires significant financial and human resources. However, the benefits gained from the promotion of diversity, multiculturalism and multilingualism outweigh the expense. In this important arena, the EU stands as a distinguished model.

In short, policy makers and language planners may range from official authorities at international levels to ordinary individuals whose voices attract other voices that may eventually trigger a policy decision. In many countries, there are governmental or non-governmental agencies dedicated to organized language planning. These agencies have various labels, such as language council, language committee, language assembly and the like. They are mostly engaged in corpus policy. For instance, academies in Arabic countries are mainly concerned with the preservation of Standard Arabic language against the infiltration of various Arabic dialects as well as the influence of foreign languages (Modarresi: 2008, 214-216). Similarly, the objective of Iranian academies has chiefly been to coin Persian equivalents for foreign terms. Government-based language planning agencies usually benefit from governmental support and have more access to other resources, including education systems and the media. However, especially in developing countries, language academies suffer from a lack of support from the language speaking community because people consider them to be part of a government they do not consider legitimate. Negative attitude towards the activities of governmental language planning agencies is one of their key challenges in achieving planned goals (Modarresi: 2008, 212-214). This problem is not surprising because despite of ordinary people's unfamiliarity with theoretical issues of language policy and planning, they realize that significant policies about language(s) and language use in society are usually made by politicians, especially in terms of status and acquisition planning. Even though many people are not familiar with the terms and concepts of acquisition, status and corpus planning, they can see obvious synergies and linkages between them.

1.5. Language planning goals

Languages are not simply mediums of giving and receiving information. They are usually used in social contexts, that is, in complex contexts encompassing the discourses of identity and power relationships. As Christian (1988, 193-194) emphasizes:

‘It is important to bear in mind that language fills not only communication, but also symbolic functions within a society. In many cases the policy decisions relate as much to the symbolic value of language as a unifying or separatist force in a community (Garvin and Mathiot: 1956 [1960]) as to real communication needs. As a result, political, social, and economic concerns typically far outweigh linguistic considerations in language planning.’

Shohamy (2006) in the introduction of *Language Policy: Hidden Agendas and New Approaches* notes the continued existence of groups and individuals who want to control and manipulate language in order to promote political, social, economic and personal ideologies. In 1952, the announcement of Urdu as the sole national language of the then Pakistan was regarded as an insult to the identity of those whose mother tongue was Bangla (also called Bengali), another national language of the then East Pakistan. Consequently, a movement was formed to preserve Bangla and during students’ demonstration in Dhaka for recognition of their mother language, police opened the fire and killed a number of demonstrators. This originally linguistic movement became the outset of Bengali nationalism in East Pakistan and after being intensified by political, economic and ethnic discrimination by the Pakistani state, led to the establishment of a new country in 1971: the People's Republic of Bangladesh. After achieving independence, East Pakistan was called *Bangladesh* – meaning the country of Bengals - and Bengali gained official status in the newly-established country.

To commemorate this event, in 1999 the United Nations Educational, Scientific and Cultural Organization (UNESCO) declared 21 February as International Mother Language Day. Some years later, the UN General assembly issued a resolution on multilingualism, calling upon Member States to ‘promote the preservation and protection of all languages used by peoples of the world’ (United Nations: 2007).

Undoubtedly, Bengali speakers are not the only speaking community who suffered from linguistic discrimination throughout history, and linguistic discrimination is not the only language problem in terms of languages.

So-called **language problems** may be rooted in linguistic or non-linguistic variables. Examples of linguistic variable include the absence of a writing system in a community and a shortage of technical terms. Conversely, economic, social, ideological and political affairs that can influence language (and in turn, be influenced by language) are called non-linguistic variables. Linguistic and non-linguistic variables may work together to create a language problem or to solve it, and often attract the attention of policy makers.

Baldauf (2004) indicates that many players have roles in policy development, and language policies have often political and economic motivations. He classifies language policies into two main categories: **symbolic language policy** that ‘tends to state high-sounding generalities not actually resulting in an implementable policy’ and **substantive language policy** that ‘offers clear objectives and clear steps through which the objectives can be attained’. Whether an announced language policy is either symbolic or substantive needs time before it can be judged. However, in any case, language policy makers usually have an overt or covert social, economic or political intention.

Nahir (1984) suggests an extensive classification of language planning goals and functions as is or could be practiced by the agencies involved, including academies, commissions and committees. Nahir’s classification system applies irrespectively of the ultimate objectives supporting non-linguistic goals. The classification of language planning goals in below is based on Nahir’s (1984, 299-319).

1. **Language purification** has two forms: external and internal. **External purification** aims to protect language from foreign influences through constructing native equivalents for foreign terms and prescriptive grammars. Language planning in Iceland is one of the most puristic examples of this. Language academies in some other countries have more or less the same tendency and coin native equivalents for foreign terms (often borrowed from English), such as the Academy of Persian Language and Literature and the Academy of the Hebrew Language. **Internal purification** preserves language from ‘incorrect’ usage that occurs *within* the language by the native speaking community.
2. **Language revival** also referred to as **language revitalization**, can be defined as ‘the attempt to add new forms or new functions to a language which is threatened with language loss or death with the aim of increasing its uses and users’ (King: 2001, 4). Hebrew is probably the most well-known example of language revival. It obtained the

function of a vernacular of everyday life in late nineteenth and early twentieth century after being limited to a liturgical and literary language for about 1700 years.

3. **Language reform** is defined by Nahir as ‘deliberate change in specific aspects of language, intended to facilitate its use’, such as the simplification of orthography, spelling, lexicon, or grammar. Simplification of Chinese characters is a well-known example of language reform. As Nahir notes, although language reform is usually practiced in order to facilitate language use, it is often affected by ideological, political, religious or other considerations.
4. **Language standardization** is the deliberate intervention to expand a local dialect, language or even a foreign language into a major language of a region due to political integration among other reasons. All academies which foster one language of a territory more so than other languages or dialect are engaged in language standardization.
5. **Language spread** is the attempt to increase the number of speakers of a language or language variety. This may be at the expense of another language by urging people to shift to a different language, language variety for a given communicative function, or a result of the natural increase of a speaking community. As Nahir observes, language spread is motivated either by pragmatic, or more often, political considerations, especially in countries with more than one national language. For example, the government of the province of Quebec in Canada encourages immigrants to learn French in pursuit of spreading that language.
6. **Lexical modernization** is word creation or adaptation, usually for imported concepts, in order to develop standard languages. Lexical modernization is practiced in many countries, including Iran, France, Israel, Sweden and Iceland. In this respect, word creation does not necessarily mean purism. A country might pursue a special language policy in which, for several reasons, some languages are considered more ‘foreign’ than others. For example, in the last few decades the official language policy in Iran has chiefly focused on coining equivalents for western terms and rarely for Arabic ones.
7. **Terminology unification** is defined by Nahir as ‘establishing unified terminologies, mostly technical, by clarifying and defining them, in order to reduce communicative ambiguity, especially in the technical and scientific domains’. He gives the example of two confusing synonyms, *inflammable* and *flammable*. Apparently a British military unit

during the Second World War received a certain liquid labeled *inflammable* and the prefix was read as a negative maker, with disastrous results. Terminology unification is usually referred to as **terminology standardization** in the science of terminology.

8. **Stylistic simplification** is, according to Nahir, ‘simplifying language *usage* in lexicon, grammar, and style, in order to reduce communicative ambiguity between professionals and bureaucrats on the one hand and the public on the other, and among professionals and bureaucrats themselves.’ Stylistic simplification in Iran was initially driven by literary figures including Ghaem Magham Farahani and Ali Akbar Dehkhoda in the nineteenth and twentieth centuries. They developed an understandable style for Persian literature which was far from the abstruse style that had previously dominated. Their simplified style attracted more readers and was followed by others. The academies in Iran did not play any notable role in this process.
9. **Interlingual communication**, another goal of language planning, is enhancing the use of a *lingua franca* in order to facilitate linguistic communication between speakers of two different languages. To obtain this goal, many countries in the world currently have an acquisition policy for teaching English as a foreign language.
10. **Language maintenance** denotes the preservation of the use of a language. This attempt is usually undertaken where a more powerful language threatens or causes a decline in the status of a native language. Social, economic or political pressures, or even the number of speakers of the stronger language, might cause a language maintenance policy to be adopted.
11. **Auxiliary code standardization**, in Nahir’s language planning classification, is ‘standardization or modifying the marginal, auxiliary aspects of language such as signs for the deaf, place names, and rules of transliteration and transcription, either to reduce ambiguity and thus improve communication or to meet changing social, political, or other needs or aspirations.’ A change of political system in a country is usually accompanied by a great deal of auxiliary-code standardization.

Nuessel (1988) splits Nahir’s classifications into two divisions in terms of each classification’s basic purpose: 1) *restorative-augmentative* that includes language revival, language maintenance, language spread and interlingual communication, and 2) *normative* that contains the remaining seven goals (language standardization, language reform,

terminology unification, lexical modernization, stylistic simplification, language purification, and auxiliary code standardization).

As mentioned earlier, Nahir's classification of language planning goals contains actual or potential changes to the language. It seems that some of these goals are pursued to a greater degree than the others by language agencies, namely language purification, language reform, lexical modernization, and terminology unification that are types of corpus planning. This may be due to the limited power of these agencies, which are usually at the service of a more comprehensive social, economical or political aim. The ultimate goals of language policy and planning are usually set by authorities with greater power than language agencies and not by the language agencies themselves; albeit they might cooperate very closely together.

Some of the factors which have played important roles in attracting more attention to corpus planning for native languages in recent decades, include the unwanted influence of English on native languages, the occurrence of nationalistic movements and the emergence of a number of newly-independent countries which have new official languages. On the other hand, the evolvement of **terminology**, as a new branch of science, has also attracted the attention of policy makers, academics and other specialists in a range of fields, for a range of purposes. Terminology is of core interest in this study. In the next section of this chapter, I will explain the necessary theoretical aspects of terminology needed as background to the discussion of language and terminology policy and planning in Iran presented in the following chapters.

1.6. Terminology: some theoretical premises

The term **terminology** may refer to: 1) terminology science, 2) collection of terms which contains the system of concepts of an individual subject field, or 3) publication which represents concepts system of a subject field and the related terms (Felber: 1984). Felber defines terminology science as an inter- and trans-disciplinary field of knowledge that deals with concepts and their representations (terms, symbols, etc.). However, not all scholars consider terminology an independent discipline. Sager (1990) argues that disciplines establish knowledge *about* things while methodologies are only means to an end and deal with *how* to do things. Hence, in his opinion terminology is not a discipline in its own right but a number of practices that have evolved around the creation of terms, their collection, and explication and finally their presentation. He believes terminology can be discussed in the context of linguistics, information science or computational linguistics. On the other hand, he asserts the

importance of terminology and points out that terminology was a response to the explosion of information that accompanied new concepts and the need for appropriate designations for them, especially in science and technology, and to a strong interest in effective international communication. In Sager's words, terminology is 'the study of and the field of activity concerned with the collection, description, processing and presentation of terms, i.e. lexical items belonging to specialised areas of usage of one or more languages' (Sager: 1990, 2).

Terminology is an interdisciplinary science that integrates several fields of studies including linguistics, information science and the philosophy of science. However, it is not fully recognized in many countries in any of these disciplines (Budin: 1994, 87). This situation remains today, 20 years after the publication of Budin's observation. Some countries have progressed theoretical and practical aspects of the study of terminology and thus it has become a branch of knowledge in its own right, while amongst other countries and groups it is still considered a basic form of methodology.

Theoretically speaking, terminology science makes a clear distinction between terms and words. The main distinction between terms and words relates to their respective referential properties. As Sager (1990, 19) explains, **terms** are endowed with the property of special reference within a discipline; and they collectively form the **terminology** of that discipline. Conversely, referential properties of **words** are uniformly generalized and their totality is called **vocabulary**. It can be concluded that terminology, as a science, is the study of terminology in a secondary sense, that is, the collective terms of discipline(s).

At the present time, the creation and expansion of scientific terminologies in many countries with national and official language(s) other than English has been a direct consequence of the transfer of scientific and technological concepts that are mostly formulated in English. In such cases, concepts are transferred and receiving linguistic communities create and expand their own scientific terminologies based on received terms and concepts. This situation is called **secondary term formation** and is opposite to **primary term formation** in which a given linguistic community creates both concepts and terminological units.

Primary term formation is externally uncontrollable although influenced by the term formation patterns existent in the linguistic community, while secondary term formation is more often subject to guidelines (Sager: 1990, 81). Further, secondary term formation may be

influenced by the source language; for instance, it may borrow term formation patterns from the source language.

1.6.1. Terminology planning

Planning for terminology, as an interdisciplinary science, has much in common with corpus planning. On the other hand, as Fishman (1983, 109) mentions ‘the lion's share of corpus planning is certainly terminological’. In his article on the contribution of language planning to terminology planning, Fawwaz (1998) defines **terminology planning** as ‘a process which refers to activities and deliberate efforts to plan for: corpus, status, and acquisition of terms’, although the distinction between corpus term planning and status term planning is not always clear in practice. **Corpus term planning** is concerned with purely linguistic issues, such as coining new terms, reforming their spelling and adopting them. **Status term planning** covers all deliberate efforts that influence the allocation of term functions in a speech community, and **acquisition term planning** refers to efforts to teach or learn newly coined terms. Term spread and term promotion that increase the number of terminology users and uses constitute the aims of acquisition term planning (Fawwaz: 1998, 46). This aspect of language planning can to some extent be achieved through media and textbooks. Language purification, standardization, modernization and unification, which were discussed in the preceding section about the classification of language planning goals introduced by Nahir (1984), are types of corpus term planning that are usually pursued by term planners.

Terminology science contributes to language and terminology planning through ‘a whole array of theory-driven methods for the creation or expansion of scientific terminologies and their harmonization within a discipline and/or a linguistic community’ (Budin: 1994, 87).

Drame (2009, 90) submits that the main aim of terminology planning is to make specialized, or subject-field, communication more comprehensible and unambiguous. However, the operation of language plans in practice shows that not all terminology planning organizations seek a common aim. Jernudd (1983, 366) categorized the activities of terminology planning organizations into those that follow the ideology of indigenization and publish indigenized terminologies versus those that systematize terminologies:

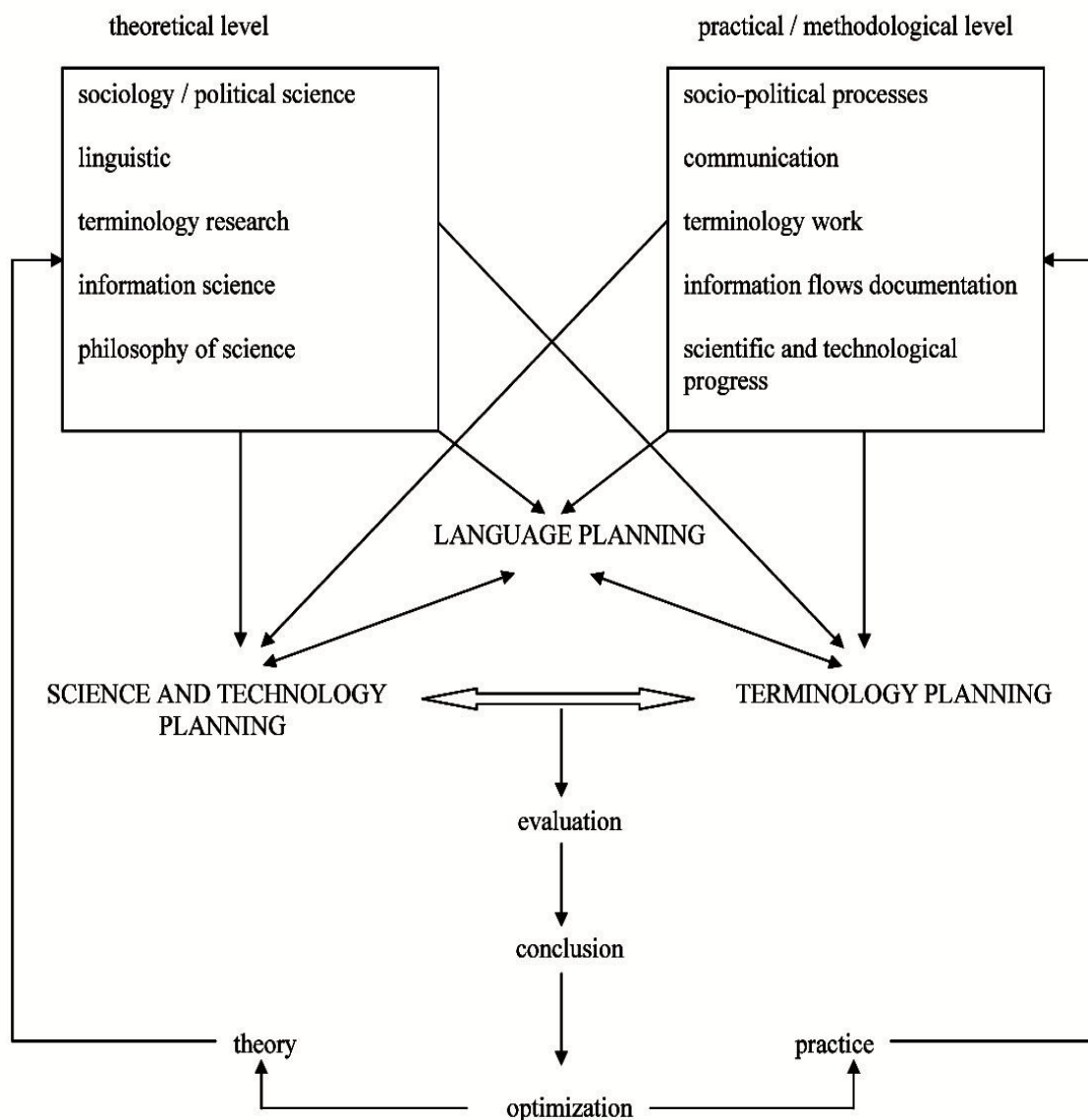
‘A term-planning agency that maximally supports the use of an indigenous language (and the ideology of indigenization) or indigenized terminology could pay much less attention to term formation and term systematicity, definitions, etc., than a term-planning agency in a modern, stable-speech community. In the former, a demonstration effect through

publication of volumes of lists and perhaps texts (maybe critically selected for impact) should be the goal. In the latter, coordination of usage and agreement on definitions dominate, and will be achieved through intensive interaction between planner and user and careful preparation of highly specialized reference work, often containing only a modest number of highly elaborated term entries.’

Creation and/or selection of appropriate terms is one of the key concerns of terminology science alongside the growing need to create terminologies in different languages attracted the notice of some scholars and national/international organizations to offer guidelines for the construction of ‘good terms’. By *good term* I mean any new term which is the product of primary/secondary term formation (direct borrowing, loan translation, newly coined terms and so on), that is likely to enter the lexicon of a linguistic community and potentially reduces the communicative gap between different sections of society. In the next section, I will briefly address the characteristics of good terms.

In his comprehensive model of key factors that play roles in language and terminology planning (Figure 1.1), Budin (1994) emphasizes socio-linguistic evaluation and optimization strategies. He highlights the role of empirical sociolinguistic and socio-terminologic research and warns that lack of such efforts may result in low acceptability of planned terminologies. Such strategies enhance our knowledge about the tendency of speaking communities and assist language planners and terminologists seeking to define good terms.

Figure 1.1- A comprehensive model of key factors in language planning and terminology planning (Budin: 1994)



1.6.2. Good term

ISO/TC 37- Terminology and other language and content resources is a technical committee within the International Organization for Standardization (ISO). According to ISO website, its activity falls within the scope of ‘standardization of principles, methods and applications relating to terminology and other language and content resources in the contexts of multilingual communication and cultural diversity’. It has five subcommittees: ISO/TC 37/SC 1 (Principles and methods), ISO/TC 37/SC 2 (Terminographical and lexicographical working methods), ISO/TC 37/SC 3 (Systems to manage terminology, knowledge and content), ISO/TC 37/SC4 (Language resource management), and ISO/TC37/SC5

(Translation, interpreting and related technology). Different working groups of ISO/TC 37 have published about 40 standards to date. The standards are important, especially because of their unique role in international standardization and because they affect all languages.

ISO 704- Terminology Work: Principles and Methods is one of key ISO standards in the field of terminology, which is concerned with basic definitions, principles and methods of terminology (International Organization for Standardization: 2009). It was compiled by experts from Technical Committee ISO/TC 37, Terminology and other Language and Content Resources, Subcommittee SC 1, Principles and Methods. The *ISO 704* categorizes designations into **terms** (that designate general concepts in different subject fields), **appellations** (that designate individual concepts, such as United Nations), and **symbols** (that may designate general or individual concepts). The *ISO 704* defines **term** as ‘a designation consisting of one or more words representing a general concept in a special language in a specific subject field’ and names the following principles for the formation of terms and appellations:

- ‘1. Transparency: when the concept of a term or appellation can be inferred, fully or partially, from its parts, it is transparent.
2. Consistency: the terminology of any subject field should be coherent. Neoterms and appellations must be consistent with the formation of concept system and integrate into it.
3. Appropriateness: terms and appellations should be semantically appropriate, that is, they should adhere to familiar, established patterns of meaning within a language community. Moreover, they should be unambiguous and without distracting connotations.
4. Linguistic economy: undue length of a term leads to its omission; therefore, terms should be as concise as possible.
5. Derivability and compoundability: in some languages, derivation and compounding make term formation more productive. Therefore, the terms with such potentiality are preferred.
6. Linguistic correctness: morphological, morphosyntactic, and phonological norms of the language in question should be respected in the term formation.
7. Preference for native language: native-language expressions should be given preference over direct loans.’

Moreover, many scholars have considered the characteristics of good term. I will review some of their conclusions below.

Tauli (1968), cited in Fawwaz (1998: 47-48), proposes four requirements for an ideal term as follows:

- ‘ - Clarity: a term must be unequivocal and motivated in scientific contexts and in scientific terminology, with some degree of redundancy.
- Economy: a term must be as short as possible and the linguistic structure must be as simple as possible. It should be as easy for both the speaker and the listener as possible.
- Elasticity: a term must be elastic, that is, it must allow creating other forms from it.
- Aesthetics: a term must be harmonious, symmetrical (in respect to the relationship between term and content), euphonic, rhythmic, varying, brief, expressive, and it must allow for affectivity.’

Pavel and Nolet (2001, 21) indicate that although such factors as brevity, handleability and productivity play important roles in the acceptance of neologisms, the most important factor is motivation, that is, that the characteristics of the concept should be reflected in the new term.

Weissenhofer (1995, 78-80) suggests a number of general principles to adhere to when forming neologisms:

- ‘ - avoidance of polysemy and homonymy in order to avoid ambiguity
- adherence to established usages and avoidance of changing established terms without any cogent reason
- good derivability so that the new term allow the easy formation of derivatives
- systematic use of term elements which should be based on systematic character of concept systems
- accuracy in order to be correctly comprehensible
- conciseness to be economical
- easy spelling and pronunciation’

As a further point, Weissenhofer suggests that if a term ‘has the same meaning and an identical or similar form in a number of different languages, especially if the languages belong to different families’, it might be considered as an **international term**. He believes

that international terms make the technical communication across linguistic borders easier and therefore have priority over indigenous equivalents. He calls this principle *terminology key*.

Rey (2005, 327-329) suggests five criteria for constructing a model for evaluating neologisms to predict their acceptance:

- ‘1. System conformity: when the phonological or graphical form of absolute creations, abbreviations, acronyms and borrowings involves the assimilation of a different system by little known processes, problems arise. For example, ‘jet’ can be assimilated in French whereas ‘design’ has not the same chance;
2. Semantic potential: fully motivated terms are preferred to unmotivated or poorly motivated ones;
3. Productivity: which refers to when a term is paradigmatically coherent in a system (for example: in logic and semantics ‘connotation-denotation’), syntagmatically lend itself to varied constructions, and transformationally permits the creation of derivatives or compounds;
4. Distinctiveness /lack of competition: neologisms may compete with other terms that may themselves be neologisms. Therefore, the existence of potentially stronger candidates is a weak point; and,
5. Acceptability: sociolinguistic value of neologisms can be observed through examining the results, like frequency and positive or negative reaction by the speakers and writers.’

However, he stresses that unanalyzed factors of social pragmatics, such as urgency of need and the complex reactions of different social groups, may introduce errors in the application of this model.

Acknowledging the difficulty of realization in an uncontrolled environment, Sager (1990, 89-90) suggests twelve idealized requirements of term formation as follow:

- ‘1. The term must relate directly to the concept. It must express the concept clearly. A logical construction is advisable.
2. The term must be lexically systematic. It must follow an existing lexical pattern and if the words are of foreign origin, a uniform transcription must be preserved.
3. The term must conform to the general rules of word-formation of the language which will also dictate the word order in compounds and phrases.

4. Term should be capable of providing derivatives.
5. Terms should not be pleonastic (i.e. no redundant repetition. e.g. combining a foreign word with a native word having the same meaning).
6. Without sacrificing precision, terms should be concise and not contain unnecessary information.
7. There should be no synonyms whether absolute, relative or apparent.
8. Terms should not have morphological variants.
9. Terms should not have homonyms.
10. Terms should be monosemic.
11. The content of terms should be precise and not overlap in meaning with other terms.
12. The meaning of the term should be independent of context.'

Besides addressing terms as basic elements of terminologies, Sager (1990, 105-106) also proposes a number of requirements to ensure the effectiveness of communication in special languages:

- '1. The message should be as concise as possible without disturbing the effective transmission of the intention or knowledge content. Economy is not simply concerned with strategies for concise transmission, but with all aspects of the reduction of effort in the transmission of information. These include compactness of substantive realization, the exploitation of non-linguistic codes, and the co-ordination of content and intention for ease of coding and decoding.

Economy of expression and reference can reference manifest itself easily in a system that has to provide for internal, textual, situational and environmental reference within the social norm governing each sublanguage. The diversity of methods of referring (general, specific, individual) is matched by various means of disambiguation which in some areas of agreed reference can be redundant. Hence, precision and redundancy can be modified within the social norm of each sublanguage to counteract various types of interference created by the requirement of economy.

2. The message should convey the intended content as precisely as possible. Precision is concerned with the association of an expression with a well-defined area of the knowledge space; the more strictly the social norm determines the limits of that area the more precise can be the corresponding term.

Precision is to some extent inherent in the linguistic norm; beyond that is a teleological criterion operating within the social norm and varying with the extent to which individual reception criteria are adjustable and taken into account by the

sender. Non-linguistic codes and artificial languages largely respond to this need for precision combined with economy.

3. The message should be constructed as appropriately as possible so that the sender can optimally affect the state of knowledge of the recipient in the way he intends. Appropriateness of reference is closely allied to intention. An appropriate message should enable the recipient to localize accurately the area of knowledge which is the subject of discourse, as well as achieving the intention in as effective a manner as possible.

Appropriateness is a purely pragmatic criterion entirely dependent on the social norm. Its rules are largely conditioned by the text type and form; greater flexibility exists in spoken variants. The conventions derived from frequently repeated special speech acts circumscribe the norm for appropriate word formation, syntactic expression and text type selection. Despite its elusive nature appropriateness is the most frequently used criterion in the evaluation of special communication; not only is it used to arbitrate between the sometimes conflicting demands of economy and precision, but also to measure the highly specific and situation-conditioned messages of special speech acts.'

Antia (2000, 230) rejects motivation as a requirement for new terms, citing the role of education in influencing the ability of those who identify specialized concepts in western languages. He points out that millions of terms are unfamiliar to native speakers of western languages and the necessity of being educated in the relevant field to learn them. Antia argues, 'the educational enterprise is what creates the opportunity for concept-term associations to be made'. While Antia's argument appears correct in the case of established terms, it does not seem to apply to neologisms. If neologisms lack the necessary requirements of good terms, the chance that they will fail from the very beginning, before entering textbooks, will be much higher. In order to be incorporated into the language of instructors, authors and the media, neologism design should incorporate the characteristics of good terms as much as possible. While coining terms that are qualified or 'cute' terms may contribute to their success, establishing an appropriate plan for dissemination of them through classrooms and media is important too. The existence of one characteristic does not reduce the role of any other characteristic in determining a term's likelihood of successful incorporation into the language. As mentioned above, Fawwaz (1998) defines economy as shortness for terms and simplicity for linguistic structure so that outcomes are as easy as possible for both the speaker and the listener to achieve. The meaning of his use of the word *easy* in his sentence is not

clear, but we may assume that he would defend his argument against Antia's view that concept-term association is gained through education.

In this regard, I will give an example from my experience working as a terminologist in the Academy of Persian Language and Literature in Iran. In 2005, I accompanied my colleague, the Academy representative to the Committee for Transportation Terminology, on a visit to the radio station which regularly broadcasted the news of Tehran traffic. During our visit, we realized that the broadcasters substituted several of the terms approved by the Academy with their own preferred terms. They argued that they were not satisfied with the approved ones and that they preferred to use the terms that made their message more comprehensible for the audience, even though they were longer. Their opinion, although expressed in non-technical jargons, was very similar to Leitchik and Shelova's (2006, 43) view. They emphasize that full motivation of a term substitutes for its definition, either by means of its direct or indirect (implied) constituents. In addition, the Iranian example supports the notion that, as Mackey (1991, 56) expresses, in language development, the ideologies of practitioners are more influential than the ideas of planners.

1.7. Summary

Languages are communicative entities in constant interaction with societies. They are also among most observable elements of the identity of human beings. Therefore, languages are not only changed because of social, technological and economical changes, but in some societies, due to the efforts of authorities trying to engineer them in the direction of their desired goals.

The emergence of English as the world language has impacted other languages, especially with regard to scientific terminologies. The domination of English is one of the impetuses provoking high-level decision-makers in some countries to use the framework of language and terminology planning to further their own ideological goals.

In the next chapter, I will review language planning in Iran, with a focus on terminology planning, and will explain one of its main challenges after the contact with the English language.

2. Terminology planning in Iran

2.1. Introduction

As many European languages include a large number of terms with Classical Latin or Greek roots, terminologists such as Sager (1990, 83-6) are confident that new terminologies can be developed and successfully adopted by those speaking communities with only small corrective measures. However, Sager notes that in contrast, the political boundaries between developing countries often divide language communities into political entities. In these cases, the lack of a clear and obvious candidate for the language of science and technology often leads to the adoption of a European language as the *lingua franca* for science.

In Chapter 1 I gave the example of the Afghan administration's apparent pessimism about the likelihood of Persian (called Dari in Afghanistan) and/or Pashto becoming the language(s) of science in that country. I described President Karzai's 2011 proposal that English be used for some higher educational purposes. In contrast, just over the border from Afghanistan, in Iran, policy makers are optimistic about the preservation and modernization of Persian, and takes official steps to fulfill this language policy. This ambition has roots in the long history of actions undertaken by individuals, interest groups and previous governments who intentionally or unintentionally developed Persian. In spite of confronting several challenges, Persian has supreme status in Iran. It is not only the national and official language of the country but also the language of administration, the media and education in all disciplines in all level. Conferences in different fields of knowledge are almost invariably held in Persian. In the other words, Iran has officially selected vernacularization over internationalization or assimilation into the global language.

In this chapter, after a short review of the history of borrowing in New Persian, I will discuss present-day language and terminology planning in Iran. We will see that previous language planning institutes were mainly involved in constructing Persian equivalents for full forms borrowed from different languages. However, recent language policy makers and planners have encountered the new challenge of English abbreviated forms.

2.2. History of New Persian

New Persian is the continuum of Old and Middle Persian and is written with the Perso-Arabic alphabet. According to Sadeghi (2003), Persian was gradually standardized by the twelfth century and since then has been used as the language of science, literature and so forth. New Persian is the developed version of the classical Persian used between the twelfth and fifteenth centuries.

The Persian language has experienced three main foreign language influences: Arabic, Turco-Mongol and most recently, Western languages (Sadeghi: 2003).

After the Arab conquest of Iran in the 7th century, the Arabic language dominated Iranian scientific and philosophical texts for about two centuries. As Sadeghi (2001a, 19) points out, a substantial number of the scientific, philosophical and cultural terms of Middle Persian were replaced by general, religious and administrative Arabic words. Many Iranian scientists, including Avicenna and Biruni, produced most of their works in Arabic, the language of science in Islamic countries at the time. Avicenna wrote only two of his books in Persian (*Encyclopedia of Alai* دانشنامه علایی /Dānešnāme-ye ælā'i/ and *Arteriology* رگشناسی /ræg-šēnāsi/). However, he and a handful of other scholars, including Biruni (in his work *التفهيم* /al-Tæfhim/), Naser-Khosrow (in *زادالمسافرين* /Zād-al-Mosāferin/) and Afzal al-Din Kashani (in *مصنفات* /Mosænnæfāt/) made some attempt to coin Persian equivalents for Arabic terms.

One of the most significant Persian dynasties was the Safavid dynasty, which ruled Iran between the sixteenth and eighteenth centuries. During Safavid rule, the Iranian economy and bureaucracy grew, architecture and the arts flourished, and Shi'ite Islam became the official state religion. Karimi-Hakkak (1989, 83) argues that migration of Shi'ite clergy from diverse Arabic-speaking regions to the margins of the Safavid court changed the way the Persian language was perceived; Persian was no longer considered an essential component of Iranian identity, and conscious barriers against Arabic lexicon faded away. Moreover, the need to advance a corpus of Shi'i lore wrapped in Arabic phraseology to imply its authenticity resulted in the extensive use of Arabic derivations in Persian prose that 'was no longer an effect to be shunned, or be kept in check, but rather an ideal to be pursued piously and pompously'. Karimi-Hakkak notes that Arabic grammatical constructions began to creep slowly and steadily into Persian during the sixteenth to eighteenth centuries.

The adoption of the Arabic alphabet and the extensive use of Arabic terms affected the Persian language severely. In the tenth century, the occurrence of Arabic words in Persian

was about 25 percent; two centuries later, it amounted to 50 percent. This proportion remains in contemporary literary Persian (Sadeghi: 2003). Mansouri (2011, 18) claims that after the 18th and 19th centuries, more than 70 percent of Persian words were borrowed from Arabic. The influence of Arabic was not confined to new vocabulary, but also extended to the borrowing of certain syntactical elements. Some such borrowings are still used in contemporary Persian, such as the Arabic diacritic tanwin in 'گاه' /gāhæn/ (sometimes), the Arabic plural form with the suffix ات /āt/, such as in پیشنهادات /pišnæhādāt/ (suggestions), and Arabic broken plurals, such as ادیان /ʔdyān/ (religions) for دین /din/ (religion). Kafi (1984, 16) believes that the most destructive effect of the Arabic language occurred in Persian morphology leading to Persian losing its productivity in constructing simple verbs. As a result, modern Persian language tends to build compound verbs which make derivation difficult; like کوشش کردن /kušəš kærdæn/ instead of کوشیدن /kušidæn/ (to attempt), and آموزش دادن /ʔāmuzeš dādæn/ instead of آموزاندن /ʔāmuzāndæn / (to teach). It is estimated that the number of simple verbs in Persian today is only about 200. The tendency to build compound verbs and use them as a replacement for simple verbs was neither in accordance with the Persian manner of word formation nor a result of economical considerations. Rather, the changes were motivated by a desire for prestige. Moreover, borrowing unnecessary words led to 'stylish' pleonasm, where a number of synonyms are used together in a single phrase. The prestige of Arabic, the then language of science, encouraged Iranian writers to apply these uneconomical linguistic behaviors.

Although scholars were fascinated by Arabic, Amouzgar (2010, 116) points out that common people continued to use Persian in daily lives, such as in conversation and when singing lullabies to their children. It is also worth noting the role of kings who supported the Persian language in various ways; for instance, Amir Yaqub Laith Saffari (840- 879), who founded the Saffarid dynasty in Sistan, refused to listen to Arabic poems because he found them alien and hence, difficult to understand (see Utas: 2006).

At the present time, we are witnessing a tendency towards the use of Persian words instead of their Arabic equivalents in some domains. This tendency is especially apparent in the coining of new terms (Sadeghi: 2003).

About six centuries after the Arab attack of Iran, the Mongolian invasion in the thirteenth century paved the way for the entrance of Mongolian and Turkish words. Since most Mongol

troops and subsequent Mongol rulers of Iran were Turk, Turkish administrative and military words penetrated Persian during this era (Sadeghi: 2001a).

However, Indian, Turkish and Mongolian words are no longer considered problematic for Persian because borrowing from these languages has ceased completely. Moreover, most Mongol words became obsolete after the end of Mongol dominance (Sadeghi: 2003).

In nineteenth century, following the expansion of the relationship between Iran and the western world, Iranian scientific society became more acquainted with new branches of science and their unfamiliar terminologies. In this period, the number of borrowed terms in Persian increased, especially those originating from Russian, and even more vigorously, from French. At the same time, teachers and scholars began to translate scientific and technical texts into Persian, resulting in the development of Persian terminologies in a range of fields. Some of the first such efforts occurred at Dar-ol-fonun (literally, Polytechnic Institute), the first modern institute of higher education in Iran, which was established in 1851.

Contact with the western world and foreign scientific advancements and ideas led to an increasing demand for Persian terminologies. A new trend in making Persian equivalents for foreign words and terms emerged in the mid-twentieth century: since that time the number of new words and terms coined according to Persian term formation patterns and with Persian elements has increased gradually. Persian term formation methods attracted more attention than they had for centuries and became more productive (Sadeghi: 2005, 500).

After the Second World War, English attained the status previously held by French in Iran and became the second language of education. The need to communicate in the international language has been unavoidable since that time. Consequently, the tendency for English terms to enter into Persian has continued up to the present time.

On the other hand, the translation of modern scientific texts into Persian has induced a new trend of secondary term formation and **terminological dependency** in Iran. Terminological dependency is a situation of subordination in all dimensions, and not simply the incorporation of terms from other languages, as terminological fertilization suggests. Terminological dependency affects the receiving speaking community on a linguistic level (pronunciation, spelling, term formation, syntax and semantics, discursive rhetoric and even typography), and a pragmatic level (attitudes of users, officials and governments towards their own and the dominant language). The relationship between these linguistic and pragmatic effects

(metalinguistic and epilinguistic markers in scientific texts) has a further impact on speakers (Humbley and Palacios: 2012, 65).

In the following section, I will review the official language planning endeavors undertaken in order to counteract the terminological dependency of Persian on other languages, beginning with the establishment of the first academy of language in Iran.

2.3. Persian language planning

More than one hundred years ago, the first academy of language was officially established in Iran by its government in 1903. The academy coined Persian equivalents for a number of European language terms and published them in three issues of the newspaper *Iran-e Soltani*. After a short period, the academy was accused of coining odd terms and its activities were stopped. Interestingly, one of its coined terms, راه آهن /rāh zāhæn/, substituted *chemin de fer* (railway) completely and it is commonly used up to the present time (Roustai: 2006, 77).

About two decades later, a language society patronized by the Iranian Ministry of War (Defense) was established in 1924. Interestingly, there were no linguists or serious grammarian among the members of this group of ten (Sadeghi: 2001a, 21). The society was active for about four months and coined some 300 terms in aviation, military sciences and other related fields. Some Persian terms coined by this society have completely replaced borrowed French terms; several of the latter are no longer in use in contemporary Persian, such as *pilote* (pilot) replaced with خلبان /xælæbān/, *aérodrome* (airport) replaced with فرودگاه /forudgāh/, *avion* (airplane) replaced with هواپیما /hævāpeymā/ and *aéromètre* (aerometer) replaced with هواسنج /hævāsænj/ (Roustai: 2006, 89).

The Society for Coining Scientific Terms was the second society of this kind, and active in making Persian equivalents for foreign terms between 1932 and 1940. Its activities encompassed terms of natural sciences, mathematics, physics, chemistry, philosophy and literature. Some 400 out of 3000 terms coined by this society entered textbooks (Sadeghi: 2001a, 22; quoted in Sadiq: 1943 and Badrei: 1976).

These attempts at modernizing Persian were continued by other bodies, such as the Ministry of Education and the Medical Academy. A number of circular letters issued to substitute not only western but also non-western borrowed terms with Persian equivalents demonstrate their generally puristic approach to term coining. Roustai (2006: 91-92) reports that one of circular

letters issued by the Ministry of Education dated 29 May 1935 contained Persian equivalents for 34 non-western borrowed terms.

2.3.1. The Iranian Academy

Eventually, senior government figures grew intolerant of the multiple scattered societies involved in building equivalents for foreign terms. In 1935, the then prime minister, Mohammad Ali Foroughi, convinced Reza Shah Pahlavi (1878–1944) to consent to the establishment of one authoritative language planning organization. It was called the Iranian Academy, and is now referred to as the First Academy (although as mentioned previously, another institute established in 1903 was called an ‘academy’ earlier).

According to the first paragraph of the Iranian Academy’s charter, the main mission of this organization was the maintenance, development and promotion of the Persian language. The second paragraph indicated that ‘the Academy should prune incongruous foreign words from the language and coin Persian terms and expressions for every branch of life, using, as far as possible, Persian (and not Arabic or Turkish) roots and words’ (Sadeghi: 2001a, 23).

Constructing Persian equivalents for foreign terms was the main purpose of the First Academy, a policy driven mainly by the contemporary political atmosphere. Throughout its active years, the Iranian Academy coined some 2000 terms and place names. About 70 percent of them gained currency in written or spoken Persian. The coined terms were based on Persian roots. However Arabic and western words that were very common in Persian, were used too (Modarresi: 1992, 186). Karimi-Hakkak (1989, 101) believes that the most significant achievement of the Academy was the increase of language awareness among literate people so that many began to suggest solutions to the problems facing the language.

Since the Academy was not an independent scientific organization, it was influenced greatly by the political situation of the time. After the abdication of Reza Shah in 1941, the Academy lost one of its main supporters and gradually ceased its activities.

The review of the Iranian Academy’s outcomes reveals that none of the approved terms was an abbreviated form. This may appear unsurprising on the basis that few English abbreviated forms had entered Persian at that time.

2.3.2. The Iranian Academy of Language

In 1970, the first meeting of the Iranian Academy of Language, also called the Second Academy, was held at the Ministry of Culture and Art. Its main aims were to restore Persian to its previously culturally exalted status, to keep the language equipped to meet various new scientific and cultural needs and to conduct research into all past and present Iranian languages and dialects (primarily in order to gain a better knowledge of and to develop the Persian language) (Gol-e-Golab and Kia: 1976, 20).

Like the Iranian Academy, the Second Academy was chiefly engaged in making Persian equivalents for foreign terms. However, its dissemination attempts were not as successful as the First Academy's had been. Modarresi (1992, 187) reports that the Second Academy coined Persian equivalents for about 17,000 foreign terms, of which about 2,000 were approved and only some 200 were published. It appears that the processes adopted by the First and Second Academies to disseminate coined terms differed greatly. The approved terms by the First Academy were disseminated and their use was mandatory, but the use of terms coined by the second was optional (Jazayeri: 1999).

In his evaluation of the Iranian Academy of Language, Samiei (Gilani) (1995, 142-143) states that it was successful in carrying out linguistic research but not in the field of term formation. He claims that some influential (and permanent) members of the Academy with puristic views tended to seek to eradicate Arabic terms from Persian vocabulary. Therefore, the equivalents coined sounded too odd to be accepted by native Persian speakers. However, Samiei does not compare the puristic approach of the Iranian Academy of Language to the puristic tendencies of the Iranian Academy's members; as I mentioned above, the latter gained popularity among the Persian speaking community.

The Iranian Academy of Language had a destiny rather similar to its predecessor, the Iranian Academy. The political situation in Iran changed and the Islamic Revolution in 1979 put an end to its activities.

Like the Iranian Academy, the Second Academy demonstrated no interest in the field of abbreviation despite the relative high number of its coined terms. It seems that the number of borrowed abbreviated forms was not substantial in that era either.

2.3.3. The Academy of Persian Language and Literature

For centuries, the Persian language has been used in Iran's executive, judiciary and legislative systems as well as all at levels of education. After the Islamic Revolution in Iran in 1979, a strong consensus was formed that the development of Persian was an essential element of the social, industrial, scientific and economic advancement of the country. Many scholars, authorities and politicians emphasize the direct correlation between language policy and planning on the one hand and general policy for sustainable development in the country on the other (see Habibi: 2008). They also cite the Persian language as a symbol of unity between Iranian ethnic groups.

According to Article 15 of Iran's constitution, Iran's official language and writing system is Persian and all Iran's official documents, correspondence and texts as well as academic materials must be in Persian. Furthermore, on 9 May 1999, the Council of Ministers ratified an administrative regulation banning the use of foreign names, titles and terms. Accordingly, the use of foreign names, appellations and writing scripts other than Persian for commercial entities and products is forbidden.

In order to fulfill the official language policy, the statute of the Academy of Persian Language and Literature, also called the Third Academy, was ratified in 13 February 1990 and the Academy was founded in 1991. According to its statute, its fundamental goals are to preserve Persian and advance its capabilities, in accordance with the development of science and technology, to meet present era requirements. The other goals are: to protect the authenticity of the Persian language, as one of pillars of Iranian national identity and the second language of Islamic world; to enrich the language's capacity to express scientific and literary thought; and to promote Persian language and literature inside and outside Iran.

There are four academies in Iran: the Academy of Persian Language and Literature, the Academy of Science, the Academy of Medial Science and the Academy of Art. By law, the president of the country is the supreme head of each academy. The Academy of Persian Language and Literature invites members of other academies to cooperate in achieving its goals, especially in developing Persian terminology in different fields of study.

At the time of compiling this study, according to its official website, the Third Academy has thirteen research departments: Teaching Persian Language and Literature, Literature of Islamic Republic, Comparative Literature, Contemporary Literature, Text Correction,

Extraterritorial Department, Encyclopedia of Literary Research, Encyclopedia of Persian Language and Literature in the Indian Subcontinent, Persian Grammar and Orthography, Language and Computer, Iranian Languages and Varieties, Lexicography, and Terminology.

My focus is the Terminology Department because its policy towards English abbreviated forms that have entered Persian terminologies is the main topic of this study. Therefore, subsequent references to the decisions, activities, operations and views of the ‘Terminology Department’ and ‘the Academy’ refer to the activities of the Terminology Department of the Academy of Persian Language and Literature.

The Terminology Department is one of the most active departments of the Academy and benefits from being well-known among the country’s authorities as well as ordinary people. However, as a result of this fame, the Department is subject to harsh and sometimes unfair criticism. For instance, some absurd Persian equivalents for English terms are wrongly attributed to the Terminology Department and thus the Department is widely criticized in the media.

The role of Terminology Department in the development of Persian is often emphasized by the authorities. For example, Habibi (2008, 8), the late head of the Third Academy and a former member of parliament, stressed that Persian will be a language of science only when terminology, that is, the construction of Persian equivalents for the terminologies of all scientific disciplines, is appreciated and pursued in a timely manner.

The Terminology Department began its activities immediately after the establishment of the Third Academy in 1991. Its aims are to contribute to the strengthening and expansion of Persian, equipping it to meet cultural, scientific and technical needs, and to coordinate the activities of word formation and the construction of equivalents for foreign words. The Department’s duties, according to the official website of the Academy of Persian Language and Literature, are: terminology planning and management; the organization of borrowed terms in Persian and the construction of equivalents for them; and the modernization of Persian terms and concepts in different fields of science, technology and the professions. By tradition, the head of the Academy is simultaneously the director of the Terminology Department.

The Department currently has some 70 terminology committees in various fields. They are primarily engaged with the construction of Persian equivalents for borrowed terms, most of

which are from English. Each committee is usually composed of about five experts in the field and one or two representative(s) of the Academy who are responsible for the implementation of the assigned terminology policy.

The process of coining Persian equivalents for foreign terms usually starts in terminology committees. The committee selects a number of the candidate terms, either assembled from textbooks, glossaries and the like or suggested by the experts. Terms selected may be basic terms of the fields, frequently used ones, or those that have entered Persian recently or might enter the language in future. Following, the committee constructs a worksheet relating to each candidate term that contains all relevant information, including its syntactic category, etymology, definition, derivations, compound forms, existing equivalents, and equivalents of the term in other languages such as German, French and Arabic. If needed, equivalents in other languages might be added; for instance, in the case of music terminology, the Italian language may be relevant. After compiling a large number of worksheets, normally between 50 and 100, the terms along with suggested equivalents are sent to Harmonization Councils. These Councils are responsible for ensuring consistency of the suggested equivalents with existing terms relevant to other subject fields. At the next stage of the process, the Technical Committee probes each worksheet from a linguistic perspective and in the case of any ambiguity, refers terms to the terminology committee for adjustment. The Technical Committee is composed of the deputy director of the Department and one linguist.

Afterwards, the Terminology Committee presents the worksheets to one of four Terminology Councils to be approved. Each Terminology Council has between 10 to 15 members. These councils provide the forum for discussion for and against each suggested Persian equivalent, and for agreed equivalents to be approved. Approved terms then appear in the upcoming volume of Dictionary of Approved Terms, which is published annually. Around 4,000 approved terms in various disciplines are published every year and remain subject to revision for three years. Each volume of the Dictionary of Approved Terms is sent to the president at the time for acknowledgement. It is the role of the presidential office to send a copy of the dictionary to government organizations. As the Academy is a research institution, not an executive one, it does not have the authority to enforce the usage of approved terms.

The terminological approach taken by the Terminology Department, similarly to that taken by many other terminology institutes, is **semasiological** and not **onomasiological**; that is, terminology committees collect foreign terms used in different disciplines and, after

becoming acquainted with their concepts, construct Persian equivalents as needed. Under some conditions, foreign terms may be approved without the attribution of any Persian equivalent. While the criteria for such conditions are fluid, such an approach may be permitted when the term is already considered an international term or its use is already well-established in the Persian speaking community.

The Terminology Department encounters some challenges as a result of both its semasiological approach and its practice of secondary term formation. These challenges hinder the Department's outputs both quantitatively and qualitatively. The rate at which terms are imported is excessively frantic, while the process of constructing Persian equivalents is very slow. Moreover, differences in term formation conventions and tendencies between the exporting and importing linguistic communities (here, mostly American English and Persian speaking scientists respectively) create theoretical and methodological challenges in adopting effective terminology policies.

2.3.3.1. Main official Persian terminology policy principles

In the following section, I will highlight the main policy principles that apply to official terminology planning in Iran at the present time. These principles form the basis of term construction undertaken by the Terminology Department, at least theoretically.

2.3.3.1.1. Which words are considered Persian?

In lexical modernization, the identity of terms can be a very crucial matter due to the interdependency of status and corpus planning. In a secondary term formation approach, the origin and identity of languages may force policy makers, terminologists and translators to make decisions not only on appropriate equivalents for the terms targeted for eradication and replacement, but also on the language(s) that may be regarded as resource(s) for coining equivalents.

Official Persian language planning principles, as set out by the Academy of Persian Language and Literature in the *Principles and Regulations of Terminology* (Academy of Persian Language and Literature: 2009b), dictate that the following vocabulary repertoires are considered Persian and may be used in term formation:

- ‘1. All originally Persian words that are registered in reliable dictionaries

2. All originally Arabic words that are used in contemporary Persian and/or that appear in reliable Persian texts written before the 11th century
3. Words from Indian, Turkish, Greek, Mongol languages and the like which are used in contemporary Persian or have been used in reliable technical texts
4. Originally European language terms which have simple word formation (otherwise the relevant concepts must undergo Persian word formation) and, for any reason, making Persian equivalents for them is not necessary.'

It would appear that the Academy of Persian Language and Literature does not take an identical approach towards each source language when it comes to borrowed words. The Academy seems to consider Arabic to be a major resource that has enriched Persian language and literature over the last fourteen centuries. The Academy does not appear to give any other language the preferential treatment it affords to Arabic. Nonetheless, as it was already discussed, some scholars have the opposite view and believe that extensive borrowing from Arabic was unnecessary and negatively affected Persian.

According to the *Principles and Regulations of Terminology*, the Academy's current approach to terminology planning does not encourage the incorporation of European words into Persian, for three key reasons. Firstly, European words in Persian are relatively new, having entered the language one century ago at most, and therefore no European language terms can be considered to have had a long history of usage in the Persian language. Secondly, there is a concern that borrowing from these languages, especially the English language, is continually increasing and, if left unchecked, may overwhelm the Persian language in a few decades. Finally, European words are also discouraged because in some cases they have been borrowed alongside related terms and thus have had an undesirable influence on Persian term formation. An example of this is the borrowing of the English word *piano*, which was accompanied by the word *pianist*.

2.3.3.1.2. Term formation resources in Persian

Accordingly, the Academy of Persian Language and Literature defines the vocabulary resources that may be used for term formation in Persian:

1. All Persian words, as defined in the above section (2.3.3.1.1. Which words are considered Persian?), regardless of their origin
2. Words that exist in contemporary Iranian languages and varieties, including: Iranian languages other than Persian such as Kurdish, Baluchi, Gilaki, and Mazandarani;

varieties of Persian such as Sivandi, spoken in the Fars district and Zoroastrian dialects used in Yazd and Kerman; and even regional dialects like Shirazi, Kermani and Kashani. For instance, the word رمیدن /rombidæn/ used in some Southern Iranian varieties of Persian has been applied to construct the Persian equivalent for the term *collapse* in the field of astronomy.

3. Words and roots originating from Old and Middle Iranian languages
4. European words and compounds, as defined in the previous section

2.3.3.1.3. Term formation methods in Persian

The Academy of Persian Language and Literature recognizes the following methods of term formation for the Persian language (the classification is offered in the *Principles and Regulations of Terminology*, and I have added some complementary theoretical notes).

1. **Selection:** an existing word or compound is used to designate a concept in a particular field of study without any modification, such as use the word پرتو /pærtow/ from common language to designate the concept of *ray* in optics.
2. **Selection anew:** an existing word or compound is used to designate a new but related concept.

This method leads to the creation of **sense neologisms** or **semantic neologisms** (terms used by Pavel and Nolet: 2001, 20-21), which are formed by assigning new meanings to existing words while the forms undergo no change. Such neologisms are usually formed when the meaning of a term is extended through the addition of a new meaning, metaphor, conversion of grammatical category, or is adopted from another subject field. This method is one of the most common term formation methods, along with the development of technology and lifestyle changes.

3. **Borrowing:** As the graphemic structures of European languages are different from Persian's, orthographic transcription of borrowed foreign terms is necessary. For example, the term *polymer* has been approved by the Academy but it is transcribed into پلیمر /polimer/. Nonetheless, the use of English words/terms written in the Latin alphabet, especially abbreviated forms, is not rare in Persian texts.

4. Term creation: this method results in **morphological neologisms** (a term used by Pavel and Nolet: 2001, 20-21), which are newly coined words/terms used to designate concepts. In Persian, they are mainly created through the following morphological processes:

- a) derivation, compounding, or a combination of the two

Derivation refers to the word/term formation method in which the neologism is the result of adding an affix (or more) to a base to function as a determinant. In Persian, there are about 20 active and semi-active prefixes and 60 suffixes. The modification of lexical items by means of affixes is also called a **synthetic means of term formation** (Sager: 1990, 57). Based on the position of affixes, derivation can be classified into prefixation and suffixation. In **prefixation** affixes preposed to a free morpheme while in **suffixation** the determinant is placed after the base. In **conversion** or **zero-derivation** the ‘determinatum is not expressed in phonic form but understood to be present in content’ (Marchand: 1969, 359). In conversion, only the syntactic category changes and allows the term to designate a second concept. **Back derivation** or **back formation** in which new lexemes are formed by deleting actual or supposed affixes of a longer term is rare in Persian term formation.

Compounding refers to the process in which at least two words are combined to form a compound word. Weissenhofer (1995, 72) defines compounding as ‘the combination of two or more free morphs into a morphological unit on the basis of a determinant/determinatum relationship.’ Combining independent lexical units into larger units is called **analytic means of term formation** (Sager: 1990, 57).

In Persian, according to Samiei (Gilani) (2001, 214), compounding is more popular in natural term formation and daily usage while derivation is more common in terminologies used in science and poetry.

- b) Syntactic phrases are formed by adding syntactical elements, such as prepositions. The most common syntactical phrases added to form Persian terms are adverbial, adjectival and prepositional phrases.
- c) Abbreviation, as a terminological process, reduces the elements of a terminological unit to form initialisms, acronyms, and so on. Abbreviation will be discussed in the next chapter.

2.4. Summary

The political, religious and cultural changes that have taken place throughout the history of Iran are reflected in the Persian language.

The influence of Arabic on Persian, after the former became the language of science of the Islamic world, was restricted not only to an abundance of borrowed words and terms, but also extended to an effect on Persian term formation patterns. Although some believe that Arabic words enriched Persian, others consider that it had a destructive effect on Persian grammatical construction. They argue that Arabic paralyzed the productivity of Persian in its ability to construct simple verbs. Arabic rose to particular prominence because its prestige encouraged Iranian scholars both to write in Arabic, and also to ornament their writing with multiple synonyms from Arabic when they wrote in Persian.

There is no doubt that neither building compound verbs nor pleonasm can be considered economical, but such changes were adopted because there were considered prestigious. The consequences of language contact throughout Persian history provide overwhelming proof that considerations of style and prestige have been more influential on the language than considerations of economy.

While a small number of Turkish and Mongolian words are still in use in Persian, the influences of Turkish and Mongolian were not as considerable as Arabic, and all but ceased alongside the termination of their respective leaders' political influence on Iran.

The contact between Persian and European languages began following the expansion of the relationship between Iran and the western world. The influence of European languages, particularly French, is evident in the common use of the French *merci* by Persian speakers, alongside many other European terms.

Finally, the pervasive use of English terms, especially in technical and scientific contexts, is evidence of the contact between Persian and the current world language.

The construction of Persian equivalents for borrowed words and terms dates back more than one hundred years when the first academy of language was officially established. Since then, this tradition has been continued, albeit with some vicissitudes. At the present time, the Academy of Persian Language and Literature is officially active in making Persian equivalents for borrowed terms in different disciplines. The uncontrollable and high rate of

the importation of terms presents quantitative challenges, while disparities in term formation between Persian and term exporting languages present qualitative challenges. At the top of the list, the construction of Persian equivalents for English abbreviated forms vigorously entering Persian terminologies seems to be an unyielding challenge.

In the next chapter, I will examine the approaches to English abbreviated forms in some languages, more thoroughly in Persian.

3. Approaches to English abbreviated forms

3.1. Introduction

The increasing number of English abbreviated forms appearing in textbooks and academic discourse is one of the challenges facing language planners, terminologists, authors and translators of scientific texts in some countries, including Iran.

This chapter begins with some theoretical observations on abbreviation as a word/term formation method generally, followed by some specific reflections on the growth of abbreviation in the English language.

Afterwards, I will examine the terminological dependency of some languages on English abbreviated forms. French and Spanish are selected because they are used in a large number of scientific materials and are hence confronted with English abbreviated forms. Moreover, both languages have played and continue to play important roles in the world. Both French and Spanish are among the official or working languages of many nations as well as international organizations, including United Nations, European Union, World Trade Organization, and World Health Organization. Further, Spanish is the second most popular international language, after English. This chapter also considers Arabic because its writing system and infrequency of vernacular abbreviated forms are similar to Persian. Arabic is also one of six official languages of the United Nations. While my original intention was to include a discussion on the effect of English abbreviated forms on German, this was not possible due to a lack of literature addressing the topic.

Finally in this chapter, I will explain how the increasing number of borrowed English abbreviated forms in Persian persuaded Iranian terminology planners to encourage abbreviation through the framework of an official terminological plan.

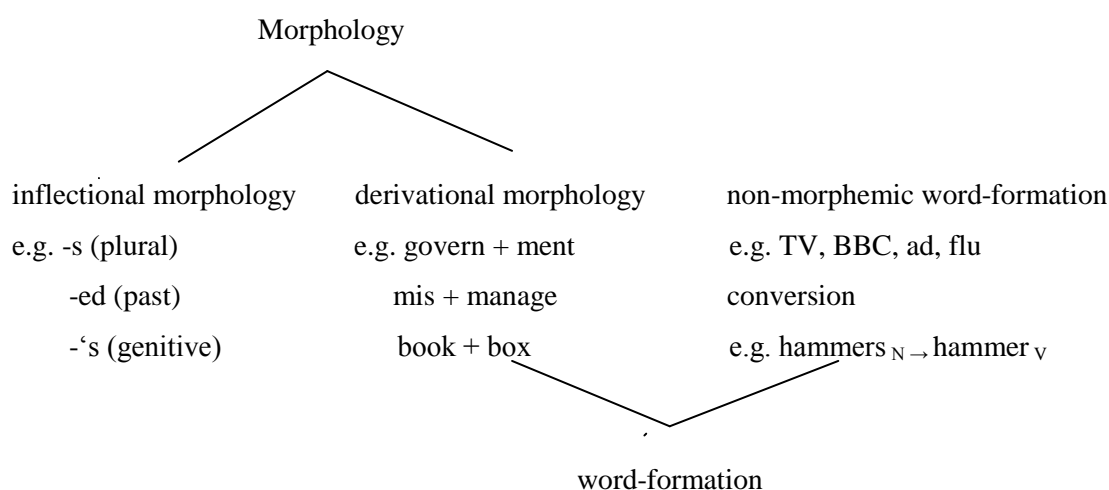
3.2. Abbreviation

In the same way that a term may be considered a shortened form of its full description, an abbreviation is a shortened form of a term. In other words, abbreviated forms have undergone a reduction procedure twice: from concepts to terms and from terms to abbreviated forms. However, language users do not always analyze the elements of abbreviated forms (as in many compound/complex terms) or seek to understand the original concepts. For instance,

many people who send and receive SMSs everyday may not recognize the full form: short message service. A further example is the term *modem*; few computer users realize that the term is a shortened form of modulator-demodulator, or know that it transforms computer signals into telephone signals by decomposing a terminological unit into its constituent parts (Sager: 1990, 63). This method of term formation in which the number of elements (letters, syllables, words) of a simple/compound/complex term or appellation is reduced while the outcome designates the same concept is called **abbreviation**. The complete representation of the designation is called a **full form** and the representation that is the result of the omission of any part of the full form is an **abbreviated form** (International Organization for Standardization: 2011).

Aronoff and Feudeman (2011) and Bauer (1983) believe that abbreviation is an unpredictable artificial process and, hence, external to the general phenomenon of lexeme formation. They reason that this type of word formation depends on orthography and not pronunciation, whereas speech must always be primary and writing secondary. Bauer, among some others, believes that abbreviation is not necessarily a part of morphology. Supporters of this view often argue that **morphemes** (the smallest meaningful elements) cannot usually be seen in abbreviated forms. Schmid (2011, 15) states that morphology and abbreviation, as a non-morphemic word-formation, are complementary to each other (Figure 3.1). He argues that although abbreviation methods lead to the creation of unpredictable words, unlike other typical word-formation patterns, they do have an underlying system and are instrumental in the creation of new words.

Figure 3.1- Relationship between the areas of morphology and word-formation
(Schmid: 2011, 15)



Non-morphematic word-formation process is a concept similar to but wider than abbreviation, including any word-formation process that incorporates at least one element that is not a morpheme; such as an initial letter, a number or a letter used as a symbol, a splinter (the constituents of blends) or a part of a syllable (Fandrych: 2004, 18). Non-morphematic word-formation processes include not only abbreviation processes like acronymy, blending and clipping but also onomatopoeia (Fandrych: 2008, 109), which cannot be categorized as a type of abbreviation. Fandrych (2008, 117) proposes that the processes like acronymy, blending and clipping make “use of a whole gamut of **submorphemic elements**, ranging from mere initials, groups of letters, syllables and splinters to full (not infrequently even complex) words”.

On the other hand, Ronneberger-Sibold (2010) considers word formation techniques like acronyms, shortening and blending to be methods of *word creation* that are intentional extragrammatical operations under the framework of natural morphology. She discusses word creation in contradistinction to unintentional extragrammatical operations, the latter arising during language acquisition, and to regular grammatical word formation. Ronneberger-Sibold defines creative techniques as ‘morphological operations which are different from the regular rules or models of word formation, and which are deliberately used by language users with a fully developed linguistic competence for the creation of words characterized by specific sound shape and /or a specific degree of transparency.’ In her comprehensive typology of word creation techniques, Ronneberger-Sibold suggests that unlike in clippings, morphological structures of sources are taken into account in the construction of acronyms and initialisms.

Therefore, it may be practical if we, with some degree of semantic extension and taking a more flexible approach than morpheme analysis, consider morphology as a branch of study that goes beyond the study of morphemes, and extends also to submorphemic elements. Such expansion is not unknown with respect to some other fields of study; as astronomy, for instance, contemplates not only stars but also other celestial objects such as planets, moons, nebulae, moons and galaxies.

The application of abbreviated forms is not restricted to any particular context. However, in some lexical domains and communicative contexts abbreviated forms are more prominent. Ronneberger-Sibold (2010, 206) states that partially or totally opaque words are preferred, as follows:

- Words denoting holistic words, especially proper names (cited from Bellman: 1980; Nübling: 2000). One of the motivations for the use of only one word to label any new institution is the iconic principle that one thing should be named by one word.
- A special variety of holistic concepts with inseparable ingredients. Such concepts are usually named by blends; such as *smog* amalgamated from smoke and fog.
- Contexts in which insiders would rather be unintelligible to outsiders, including specialized languages.
- Contexts calling for taboo words.
- Texts which at amusing or impressing their interlocutors, such as literature for children, humoristic texts for adults and advertising texts.'

3.3. Emergence of abbreviation in English

The history of abbreviated forms goes back thousands of years, with such forms appearing on coins, seals and inscriptions written in ancient languages such as in Old Persian. The emergence of abbreviation in more familiar linguistic contexts, such as dictionaries of abbreviated forms, may be traced back to the fifteenth century when *Modus Legendi Abbreviaturas* (1475?) was compiled (Cannon: 1989). The items in this dictionary were pronounced as whole words rather than in their reduced (written) form.

There is no definitive evidence demonstrating the exact time that abbreviated forms emerged in English. Mencken (1921) in his classic book, *the American Language*, suggests that *O.K.* was in use as early as 1790. He adds that Thornton (1912) traces *N.G.* [no good] to 1840, and that *C.O.D.* [cash on delivery] and *P.D.Q.* [pretty damn quick] are probably almost as old.

English abbreviated forms flourished more in American culture than in British. Newly coined abbreviated forms were welcomed with delight by many of the mostly bilingual speakers in post-colonial America. Mencken states that in 1813, American Founding Father Thomas Jefferson prophesized that new circumstances, including an increasingly culturally and linguistically diverse population, would call for new words and phrases, and ultimately an American dialect would be formed. The increase of new phrases as well as Americans' tendency to communicate economically encouraged him to describe proudly such *highly typical Americanisms* (his own words) as 'the characteristic American habit of reducing complex concepts to the starkest abbreviations.' He highlighted the contrast between English and American cultures, states of mind and divergent vocabulary by comparing a placard in the wash-room of the British Museum: "These Basins Are For Casual Ablutions Only," and a

sign at American railroad-crossings: “Stop! Look! Listen!” Of course, he did not confine his comments on the process of abbreviation to American English:

‘All of these processes, of course, are also to be observed in the English of England; in the days of its great Elizabethan growth they were in the lustiest possible being. They are, indeed, common to all languages; they keep language alive. But if you will put the English of today beside the American of today you will see at once how much more forcibly they are in operation in the latter than in the former.’ (Mencken: 1921)

The first systematic attempts to compose English abbreviated forms in book-length collections, according to Cannon (1989), were Courtenay’s 53-page collection of 3,000 items and Macgregor’s 40-page pamphlet, both published in 1855. Martin’s (1984) Latin and French abbreviated forms used in English historical manuscripts (1982) and Cordingley’s (1902) mercantile collection were some of the first specialized dictionaries.

By the First World War, American English had long been using abbreviated forms to refer to business, governmental and daily activities, the number of them expanded more systematically during the war (Riordan: 1947, 108 quoted in Cannon: 1989). Cannon further notes that seventy years later, the number of abbreviated forms acronyms, initialisms, abbreviations, contractions, alphabetic symbols, and similar condensed appellations had increased to more than 400,000, as evidenced in the subtitle of Gale’s 1987 *Acronyms, Initialisms, & Abbreviations Dictionary* (See Towell and Sheppard: 1987). He adds that the rationale behind the coining of abbreviated forms has changed significantly from the original need to conserve space when paper was scarce in medieval times. Rather, abbreviated forms are now coined for convenience and have become a vital part of technical vocabularies. Cannon suggests that abbreviated forms superseded their full forms because they became fashionable and popular in the twentieth century, as evidenced by the increasing number and size of general and specialized dictionaries of abbreviated forms.

Although examples of clipping in the languages of Western Europe can be traced as far back as the 16th century, the expansion of abbreviation is essentially a feature of the late 19th and 20th centuries (Kreidler: 2000). Kreidler believes that several contributing factors were involved: firstly, the rapid growth of technical terms and political administration in modern life resulted in the production of considerably long terms, causing people to perform a ‘Procrustean operation’; second, an ‘element of play’ was involved—abbreviation began to be seen as an enjoyable linguistic sport, in the same manner as punning and rhyming; and

finally, a number of other sociolinguistic factors caused abbreviation to gain popularity, including prestige, fashion and social bonding.

As to borrowing abbreviated forms, Cannon poses the interesting question of whether a language is more likely to borrow the full form or its abbreviated forms when they both exist in a language with an alphabetic writing system. He notes examples of acronyms such as the Persian secret police SAVAK, the Portuguese political party UNITA and the Afghan Persian intelligence agency KHAD, which were borrowed into English in their abbreviated forms and original term order, without regard to English grammatical conventions. Cannon contrasts this situation with that of the acronym designating the disease *AIDS* when borrowed by Spanish (el SIDA) and French (le SIDA).

Kafi (1991) reports that nearly 10 per cent of English words and compounds in *Webster's New Collegiate Dictionary* are abbreviated forms. More recently, the number of such forms was estimated to be around 5 million (Zhou: 2012, 102-103). In addition, the number of English general and specialized dictionaries and websites of abbreviated forms in various subject fields is substantial, while corresponding resources in other languages, such as Persian, are much less prevalent. The extensive usage of abbreviation persuaded Ayto (1999, ix) to call acronyms and blends as the symbols of the second half of the 20th century.

3.4. English abbreviated forms in other languages

Today, abbreviation is a powerful method of word/term formation in the English language and some other languages. English abbreviated forms not only are increasing in business, scientific, technical and general English vocabularies, but also are penetrating other languages.

The tendency for other languages to adapt English abbreviated forms may be observed in the *Multilingual Glossary of Abbreviations* compiled by the Council of European Communities. The Glossary lists more than 3000 abbreviated forms used in official documents of the Council, detailing equivalents (if any) in the six languages under consideration. Gonzalez (1991) examined the first 100 entries for which an abbreviated form is used in each of the six languages. He found that 27 per cent of the German abbreviated forms, 34 per cent of the Italian abbreviated forms, and 44 per cent of the Dutch abbreviated forms were taken from English.

English abbreviated forms are penetrating other languages not only by means of the borrowed forms themselves, but also through the introduction of abbreviation as a word formation method. That is, English abbreviated forms are gaining prominence in numerous lexical domains of other languages, and have also led to the coining of abbreviated forms in languages with a limited or non-existent prior tradition of abbreviation, such as Persian.

Before discussing the Iranian experience, approach and policy towards the increasing appearance of English abbreviated forms in Persian, I will review the experiences and strategies of language users and planners in dealing with English abbreviated forms in French, Spanish and Arabic.

3.4.1. French

The French language, which has a rich experience of both status and corpus planning dating from the Renaissance, has been confronted by widespread borrowing from English for decades.

The relatively vast number of rules and regulations against ‘non-use of French’, especially the use of English, was not as successful as language planners expected. Martin (2006) cites a number of rules restricting and resisting the use of English. Referring to one such rule, he quotes from Loretta Nelms-Reyes (1996, 288-9) who details France’s legal *crusade* against English:

‘Overall, the 1975 language statute, perhaps because it was camouflaged as a consumer-protection law, had little impact on the increasing number of Anglo-American terms being used in everyday French... Poor drafting, which required broad judicial interpretation to redefine the statute, coupled with inconsequential fines, made the statute largely unsuccessful in limiting the use of English, especially by the advertising industry. Thus, although thousands of companies and individuals were investigated under the 1975 law, the language ban was routinely defied or circumvented.’

However, despite a history of language policies reflecting linguistic nationalism and radical position towards English, French language circles began to change this viewpoint in the 1980s. Emphasizing both English and French’s Greek and Latin roots, some linguists suggested that English terminology could be considered a means of *fertilizing* French scientific and technical vocabulary, rather than being perceived as terminology to be avoided at all costs. The modification of French language planners’ views about borrowing from

English was observed in their decisions to render English N+N noun phrases as N+de+N into French and to develop programs to transform English compound noun terms into equivalent French compounds (Humbley and Palacios: 2012, 64).

In his paper on the impact of Anglicism on French abbreviated forms, Humbley (1997, 268) identifies the increasing number of acronyms and initialisms for technical terms, many of which are borrowed directly from English. He adds: ‘As the motivation of these terms is very limited, one strategy has been to find a French coinage that corresponds to the English acronym. Thus, *high cube* and *super high cube*, known in railway circles as HC and SHC[,] have been given the equivalents *hors cotes* and *super hors cotes* respectively.’ On the other hand, Gonzalez (1991) notes an increasing tendency towards the displacement of French abbreviated forms in favor of English ones, such as SEATO (South East Treaty Organization), which has prevailed against its French counterpart OTASE (Organization du traite de defense collective pour l'Asie du Sud-Est).

Despite efforts to the contrary, ‘the image of English as the appropriate language for science and technology is strong, and planners for French have to work hard to convince French scientists that they will not suffer if they use French’ (Ager: 2005).

3.4.2. Spanish

The borrowing of English abbreviated forms may also be observed in Spanish scientific texts. Humbley and Palacios (2012, 74-75) summarize a study focusing on terminology used in texts relating to Alzheimer’s disease, carried out by Beatriz García Alonso and Cristina Lumera in 2009. The highly specialized texts analyzed as part of this study were written in English and Spanish in 2008 and 2009. The study’s authors selected 77 terms written in English and 63 in Spanish, and analyzed them with a view of identifying any terminological dependency. They found that 34 per cent of the terminological units were made up of initialisms and symbols, but also identified complex dynamics in the data. For instance, the peptide *Beta amyloid* is usually shortened to the form *A β* in English texts, although in some such texts the Greek letter is not used and *beta amyloid peptide* is written. It appears in Spanish texts as *peptido beta amiloide*. In Spanish texts, *A β antibody* appears only with the full form *anticuerpo beta amiloide*. Despite these complexities, final analysis of the data demonstrated that the examined texts followed English terminology very closely, and that some English abbreviated forms were directly borrowed into the Spanish texts.

The pioneering work of Aguado de Cea (1993) demonstrates that the most common practices in Spanish, when dealing with abbreviated forms, is either the use of the original English form preceded by the definite or indefinite article, like *un CD-ROM*, or the expansion of the full term corresponding to the last English initial, as in *memoria RAM*. However, the last English initial is not omitted from the acronym; the *memoria* and *M* in the aforementioned example have exactly the same meaning (quoted in Belda Medina: 2004, 921). Humbley and Palacios (2012, 75-77) also describe a similar study, in this instance focusing on texts which used remote sensing terminology. A comparative corpus, made up of scientific articles in English and Spanish, were identified from María Lara Sanz Vicente's 2011 doctoral thesis. The study revealed that initialisms were extremely numerous in the field and that when written in Spanish, kept the same order as in English without translation. For example, *Linear Imaging Self-Scanning Sensor (LISS)* is found in compounds such as *sensores LISS* and *en modo LISS*.

Interestingly, Belda Medina takes for granted that English abbreviated forms relating to information technology are not generally translated into Spanish. In his opinion, this causes terminological problems when the abbreviated forms are not very popular or common among computer users and thus they need to be translated into Spanish. He suggests that in such cases, as the structure in English and Spanish is different, translators have to take special care about two key matters: (1) word order, and (2) the use of certain prepositions, particularly 'de' which might have more suitable alternatives like 'para, por, mediante'. Gonzalez (1991) principally agrees with Martin-Municio (1986, 108) that when faced with complex technical terms, translators have no alternative but to accept and adapt the abbreviated forms in their already internationally established original forms; a similar policy appears to have been adopted by the Spanish Royal Academy of Sciences in recent times.

In short, attempts to adopt Spanish equivalents for the English abbreviated forms in the field of information technology have been generally unsuccessful. For example, neither the acronym *MMM* (Malla Máxima Mundial) for *WWW* (World Wide Web), proposed by the Centro Virtual Cervantes nor *dibín* (dígito binario) for *bit* (binary digit), recommended by the Diccionario de la Real Academia, captured the communication context (Belda Medina: 2004, 921).

Gonzalez (1991) concludes that in certain cases, a translator would be ill advised to attempt translation of abbreviated forms from another language, due to their uneven frequency and the conditions of use applying to many of them.

3.4.3. Arabic

Like in Persian, abbreviated forms in Arabic morphology are relatively rare. Historically, Arab philologists preferred full forms, and the majority of contemporary abbreviated forms in Arabic are outcomes of translations from other languages (Al-Qinai: 2007). Blachère (1956, 29, 46, 144-149) postulates that abbreviated forms exist in the Quran (quoted in Al-Qinai 2007). I do not concur with this statement because to the best of my knowledge most interpreters of the Quran do not agree with this opinion. Some insist, for example, that the so-called abbreviated forms are in fact codes or symbols. Furthermore, there is no identification of any full forms correlating with what Blachère suggests are derived from. Further, according to Al-Hamly and Farghal (2013), the use of Arabic abbreviated forms was traditionally confined to religious phrases, such as **هَلْ** for the sentence **لَا إِلَهَ إِلَّا اللَّهُ** (There is no God but Allah) and **بِسْمِ** for the phrase **بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ** (In the name of God, the most Gracious, the most Merciful).

It is possible to identify a few abbreviated forms in Modern Standard Arabic. Familiar examples, which are used as full forms in spoken language, are **د.** for **دكتور** (doctor) and **م.** for **مهندس** (engineer). Each one is formed by the initial letter of the full form followed by a dot. However, Arabic also employs abbreviated forms as a result of the continued influence of English technical terminologies, particularly in the fields of business, industry, tourism, science, technology, academia and so on. Arabic translators adopt different strategies in dealing with them. For instance, DNA (deoxyribonucleic acid) is variously translated into corresponding individual Arabic letters reflecting the English pronunciation (**دي ان اي**), an Arabic acronym (**الدنا**), an full form Arabic loan translation (**النووي الحمض/الوراثية البصمة**), or a combination of these techniques. It should be also noted that Arabic can readily borrow English acronyms such as AIDS (**الايدز**), UNESCO (**اليونسكو**) and NATO (**الناتو**), but that it is extremely uncommon to acronymize English initialisms such as DNA; the latter are usually either translated or transcribed using the Arabic alphabet (Al-Hamly and Farghal: 2013).

A case study conducted by Al-Hamly and Farghal examined the strategies of translators to deal with English abbreviated forms in the Arabic version of *Scientific American*. The material consisted of 15 Arabic translations of *Scientific American* articles appearing in

Majalat Al-Oloom, a publication of the Kuwait Foundation for the Advancement of Sciences. The data showed that professional scientific translators employed six different strategies, summarized in Table 3.1 following. The most common practice was the provision of the full Arabic form, either with or without the original English abbreviation.

It is also interesting that in some instances, Latin and Arabic letters were used in combination in the translation of English initialisms. For example, in the term *المادة المتفجرة TNT* (TNT explosive material), the English initialism, in English letters, appeared after the Arabic definite article; this approach conflicts with the Arabic cursive writing system which is not only written from right to left (in contrast to English), but also demands that certain letters must be attached to previous and/or next letter.

More interestingly, the data also shows that no attempt was made by the translators to coin Arabic abbreviated forms as equivalents for the English ones, a practice that is officially pursued in the case of Persian and which will be discussed in the next section.

Table 3.1- Percentage of translation strategies

| | Strategy | Percentage |
|---|--|------------|
| 1 | Translation Alone Example: الأمريكية المتحدة الولايات (U.S.) | 41.6% |
| 2 | Translation + abbreviated form Example: CO2 الكربون أسيد ثاني | 22.5% |
| 3 | Arabic generic word (to clarify the translation)+ Borrowing Examples: HIV الفيروس (HIV virus); المادة المتفجرة TNT 'TNT explosive material' | 18.3% |
| 4 | Borrowing Alone Example: IEEE for 'IEEE' | 9.1% |
| 5 | Borrowing + abbreviated form Example: AIDS الأيدز | 4.4% |
| 6 | Translation + Borrowing Example: 4E الصبغي for 'Chromosome 4E' | 4.4% |

The need to translate English abbreviated forms presents several complexities when Arabic is the target language. On the one hand, as abbreviation is not a common word formation method in the Arabic language, coining Arabic equivalents for foreign abbreviated forms is almost unprecedented and thus extremely challenging. Humeid and Altai (2013) state that many Arab linguists believe abbreviated forms are not of significance and that there is no need to use them in Arabic. They add the number of dictionaries of Arabic abbreviated forms is not considerable. Humeid and Altai also provide results of a study whereby university

students were asked to identify abbreviated forms for a range of English and Arabic phrases. The study showed that most of the participating university students faced difficulties in attempting to construct Arabic abbreviated forms while they had much less difficulty constructing English ones. This may be due to the rareness of such constructions in Standard Arabic, as some Arab linguists believe. Humeid and Altai also point out that most abbreviated forms are translated into Arabic in their full forms, without using abbreviation.

On the other hand, the Arabic language is spoken by more than 400 million people in more than twenty countries. Hence, the possibility that inconsistencies may arise is also a problem. There is no doubt that this problem is not restricted to abbreviated forms. Sieny (1988) emphasizes that coordination and terminology unification is more challenging and difficult than term formation. Some Arab countries, including Mauritania, Morocco, Algeria and Tunisia, have frequent communications with French-speaking organizations while most of the remainder have more links with English-speaking ones. As an example, Sieny cites the Arabic equivalent for the term *computer*. Arab countries which use French-based terminology use /rattaabah, nazzaamah/, which are translations of French *ordinateur* (from the concept of putting things in order), while /al-haasib al-aali/ (from the concept of calculation) is common in countries which use English-based Arabic equivalents. Sieny identifies some of the causes of such inconsistencies. Among linguistic factors, he cites the presence of a large number of synonyms for some concepts and the multitude of subjective considerations in Arabisation procedures. Administrative factors include the lack of an official terminological body to coordinate the activities in the field, the slow speed of the official agencies involved in the production of Arabic terms, and poor dissemination of new terms. The tendency of translators to Arabize terms rather than apply existing terms or to coin Arabic equivalents causes synonymy and thus intensifies the problem (Maarouf: 2001).

The increasing number of abbreviated forms has created a very complex situation for translators inside and outside of the Arab world. Since Arabic is one of the official languages of the United Nations, its documents must be translated into Arabic. It is not difficult to imagine the problems of word formation and terminology unification that translators encounter as they seek to produce Arabic versions of UN documents. Due to disparities between the terminologies used in the Arab world, which variously include borrowed abbreviated terms from languages including English, French, Spanish and Italian, a translator often finds more than one abbreviated form for one and the same referent (Al-Qinai: 2007,

370). This problem is particularly pronounced in the case of synonymic acronyms from English and French-based equivalents. For example, AIDS (acquired immune deficiency syndrome) is variously written as ايدز, from English, or سيدا, from French. The same situation occurs in the case of NATO (North Atlantic Treaty Organization), written as ناتو or اوتان, from English and French respectively (Humeid and Altai: 2013).

Al-Qinai considers the main drivers of this phenomenon to be lexical gap and the desire to acquire the air of prestige associated with borrowed terms. In his opinion, dealing with European abbreviated forms in Arabic is very problematic because the transfer happens between languages from different families— from Indo-European languages to a Semitic language. He also points to some other difficulties, such as the absence of capitalization in Arabic and the lack of correspondence between some Arabic and foreign letters. Al-Qinai proposes several solutions to reduce the inconsistencies caused by borrowed European abbreviated forms, including: to enclose abbreviated forms in parentheses or inverted commas, to write them italic, boldface or underlined text, to use the Latin characters of the original, and to apply modified characters adopted from Persian or Urdu for foreign consonants.

Al-Qinai (2007, 368) claims that the relatively high rate of illiteracy in Arabic-speaking countries may be a reason that native speakers tend to make themselves comprehensible to their audience by avoiding opaque abbreviated forms, and that this may hinder native speakers from coining native abbreviated forms. Thus Al-Qinai concludes that Arabic speakers have no alternative but to accept foreign abbreviated forms or their transliterated approximants along with the imported technology. However, I have not seen any reference to support his presupposition, and I believe that it is not easy to prove the existence of a reverse correlation between literacy rates and the use of abbreviated forms.

3.4.4. Persian

Compounding, derivation and, more recently, prepositional phrases are commonly and widely used to build words, terms and appellations in contemporary Persian. However, the number of borrowed English abbreviated forms, especially in technical and scientific terminologies, is rapidly increasing in Persian without Persian equivalents being coined. The issue has affected both academic discourse and the language of common use.

In an unpublished study (Akbari: 2013), I examined 3,000 key terms in Persian academic journals from a variety of disciplines, including: agriculture, medical, engineering and pure sciences, arts and humanities. The use of English abbreviated forms (in English alphabet) in Persian scientific texts was striking. In order to address them, publishers, authors and translators of scientific books employ different strategies, including: substitution by the full form Persian equivalent; adoption in its original alphabet; or transliteration into Persian (as لوح فشرده, *CD*, or سی‌دی for *CD* respectively). Although the continuation of this situation gives academics and translators liberty to select their own desired method, it increases erraticism in terminologies of and across various branches of scientific knowledge. In order to solve this problem and prevent further chaotic term formation mechanisms, terminology standardization is the only alternative. The need to adopt a consistent policy towards English abbreviated forms is one of the main challenges facing authors of scientific texts, translators, researchers as well as the members of terminology committees and councils at the Academy of Persian Language and Literature who devote much time to discussing the issue.

In this section, I will discuss abbreviation as a term formation method in Persian. I will then examine the current official terminology policy for English abbreviated forms in Iran and the challenges it presents.

3.4.4.1. Abbreviation dynamicity and domains

Some scholars assert that the need to convey more information in less space as well as the difficulty of engraving on inscriptions are the causes the introduction of abbreviated forms in Old and Middle Persian. Nonetheless, according to Kafi (1991), no abbreviated forms were used in early New Persian scientific books. Sadeghi (2001b, 249) identifies لک /læk/ as the only example of vernacular acronyms, if it can be referred to as such, in the history of Persian. The term /læk/ is probably created from /lor/ and /tork/— two ethnic groups in Iran.

Over the last decades, the number of Persian abbreviated forms has slightly increased in some contexts and lexical domains. Nonetheless, the number of vernacular abbreviation designations in contemporary Persian remains modest, especially in comparison with English.

A number of scholars have extracted the existing Persian abbreviated forms from various sources. Zahedi and Sharifi (2009) reported some 400 abbreviated forms in dictionaries, articles and advertisements, while Mokhtari-Memar (1998) identified about 500 abbreviation designations from different Persian texts and Iranian shop signs. However, the highest figure

is cited by the Committee for Abbreviation (2000, 11) at the Academy of Persian Language and Literature, which reported nearly 900 abbreviated forms, chiefly found in general dictionaries, encyclopedias and biographies. If we compare even the largest of these figures with the number of compound forms coined in Persian during the last one hundred years, that is, circa 600,000 (Yarmohammadi: 2005), it is obvious that abbreviation methods are comparatively rare as a form of Persian word/term formation.

It is interesting to note that Persian abbreviated forms in defense related terminologies are probably historically and quantitatively most prevalent (Akbari: 2014). Ahani (2010) cites the necessity of observing the principles of security and cryptography as well as the importance of rapid transfer of messages by military personnel as the reasons behind this phenomenon. Alternatively, it is possible that the presence of American advisors in Iran's military education system during and after the Second World War encouraged the use of abbreviation in Persian military terminology (Fatemi: 2012, Interview).

In an attempt to measure the increasing rate of abbreviated forms from 1960s to 1990s, Abolhassani and Pooshaneh (2011) contrasted the proportion of abbreviated forms with other word/term forms in Persian political journalism. The results indicated that the frequency of abbreviated forms hardly changed over the period; the incidence of clipped forms and acronyms increased only 3 per cent over the period and blends showed only a slight difference.

In a study to investigate the dominant tendencies in brand formation of Iranian products the results showed that some 2.5 per cent of 600 brands examined included one form of abbreviation (Mahrami: 2005). The abbreviated forms used in brand names examined in Mahrami's study were mostly contracted forms, such as *کاجیران* /kāčīrān/ for *کارخانجات چرخ* /kārḫānejāt-e čærḫ-e xæyyāti-ye ʔirān/ (Iranian Sewing Machine Factories) and *شوما* /šumā/ for *شوینده مخصوص ماشین لباسشویی* /šuyænde-ye mæxsus-e māšin-e lebāsšuyi/ (washing machine powder).

In Persian argot spoken mainly among youngsters, abbreviation is an active word formation method. Examples include *اطل* /ʔetel/ for *اطلاعاتی* /ʔettelāʔāti/ (secret agent) (Samaei: 2005). Abbreviation is also used in text messages sent by Persian mobile phone users. However, as a study by Mahzari and Chupanzadeh (2013) shows, text message senders frequently use uneconomical styles, such as exaggerated stylish literary, in order to appear different, cute,

clever, creative, funny or cool. The study also mentions another uneconomical technique, the use of mathematical games, such as the use of Mer10+10+10 instead of *merci*, thank you. The last syllable of the word, *ci*, is a homophone of the number 30 in Persian.

An examination of the collections of abbreviated forms (including Mahrami: 2005, Mokhtari-Memar: 1998, Harati Tehrani: 2007 and Ghiasi Rad and Abolhassani: 2005) suggests that abbreviation is more common in appellations than technical and scientific terms, but still not widespread, especially in the spoken language. The usage of acronyms in everyday language is slightly more prevalent, although uncommon. For instance, although the acronym نه‌ا‌ج‌ا /*næhājā*/ for *نیروی هوایی جمهوری اسلامی ایران* /*niru-ye hævāyi-ye jomhuri-ye ʔeslāmi-ye ʔirān*/ (Islamic Republic of Iran Air Force) is well-known in the speaking community, the short form *نیروی هوایی* /*niru-ye hævāyi*/ (Air Force) is much more common. It should also be noted that the coined acronym does not follow the same element order as the full form.

3.4.4.2. Pros and cons

In his contrastive study on abbreviation in English and Persian, Famian (2008) suggests that the coinage and usage of abbreviated forms can be regarded as a realization of the Principle of Least Effort. Famian selected 60 English and Persian websites relating to topics including current affairs, government issues, science, business, sports and culture and extracted abbreviated forms. He examined the data, comprising 60,000 words (30,000 in each language) with respect to each language's tendency towards the coinage and usage of abbreviated forms. Famian concluded that communities of people experiencing 'competitive and speedy lifestyles' tend to use abbreviation more frequently than those with more relaxed lifestyles. However, he did not provide the criteria that resulted in the classification of American speakers as people with 'competitive and speedy lifestyles' and Iranian speakers to the contrary. More importantly, he did not present the basis of his generalization that a systematic correlation exists between the modernity of a society and the rate and frequency at which abbreviated forms are coined. Moreover, Famian's theory can hardly explain the skyrocketing number of vernacular abbreviated forms in Bahasa Indonesian. According to Jaap Erkelens, a representative of KITLV (Koninklijke Instituut voor Taal-, Land-en Volkenkunde), the Royal Institute of Southeast Asian and Caribbean Studies at Leiden, some 450 new abbreviated forms are coined every month in Indonesia. They appear in everyday communication, media and official documents issued by the Indonesian government and various other institutions (Bałkiewicz: 2010). Bałkiewicz suggests that Indonesians are good

at creating and memorizing abbreviated forms because of their mentality and linguistic culture.

Sadeghi (2001b: 248-251), a member of Terminology Council at the Academy of Persian Language and Literature, suggests that the current situation of the Persian language and the needs of the scientific community in Iran necessitate the expansion of Persian term formation methods beyond compounding and derivation. He nominates abbreviation among other methods with potential for growth.

Some scholars believe that in the modern age a lack of abbreviation in a given language indicates an inadequacy in that language. For example, Kafi (1991) suggests that Persian, as a widely used language in Iran, requires abbreviation in order to be concise, clear and easy-to-transfer; otherwise, non-Persian abbreviated forms will penetrate and harm the language.

Khodayar (2010) acknowledges Kafi's (1991) above-mentioned statement and suggests that a website for abbreviated forms be established in order to encourage the speaking community to use them. He does not estimate how many Persian abbreviated forms exist but claims that the number of abbreviated forms in western European languages is one and a half times greater than all Persian vocabulary.

Mansouri, physicist and member of Terminology Council, declares that Iranian physics PhD students write their dissertations completely in Persian, however, Persian as a language of science needs a solution for abbreviation (2007, 68).

To encourage Persian speakers to use abbreviated designations, Mokhtari-Memar (1998) introduces a number of existing and potential forms while conceding that it is likely that the structure of Persian does not lend itself to the production of abbreviated forms.

Another attempt to give momentum to abbreviation in Persian is the MA thesis of Harati Tehrani (2007) entitled 'On Acronymy in Persian'. Her study is not purely concentrated on the language of science; rather it examines abbreviated forms extracted from one medical dictionary, a number of general dictionaries, advertisements, argots as well as the publication of approved terms by the Academy of Persian Language and Literature. Like many other advocates of abbreviation in Persian, she points to the Principle of Least Effort and states that native speakers' propensity to use short forms as opposed to abbreviated forms is regrettable because the latter are more economical and more precise. This principle will be discussed in

Chapter 6. In her conclusion, Harati Tehrani extracted more than twenty abbreviation methods from the data examined and recommended these be applied in Persian word formation.

Ghiasi Rad and Abolhassani (2005), who encourage abbreviation in military discourse, present a list of about 50 English and Persian abbreviated forms in this field. It seems to me that some of them are not easy to use and can only be pronounced in their full forms.

In short, advocates of abbreviation believe that it makes communication more elegant. Those in favor suggest that abbreviation saves time, text and energy, that abbreviate forms condense terms in accordance with the Principle of Least Effort. However, the major deficiency of such arguments is the absence of supporting terminological and socio-terminological studies. Further, such arguments tend to reflect opinions and viewpoints that are chiefly based on a misinterpretation of the Principle of Least Effort. There are few evidence-based studies on the potential of the Persian language for abbreviation, and little socio-terminological research on the tendency of Persian speaking community to use abbreviation. We need to identify clear answers to two critical questions: 1) why are abbreviation methods stagnant in the Persian terminologies? and 2) why does the Persian speaking community show such little interest in abbreviated forms?

Furthermore, none of the authors considered both the advantages and disadvantages of abbreviation. Mostly, they simply present opinions encouraging (or discouraging) the use of abbreviation, or compile lists of abbreviated forms in an attempt to inspire the speaking community to use them.

3.4.4.3. Official terminology planning for English abbreviated forms

The Academy of Persian Language and Literature, the highest authority responsible for language planning in Iran, decided to take the first official step to solve the problem of arbitrary approaches to abbreviated forms in 1996, with the establishment of the Committee for Abbreviation at the Terminology Department. The Committee was tasked to develop a strategy to address the issue.

As Akbari (2014) reports, ‘the Committee for Abbreviation was primarily composed of two linguists, one engineer in electronics, one expert in librarianship and information science and one researcher in terminology. After about three years and the examination of 23 dictionaries, encyclopedias and biographical encyclopedia, the Committee released its conclusions in a

final report in 2000'. The report emphasized that abbreviation is a critical requirement for the enjoyment of easy communication, the quick transfer of information and the explicitness of messages, although it did not explain how abbreviated forms, which are mostly opaque, make messages more explicit. The coinage of abbreviated forms for the ministries and organizations with multiple word appellations as well as university textbook terminologies was recommended by the Committee for Abbreviation. The Committee also recommended the standardization of the abbreviated forms in reference books. In 2002, the Committee for Abbreviation ceased to be active because its members became dissatisfied with the productivity of abbreviation as a term formation method in Persian. The structure of the language and the lack of any tendency towards abbreviation amongst the speaking community were among the frustrations expressed by the Committee; issues that remain at the forefront of abbreviation discussions within terminology committees and councils at the Terminology Department to the present day.

However, the dissolution of the Committee for Abbreviation did not discourage the authorities at the Terminology Department; they continued to request that terminology committees suggest abbreviated equivalents for foreign terms. The policy of the Terminology Department, according to the *Principles and Regulations of Terminology*, is to develop the coinage of Persian abbreviated forms. The revised version of the *Principles and Regulations of Terminology* was issued by the Academy of Persian Language and Literature in 2009. It recognizes abbreviation as a method of term formation to be employed in order to make equivalents for foreign terms. This policy was essentially introduced as a guideline for the Terminology Department that presently is comprised of about 70 terminology committees across different fields of science, arts and humanities.

Furthermore, the application of abbreviation in term formation was supported and is still supported by the former and the present head of the Academy of Persian Language and Literature respectively. Habibi (2012, 123), the late head of the Academy, cited one of the most famous arguments arising in the study of term formation, that is, whether speakers prefer precision or conciseness. He argued that neither English nor Persian full forms are able to compete with English abbreviated forms and that therefore the best solution is for language planners to condense foreign long terms into single Persian words. As examples, he mentioned some of the existing Persian acronyms such as هما /homā/ and نه‌جا /næhājæ/ for *Iran Air* and *Islamic Republic of Iran Air Force* respectively. Nevertheless, Habibi did not

consider what the majority of long terms are, that is, those terms for which it is not possible to coin Persian acronyms. Haddad (2000, 6), the current head of the Academy, stresses the need for abbreviated forms to be standardized in order to prevent homonymy. Traditionally the head of the third Academy has simultaneously held the position of head of Terminology Department. Since the establishment of the third Academy, Dr Gholam Ali Haddad Adel and Dr Hassan Habibi alternatively held both positions until Dr Habibi's death in 2013.

Recently, the Terminology Department increased its efforts to encourage abbreviated forms in Persian terminologies by reestablishing the Committee for Abbreviation. In order to obtain more information about the activities of this Committee I interviewed one of the members, the linguist Alaeddin Tabatabai, in March 2014. He told me that after the activity of the Committee for Abbreviation was terminated in 2002, terminology committees across different disciplines were asked to suggest Persian abbreviated equivalents for foreign terms. However, the suggestions they made were not to the satisfaction of the authorities. He added that the lack of abbreviated forms impeded the development of Persian scientific terminologies, which in the same manner as the scientific terminologies of English, French and German are dependent on abbreviated forms. As a result, the Terminology Department reestablished the Committee for Abbreviation with new members in 2012 in order to construct abbreviated forms for approved terms in various subject fields. The committee has five members. Tabatabai added that the outcomes of this committee are likely to be more numerous than those produced by the terminology committees between 2002 and 2012, because the latter show little interest in applying abbreviation techniques. The Committee for Abbreviation had built about 200 abbreviated forms by March 2014. This Committee's activity is aimed to supplement rather than substitute the attempts of terminology committees to suggest abbreviated forms. Tabatabai also pointed out that the outcomes of the abbreviation committee are sent to the relevant specialized terminology committee for their feedback. When I asked about strategies for the dissemination and acceptance of the coined abbreviated forms, Tabatabai expressed his hope that if such terms are used by university teachers, they will be accepted by language users and will successfully enter Persian terminologies.

The Committee for Abbreviation (2013) also compiled an internal document titled *Principles, Regulations and Methods of Abbreviation*. It is more or less the same as in the *Principles and regulations of Terminology* (Academy of Persian Language and Literature: 2009b) with some

modifications. The main difference appears in the typology of abbreviated methods, which now includes two new categories. One is entitled *special method* and covers all outcomes that cannot be placed in any of other categories, and the other is the result of the division of clipped forms into those that are pronounced in full form and those that are not. The new Principles also propose that abbreviated forms should resemble the relevant full form so that the two forms may be easily associated in the minds of speakers. The Principles further state that the pronunciation of the newly coined abbreviated forms must be agreed upon by experts in the field. This is significant in the case of Persian because short vowels are not shown in the Persian script, leading to ambiguity in the pronunciation of newly coined lexical items. The existence of homonymy, homophony and inconsistencies in pronunciation of Persian letters are also noted in this document. In order to address these issues, the Principles suggest new names for three Persian letters, that is, **ثا**, **ح** and **ها** for **ث**, **ح** and **ها** respectively.

3.4.4.3.1. Evaluations

Although strategies to coin abbreviated forms have been pursued officially for nearly twenty years, unfortunately there is no specific and comprehensive study on the acceptability and application of approved abbreviated forms by desired groups, such as experts in relevant fields or translators of technical texts. However, some general studies on the acceptability of the Academy's approved terms make reference to a number of abbreviated forms.

In an investigation into the acceptance of Persian equivalents for terms of genetics approved by the Academy, 101 questionnaires were distributed to academic staff and post-graduate students of two universities in Iran. The questionnaires contained approved 20 terms; 10 neologisms coined by the Academy and 10 selected from existing resources. Four of the terms were abbreviated forms introduced by the Academy, that is, DNA, RNA, ribosomal RNA (rRNA) and transfer RNA (tRNA). The results revealed that the terms selected from existing resources were accepted at the highest rate, while the four coined abbreviated equivalents were considered least acceptable (Hesami-Tackallou and Ghanbari: 2012).

In an interesting field study, Pahlavan Shilgani (2010) investigated the views of Persian speakers towards abbreviated forms in contemporary Persian. Through a questionnaire composed of 104 abbreviated forms and appellations, she asked informants aged between 20 and 45 to mark the reasons of their acceptance or rejection of abbreviated forms. Two of coined abbreviated forms by the Academy were included in the questionnaire. Of the 60 respondents, 83.1 per cent rejected the Persian abbreviated form for *dissolved oxygen* due to

its lack of transparency. The abbreviated equivalent for *learning service provider* was also rejected by 71.2 per cent of respondents for the same reason.

In two separate studies, Hazbavi investigated the usability and acceptability of the Persian equivalents introduced by the Academy of Persian Language and Literature in translations of IT and chemistry books. In one of his studies, Hazbavi (2012 b) compiled a list of 100 terms, including five abbreviated forms, in the field of chemistry, each of which had been approved by the Academy. Hazbavi investigated the usage of the coined terms in the Persian translations of 10 chemistry books written in English. He found that in the case of 71 of the 100 terms he had compiled, translators had used equivalents other than the ones approved by the Academy. He concluded that most Iranian translators do not welcome the Academy's approved terms and prefer to borrow the original English terminologies using different translation methods, and therefore that the Academy has failed to reach its goal of providing acceptable and usable Persian equivalents for English chemistry terminologies. Hazbavi (2012a) also examined the usage of 140 approved information technology (IT) terms, including about 15 abbreviated forms, in the Persian translation of 16 books about IT written in English. His data analysis revealed the unwillingness of Iranian translators to apply Academy approved terms in the field of IT, and he reached similar conclusions to those he had made in his previous study on terms used in chemistry.

Although Hazbavi did not consider the usage of abbreviated forms specifically in either of his studies, no Academy-approved abbreviated form appeared in the translated texts he examined. Nonetheless, and interestingly, he does not note any Persian abbreviated form coined by a book translator, suggesting that translators have a reluctant attitude towards Persian abbreviation methods. Hazbavi (2014) advised me via personal communication that translators usually provide English abbreviated forms with their full form Persian translation in the first instance, and that they only use English abbreviated forms (in English letters) in subsequent instances.

The lack of a consistent policy towards foreign abbreviated forms is widely criticized. Talebinejad et al (2012) examined the terms approved by the Academy of Persian Language and Literature to measure the ratio of neoterms to borrowed terms, and criticized the Academy's lack of a consistent policy towards foreign abbreviated forms. The authors stated that in some cases, like *AIDS*, the Academy accepted the English abbreviated form but in others, such as *HTML*, it created long and incomprehensive equivalents.

Finally, Majd (2009 and 2011) also regards the abbreviated forms coined by the Academy with disfavour. He adopts an alternative approach to dealing with foreign abbreviated forms. In his opinion, ‘causeless omission of letters’ [abbreviation] is not applicable to the Persian language because the outcomes convey limited meaning for Persian speakers.

In summary, abbreviated forms coined by the Academy are not likely to be judged acceptable.

3.4.4.4. Non-official practices

Due to the lack of a comprehensive policy, a variety of strategies are employed to address foreign abbreviated forms in Persian texts. Scientific authors and translators may apply either of the following strategies: substitution by a full form Persian equivalent; adoption in its original alphabet; or transliteration into Persian (as لوح فشرده, CD, or سی‌دی for CD respectively). I assume that many of them are not aware of the abbreviation policy of the Academy and that even if they were, may not agree with or follow it.

In addition, language users apply various abbreviation techniques, probably mostly initialisms, for personal or small group use. Such coinage is casual and driven by economical motivations. However, such forms may be considered as closer to a form of note-taking, rather than comprising abbreviated forms, because they are not widely used in a domain or in a specialized terminology. Furthermore, they are usually pronounced in their full forms. Photo 3.1 shows such a form on a payment slip, which I took at a bank during my trip to Iran in September 2013.

Photo 3.1- Abbreviated form on a payment slip

The image shows a Bank Mellat payment slip with handwritten Persian text. The slip is divided into two main sections: 'جهت برداشت از حساب این قسمت را تکمیل فرمایید' (To withdraw from this account, complete this section) and 'جهت واریز به حساب این قسمت را تکمیل فرمایید' (To deposit to this account, complete this section). The left section contains fields for 'مبلغ' (Amount), 'حروف' (Letters), 'از شماره کارت' (From card number), 'شماره واریز' (Deposit number), and 'کدبینی' (BIN). The right section contains fields for 'مبلغ' (Amount), 'حروف' (Letters), 'به شماره حساب' (To account number), 'نام و نام خانوادگی' (Name and family name), and 'نشانی' (Address). Handwritten text includes '۱۰۰,۰۰۰' (100,000), '۱۱۹۴۳۴/۵۰', '۴۲/۴۴', and '۴۲/۴۴'. A red circle highlights the handwritten text 'سی‌پی‌فن' (C-P-F), which is an abbreviation for 'سی‌پی‌فن' (C-P-F). The slip also features the Bank Mellat logo and the website 'www.bankmellat.ir'.

I asked one of the bank clerks if the abbreviation on the payment slip was a common abbreviated form. He responded that it was a short form used only in that branch and that his

colleagues in other branches may not to recognize it. When I asked how the short form is usually pronounced in his branch, he replied that they always say the full form of the appellation, that is, شرکت پخش فرآورده‌های نفتی /šerkæt-e pæxš-e færværdehā-ye næfti/ (Oil Distribution Company) or they use its short form شرکت پخش /šerkæt-e pæxš/ (Distribution Company). It is also interesting to add that after I checked the company's official website, I found that what he cited as the full form was actually the short form of the real full form, that is, شرکت ملی پالایش و پخش فرآورده‌های نفتی ایران /šerkæt-e melli-ye pālāyeš væ pæxš-e færværdehā-ye næfti-ye ʔirān / (National Iranian Oil Refining and Distribution Company). It is not unusual for Persian speakers to see the complete full appellation of company names in the heading of a newspiece, for example, معاون مدیرعامل شرکت ملی پالایش و پخش فرآورده‌های نفتی, ایران منصوب شد, meaning 'new managing director appointed for National Iranian Oil Refining and Distribution Company' (National Iranian Oil Refining and Distribution Company: 2013).

3.5. Summary

Abbreviation is a powerful method of word/term formation in some languages. However, English abbreviated forms that flourish in America particularly are increasingly entering other languages, especially through their science and technology terminologies.

Although abbreviation is a familiar word formation method in French and Spanish, there is a tendency among native speakers of these languages to apply English abbreviated forms in their original forms rather than translating or coining vernacular equivalents for them. This tendency is also apparent in the Arabic language, even though it is a Semitic language, is written in a completely different writing system and does not use abbreviation as an active term formation method. Persian, an Indo-European language written in the Perso-Arabic script, is not an exception to this trend. This shows that many languages, even those with different linguistic systems, writing systems and from different language families, welcome English abbreviated forms. The similar linguistic behavior exhibited by the speakers of different languages reveals that extra linguistic factors are also involved.

The overwhelming prevalence of English abbreviated forms caused the Academy of Persian Language and Literature to adopt an official plan in order to encourage abbreviation in Persian terminologies. The plan was launched about twenty years ago and has been active since then. It is based primarily on the view that abbreviation methods meet the Principle of Least Effort and, hence, the coinage of Persian abbreviated forms will hinder the usage of English ones because the common practice for constructing equivalents for English terms

leads to *long* terms. Several independent (but not specific or comprehensive) studies on the outcomes of the Academy show that the plan has not achieved much success to date. These studies suggest that the speaking community tends to meet its lexical needs through other term formation methods, including translating the abbreviated forms into Persian full forms, or simply using English abbreviated forms. Nonetheless, the plan continues to be followed by the Academy in the hope that future generations will appreciate and use the coined abbreviated forms.

In the next two chapters, I will describe the Academy's official plan for promoting abbreviation and the outcomes it has produced. Chapter 4 will introduce the methodology and the data I applied in order to study the plan, and Chapter 5 is devoted to my results.

4. Methodology

4.1. Introduction

As discussed in Chapter 3, the Academy of Persian Language and Literature follows an official plan to promote abbreviation in Persian, in response to the extensiveness of borrowed English abbreviated forms. The plan was introduced about twenty years ago and its focus has remained unchanged since. Policy makers believe that the implementation of the plan hinders the usage of abbreviated forms in their original English forms.

In order to assess the implementation of the plan, I compared the coined Persian abbreviated forms, which are the outcomes of the plan, with the English abbreviated forms that were examined in the course of implementing the plan.

The abbreviated forms approved by the Academy of Persian Language and Literature are the source of the data.

4.2. Typology of abbreviated forms

There are a number of different definitions for and categories of abbreviation designations exist (López Rúa: 2002 and Ronneberg-Sibold: 2014 among many) In this study, I followed *ISO 704: Terminology Work — Principles and Methods* (International Organization for Standardization: 2009) in order to classify English abbreviated forms. In order to categorize abbreviated forms coined by the Academy of Persian Language and Literature, I followed the categorization defined in the *Principles and Regulations of Terminology* (Academy of Persian Language and Literature: 2009b) that is based on the official policy for abbreviation. Both classification systems will be explained below.

4.2.1. Typology of English abbreviated forms

According to *ISO/DIS 10241-1* (International Organization for Standardization: 2011, 6), an **abbreviated form** represents a designation and is formed through the omission of any part of its **full form**. Abbreviated form is a superordinate term that covers short forms, clipped terms, initialisms, acronyms, and the like (International Organization for Standardization: 2009, 52).

ISO 704: Terminology Work — Principles and Methods introduces the types of abbreviated forms in English as follows:

1. **Short forms:** abbreviated forms of long complex terms or appellations in which ‘fewer words are used to designate the same concept’; such as *Security Council for Security Council of the United Nations* [my example; the other examples in this categorization are original].
2. **Clipped terms:** abbreviated forms in which ‘the front, middle or back portion of a simple term’ is truncated. Both front and back portions may be truncated too; like *chute*, *flu* and *prefab* for *parachute*, *influenza* and *prefabricated house* respectively.
3. **Abbreviations:** abbreviated forms in which terms are made up through ‘omitting words and/or parts of a word’ and may be accompanied with a period at the end. Some abbreviations are formed by the first letter of a word and in some ‘the first letters of short phrases are grouped’, like *p.*, *etc.*, *L10N* for *page*, *et cetera* and *localization* respectively.
4. **Initialisms:** abbreviations in which ‘the first letter (or sound) of each or some of the elements of a complex term or appellation’ is used. They are always pronounced letter by letter and might be accompanied with period(s); like *UN*, *a.m.* and *PC* for *United Nations*, *ante meridian* and *personal computer* respectively.
5. **Acronyms:** abbreviations in which ‘initial letters or syllables from each or some of the elements of the full form’ are combined. Acronyms are pronounced syllabically like a word. A few well-known acronyms are *UNESCO* for *United Nations Educational, Scientific and Cultural Organization*, *laser* for *light amplification by stimulated emission of radiation* and *DOS* for *disc operating system*.

4.2.2. Typology of Persian abbreviated forms

Like the classification of English abbreviated forms in *ISO 704*, the approach of the Academy of Persian Language and Literature towards the typology of abbreviated forms is structurally oriented.

The *Principles and Regulations of Terminology* issued by the Academy of Persian Language and Literature in 2009 defines **abbreviated form** as the shortened form of a term/syntactic group and cites the following categorization:

1. **Single-letter abbreviations** are usually created by using one letter (usually the first letter) of a word represent the term; like: ص for صفحه (page).

2. **Multi-letter abbreviation [initialisms]** are usually formed by using the first letters of a complex term and are always pronounced letter by letter; like: ش.م.ر. for شیمیایی، میکروبی، رادیواکتیو (chemical, biological, radiological).
3. **Clipped forms** are created by omitting two or more letters of the beginning/end of a word or omitting a part of the end of a phrase, like: آز for آزمایشگاه (laboratory), and رض for رضوان الله علیه (she or he may go to paradise).
4. **Contracted forms** are formed by omitting two or more letters from the middle of a word or parts of the middle of a phrase or sentence, like: قس for مقایسه کنید (compare), تخ for تاریخ (history), and الخ for الی آخر (et cetera).
5. **Blended forms** are created by omitting parts of two (or more) words and combining the remained parts: آتش+باد for تشباد (fire + wind).
6. **Acronyms** are formed by combining the first letters of a phrase and pronouncing them like a word, such as: شماره استاندارد بین‌المللی کتاب for شابک (International Standard Book Number).

4.2.3. Notions on categorizations

A review of the definitions and examples in *ISO 704: Terminology Work — Principles and Methods* (International Organization for Standardization: 2009) and the *Principles and Regulations of Terminology* (Academy of Persian Language and Literature: 2009b) suggests that:

1. *ISO 704: Terminology Work — Principles and Methods* considers initialisms and acronyms as types of abbreviations in the typology of English abbreviated forms.
2. *ISO 704: Terminology Work — Principles and Methods* does not consider blends as abbreviated forms in English; rather it classifies blends in compounds along with complex terms and phrases. In this document, blends are compound forms that result from ‘fusing two or more words, after one or more of them have been clipped’, like *cyberspace* (cybernetics + space).
3. Abbreviations defined in the ISO standard for the English language cover both one-lettered abbreviations and contracted forms while they are considered as two distinct categories of abbreviated forms in the Persian document.
4. The *Principles and Regulations of Terminology* does not consider short forms as abbreviated forms in Persian.

Before addressing the main data, I will expand a study by Akbari (2014) on a proposed field for abbreviation as recommended by the Committee for Abbreviation, that is, the appellations

of ministries with multiple word appellations. Neither the relevant bodies nor the Terminology Department have implemented the recommendation to date. This examination describes the unplanned behavior of Persian in the coinage of appellations to some extent. It shows that short forms are very common in Persian although they are ignored in the *Principles and Regulations of Terminology*.

4.2.4. A negligence in Persian typology: short forms

As Akbari (2014) cites, the Committee for Abbreviation has recommended an abbreviated form for each government ministry with multiple word appellations, that is, 13 out of 18 Iranian ministries. Investigations show few of them have ever used any of the six types of abbreviated forms named in the *Principles and Regulations of Terminology* as abbreviation methods in Persian. However, as Table 4.1 shows, all 13 ministries already enjoy short form formation, a method of abbreviation that is not formalized in the mentioned resource. The common practice is to use fewer words to designate the same appellation and use the short form where needed. All short forms in Table 4.1 are formulated by the speaking community through unplanned processes and are commonly used in spoken and written Persian. Even the Ministry of Sport and Youth Affairs, which was founded only a few years ago, quickly acquired a short form from the speaking community, which appears in media and everyday usage. Akbari adds:

‘The only ministry possessing an acronym form is the Ministry of Science, Research and Technology. To obtain a phonologically pleasant acronym, it is transliterated into English as ATF while OTF corresponds to the phonology of the relevant full form and this makes decoding the acronym more problematic. In any case, the acronym form is not yet a workable substitute for the short form and is unfamiliar to the community.’

In a non-scientific, informal survey, I asked a number of ministry employees about the acronym form. None said they had heard the acronym form.

The last five ministries in Table 4.1 have single word appellations and thus have no need to be shortened; although employing دادگستری and اطلاعات [Justice and Intelligence respectively] for وزارت دادگستری and وزارت اطلاعات [Ministry of Justice and Ministry of Intelligence respectively] in spoken Persian is common.

Table 4.1- Iranian ministries' appellations

| No | Full form | Abbreviated form |
|----|---|---|
| 1 | وزارت آموزش و پرورش [Ministry of Education and Training] | آموزش و پرورش [Education and Training] |
| 2 | وزارت ارتباطات و فناوری اطلاعات [Ministry of Communication and Information Technology] | وزارت ارتباطات [Ministry of Communication] |
| 3 | وزارت امور اقتصادی و دارایی [Ministry of Economic Affairs and Finance] | وزارت اقتصاد [Ministry of Economy] |
| 4 | وزارت امور خارجه [Ministry of Foreign Affairs] | وزارت خارجه [The Foreign Ministry] |
| 5 | وزارت بهداشت، درمان و آموزش پزشکی [Ministry of Health, Medicine and Medical Education] | وزارت بهداشت [Ministry of Health] |
| 6 | وزارت تعاون، کار و رفاه اجتماعی [Ministry of Labor and Social Affairs] | وزارت کار [Ministry of Labor] |
| 7 | وزارت جهاد کشاورزی [Ministry of Agricultural Jihad] | وزارت کشاورزی [Ministry of Agriculture] |
| 8 | وزارت دفاع و پشتیبانی نیروهای مسلح [Ministry of Defense and Logistics] | وزارت دفاع [Ministry of Defense] |
| 9 | وزارت راه و شهرسازی [Ministry of Roads and Urban Development] | وزارت راه [Ministry of Roads] |
| 10 | وزارت صنعت، معدن و تجارت [Ministry of Industry, Mine and Trade] | وزارت صنایع/ وزارت صنعت و معدن [Ministry of Industries/ Ministry of Industry and Mine] |
| 11 | وزارت علوم، تحقیقات و فناوری [Ministry of Science, Research and Technology] | وزارت علوم / وزارت عتف [Ministry of Science] |
| 12 | وزارت ورزش و جوانان [Ministry of Sport and Youth Affairs] | وزارت ورزش [Ministry of Sport] |
| 13 | وزارت فرهنگ و ارشاد اسلامی [Ministry of Culture and Islamic Guidance] | وزارت ارشاد [Ministry of Guidance] |
| 14 | وزارت کشور [Ministry of Interior] | وزارت کشور [Ministry of Interior] |
| 15 | وزارت نفت [Ministry of Petroleum] | وزارت نفت [Ministry of Petroleum] |
| 16 | وزارت نیرو [Ministry of Energy] | وزارت نیرو [Ministry of Energy] |
| 17 | وزارت دادگستری [Ministry of Justice] | وزارت دادگستری [Ministry of Justice] |
| 18 | وزارت اطلاعات [Ministry of Intelligence] | وزارت اطلاعات [Ministry of Intelligence] |

Interestingly, as we can see in Table 4.2, the formulation of short forms was the most common abbreviation method used by the Academy of Persian Language and Literature in its collection of approved terms published in 2013.

Table 4.2- Abbreviation in a Collection of Terms Approved by the Academy of Persian Language and Literature (2013)

| | Full form | Abbreviated form |
|----|--|---------------------------------|
| 1 | حمل و نقل درون شهري جاده اي [Urban and Rural Transportation] | درون شهري [Urban] |
| 2 | دريايي و نقل حمل [Sea Transportation] | دريايي [Sea] |
| 3 | ريل و نقل حمل [Rail Transportation] | ريل [Rail] |
| 4 | حمل و نقل هوايي [Air Transportation] | هوايي [Air] |
| 5 | ژن شناسي و زيست فناوري [Genetics and Biotechnology] | ژن شناسي [Genetics] |
| 6 | علوم پايه پزشكي [Medical Sciences] | پايه پزشكي [Medical] |
| 7 | علوم سلامت [Health Sciences] | ع. سلامت [Health S.] |
| 8 | علوم سياسي و روابط بين الملل [Political Science and International Relations] | سياسي [Political] |
| 9 | علوم نظامي [Military Sciences] | نظامي [Military] |
| 10 | علوم و فناوري غذا [Food Science and Technology] | فناوري غذا [Food Technology] |
| 11 | گردشگري و جهانگردى [Tourism and Hospitality] | گردشگري [Tourism] |
| 12 | سلامت مديريت [Health Management] | م. سلامت [Health M.] |
| 13 | فناوري مديريت [Technology Management] | م. فناوري [Technology M.] |
| 14 | مهندسي محيط زيست و انرژي [Energy and Environment Engineering] | محيط زيست [Environment] |
| 15 | مهندسي مخابرات [Telecommunications Engineering] | مخابرات [Telecommunications] |
| 16 | مهندسي منابع طبيعي شاخه علوم جنگل و محيط زيست [Natural Resources Engineering: Forest and Environmental Sciences] | جنگل [Forest] |
| 17 | برداري نقشه مهندسي [Surveying Engineering] | نقشه برداري [Surveying] |
| 18 | ميكرب شناسي [Microbiology] | ميكرب [Microbe] |

More interestingly, the Academy of Persian Language and Literature itself lacks an abbreviated form. Rather, the full form فرهنگستان زبان و ادب فارسی /færhængestān-e zæbān væ ʔædæb-e fārsi/ (the Academy of Persian Language and Literature) is shortened in several ways in spoken and written contexts. It is usually referred to by the short form فرهنگستان زبان /færhængestān-e zæbān/ (the Academy of Language) to avoid confusion with the other three Iranian academies, that is, the Academy of Sciences, the Academy of Medical Sciences and the Academy of Arts. The most minimal short form, that is, فرهنگستان /færhængestān/ (the

Academy), is used where none of the other academies are mentioned in a given discourse. The short form فرهنگستان /færhængestān/ (the Academy) may be used in relation to any of the academies in contexts where confusion between academies is unlikely. Finally, it may also be named فرهنگستان سوم /færhængestān-e sevvom/ (the third Academy) in the context of previous Persian language academies.

It seems that the Academy either purposefully or inadvertently neglected to take into account the high dynamicity of short form formation in Persian when it chose not to include short terms in its definition and classification of Persian abbreviation methods. As Akbari (2014) recommends, if the Academy does officially recognize short forms as a Persian abbreviation method, it will not only have the opportunity to make use of one of the most practical term formation methods, and further, a method that is already widely accepted by the speaking community, but it will also avoid some of the disadvantages of other types of abbreviation. These disadvantages will be discussed in Chapter 6.

However, in order to analyze the Persian abbreviated forms approved by the Academy of Persian Language and Literature I will continue to refer to the *Principles and Regulations of Terminology* (Academy of Persian Language and Literature: 2009b).

4.3. Data collection

The lists of terms approved by the Academy are the single most valuable resource in the study of abbreviated forms coined through official terminology planning. Firstly, the Academy is the only official body responsible for Persian term formation. In addition, as the lists of approved terms were produced during the implementation of the Academy's official plan to promote abbreviation, the lists reflect a concerted attempt by the Academy to coin abbreviated forms within the framework of the Persian morphological structure.

Therefore, in order to understand the full potential of abbreviation as a method of word/term formation in Persian morphology, the abbreviated forms approved by the Academy of Persian Language and Literature in different fields of knowledge are the source of data gathering for the current study. By 2013 the Academy had examined more than 32,000 non-Persian terms from a wide range of fields and published them, along with their relevant approved Persian equivalents, in 10 volumes. Volumes 1 to 10 include 2203, 2939, 1661, 3300, 5000, 4071, 3632, 3900, 2725 and 2993 non-Persian terms respectively (approximate numbers given for volumes 5 and 8). For the purpose of this study, I examined the collections published during

the implementation of the Academy's official abbreviation plan, that is, during the period of 1997 to 2013 (See Academy of Persian Language and Literature: 2004-2013a). Subsequently, both English and Persian abbreviated forms were extracted for analysis.

As the next step, I categorized English abbreviated forms following the typology introduced in *ISO 704: Terminology Work — Principles and Methods* (International Organization for Standardization: 2009). In order to categorize Persian abbreviated equivalents approved by the Academy of Persian Language and Literature I applied the categorization defined in the *Principles and Regulations of Terminology* (Academy of Persian Language and Literature: 2009b).

Finally, the data extracted from Persian abbreviated forms were compared with English ones in order to understand:

1. The dynamism of each of the five English abbreviation methods named in *ISO 704: Terminology Work — Principles and Methods*.
2. The dynamism of each of the six Persian abbreviation methods named in the *Principles and Regulations of Terminology*.
3. The applicability of the terminology plan for encouraging abbreviation in Persian.

The aims of the study are to determine:

1. The extent to which it is morphologically possible to apply abbreviation in Persian
2. The extent to which abbreviation is necessary or advisable in Persian
3. An explanation for the difference in the dynamicity of abbreviation across languages, which may be also relevant to other term formation methods.

In order to determine the productivity of each abbreviation method a quantitative analysis was applied, based on the frequency of methods occurred in the data.

One of the problematic parts of this study arose in the categorization of Persian abbreviated forms due to the tremendous extent of irregularity; the forms could not easily be labeled as one of the six abbreviation types advised in the *Principles and Regulations of Terminology*. Such irregularity may be one of the reasons that Samaei, who conducted a survey on the outcomes of the approved abbreviation in 2009, suggested a new suite of categorizations and relevant definitions. For instance, he stated that although acronyms made from the first letters

of words are the most common, acronyms may also be constructed from letters in the middle or end positions of words (Samaei: 2011).

After scrutinizing the *Principles and Regulations of Terminology* (Academy of Persian Language and Literature: 2009b), I applied a solution that enabled me to follow this document and avoid the addition of a new classification titled ‘irregular’. According to the Principles, contracted forms are formed through omitting two or more letters from the middle of a word or parts of the middle of a phrase or sentence, like: *مقایسه کنید* for *قس* (compare), *تخ* for *تاریخ* (history), and *الخ* for *إلى آخر* (et cetera). The definition describes the irregular nature of contracted forms clearly and suggests that the outcomes of the applied method are unpredictable and may vary broadly from one case to another, but the examples provided suggest an even wider definition could be applied. As it can be inferred from the first example, an omission may be applied not only to letters from the middle of a word or parts of the middle of a phrase or sentence but also to beginning or final letters. Therefore, it is reasonable to categorize such forms as contracted forms.

One of the challenges in categorizing English data was the pronunciation of abbreviated forms. It was not always easy to differentiate acronyms from initialisms in English abbreviated forms, such as *MOD* in *MOD cavity* for *mesio-occlusodistal cavity*, because I am not an expert in the specification field and I was not familiar with how such forms were pronounced. To solve the problem, I consulted a large number of experts in the relevant fields of study as well as dictionaries, YouTube and TED in order to learn how they are usually pronounced.

It should be also added that I used the data in its exact original form unless corrections were unavoidable. For instance, in the example of EDTV, the full form introduced by the Terminology Committee of Cinematography was *enhanced TV* while the correct full form is *enhanced definition TV*. Further, HOE for *holographic optical element* was wrongly named *holography element* by the Committee of Astronomy.

4.4. Summary

In order to understand the implementation of the official plan to promote abbreviation in Persian, I compared the quantity and quality of the Persian constructed abbreviated forms, that is, the outcomes of the plan, with their pre-existing English equivalents. The collections of approved terms produced by the Academy contain the outcomes of the official plan and

thus comprise the data source for this study. The typologies introduced in *ISO 704: Terminology Work — Principles and Methods* and the *Principles and Regulations of Terminology* are applied to categorize the English and Persian data respectively.

In the following chapter, I will categorize and then analyze my data. This will allow me to assess the flexibility of Persian morphology in coining abbreviated forms as well as the relative productivity of each of abbreviation method used in English and Persian.

5. Results

5.1. Introduction

The majority of literature on abbreviation in Persian reviewed in this study, as well as the views expressed by official Persian language planners, emphasize the necessity of encouraging abbreviation in Persian. Proponents of this argument suggest that abbreviation is a materialization of the Principle of Least Effort and that abbreviation in Persian increases the chance that Persian equivalents for English terminologies in various subject fields will be accepted (See Chapter 3). This notion formed the basis of an official terminology plan designed and implemented by the Academy of Persian Language and Literature, which encourages abbreviation despite the language's historical lack of dynamism in this area.

In this chapter, I will examine abbreviated forms coined during the period of 1997 to 2013 quantitatively and qualitatively in order to understand the morphological potential of Persian for constructing abbreviated forms. This period correlates with the implementation of the first official plan to promote abbreviation, designed and supported by the highest authority for the Persian language planning in Iran. Therefore, my data reflects the period in which abbreviation has been pursued in Persian more aggressively than ever before.

5.2. Data analysis

The Academy examined more than 32,000 non-Persian terms in different fields of study between 1997 and the end of 2013. Out of this figure, the total number of both English and Persian abbreviated forms extracted from the collections of approved terms (volumes 1 to 10) was 869 (Table 5.1). These included: a) the terms that had only English abbreviated forms and acquired no Persian abbreviated equivalents (837 cases); b) English abbreviated forms that acquired approved Persian abbreviated equivalents (174 cases); and c) English terms that possessed no English abbreviated form but gained a Persian abbreviated form (only 18 cases).

Table 5.1- Number of examined and approved abbreviated forms (1997-2013)

| Non-Persian terms examined | > 32,000 |
|--|--------------------|
| English and/or Persian abbreviated forms | 869 |
| English abbreviated forms | 837 |
| Persian abbreviated equivalents | 174 |
| Persian abbreviated forms | 18 |

Due to the lack of relevant documentation, it was not possible to differentiate abbreviated forms coined by the Academy from any existing Persian ones. However, based on my experience as a terminologist at the Academy and after reviewing the available material, I came to the conclusion that it is extremely probable that the majority – if not all – of the approved Persian abbreviated forms, were coined by the Academy either in terminology committees or terminology councils.

The data shows that abbreviated forms were coined in the following fields of knowledge: addiction, agriculture, archaeology, astronomy, atmospheric sciences, audiometry, biology, cartography, chemistry, cinematography, corrosion, cryptology, dentistry, dramatic arts, environmental science, food technology, forestry, futuristics, genetics, geology, geophysics, health management, health science, information technology, library science, linguistics, mathematics, medicine, metallurgy, microbiology, military science, music, nutrition, oceanology, optics, orthopedics, physics, political science, polymer science, project management, psychology, sport, technology management, telecommunications, tourism, transport as well as general language.

The Terminology Department's knowledge and experience of term formation, amassed while contending with the issue of abbreviation in recent years, formed a valuable basis from which to implement the Academy's abbreviation plan. However, despite this extensive experience, Table 5.1 shows that the Academy coined only 192 Persian abbreviated form equivalents for more than 32,000 non-Persian terms. (Of this total of 192, 174 were equivalents for English abbreviated forms and 18 corresponded to full terms without English abbreviated forms). In other words, 0.6 per cent of the terms examined gained Persian abbreviated forms. Conversely, English abbreviated forms exist for 2.61 per cent of the full terms (837 of 32,000), which is 4.3 times the frequency of Persian abbreviations. We should also note that many of non-Persian terms possess two or more Persian equivalents; while the total of 32,000 reflects the number of non-Persian terms for which Persian equivalent(s) have been coined,

other commentators count the total number of Persian equivalents coined. For example, the present head of the Academy of Persian Language and Literature suggests that the number of approved Persian equivalents is about 45,000 (The Academy of Persian Language and Literature: 2013b). If this method of counting terms is used, the percentage of coined Persian abbreviated terms becomes even smaller. It reveals that despite the Academy implementing an official plan to dynamize abbreviation in Persian, its results were not promising.

Result 1- Even the implementation of an official language plan promoting abbreviation in Persian did not result in a substantial increase to the number of Persian abbreviated forms.

It is also possible to interpret the low frequency of abbreviated forms coined as a suggestion that a several Academy staff may not have followed the terminology plan for abbreviation; hence, the possibility remains that Persian abbreviated forms could be coined for a much greater number of English terms. I cannot negate this hypothesis based on existing documentation; the data does support the view that those responsible for constructing Persian equivalents for foreign terms showed limited tendency to follow the plan and thus many Persian equivalents do not have abbreviated forms. Although the number of staff members is too small a sample to represent the speaking community, we may speculate that if the staff at the Terminology Department are disinclined to coin abbreviated forms, the speaking community may also lack such a tendency.

It should be also noted that the figures showing potential abbreviated forms that have not yet been approved to enter terminologies used by experts. Hence, the result implies only the potentiality of the application of abbreviation method in Persian morphologically, in this case, by a language-planning institute. Moreover, as long as such forms have not entered in lexicon, they cannot be considered **nonce forms** or **hapax legomena**. Nonce forms refer to words that occur only once in the recorded corpus of a given language (Aronoff and Feudeman: 2011), while the potential abbreviated forms described above are yet not recorded in any natural context or corpus cited by the speaking community.

Another striking finding is that hardly any Persian abbreviated designations were coined for the terms without English abbreviated forms, that is, in only 18 cases from the approximately 31,000 examined terms. Thus, as Akbari (2014) confirms, ‘it may be reasonable to assume that in almost all cases the mere existence of English abbreviated forms initiated the coinage

of Persian abbreviated equivalents, rather than a need for filling a gap deriving from the Persian language' per se. Even if this were the case, it is notable that only 174 of the 837 English abbreviated forms gained Persian equivalents, that is, about 21 per cent. A closer examination of the data fails to illuminate any other criterion that may have played a role in selecting term candidates for creating Persian abbreviated forms, such as term length or transparency. For instance, some long terms such as ایستگاه کاری تصویرسنجی رقمی /zistgāh-e kārī-ye tæsvirsænji-ye ræqæmi/ (digital photogrammetric workstation), خدمات سفارشی نشانکده‌ی /xædæmāt-e sefāreši-ye nešānækdehi-ye dæstresi-ye mæhlli/ (custom local access signalling services), and سامانه پادکنش فروسرخ تهدید پیشرفته /sāmāne-ye pādkoneš-e forusorx-e təhdid-e pišræfte/ (advanced threat infrared countermeasures) lack abbreviation. At the same time, several short transparent terms with English abbreviated forms acquired Persian abbreviated equivalents, like ارتباط هم زمان (ارمان) /zertebāt-e hæmzæmān/ for *simultaneous communication (SimCom)*, اکسیژن محلول (اکسل) /zoksižen-e mæhlul/ for *dissolved oxygen (DO)*, دریافت کافی (درک) /dæryāft-e kāfi/ for *adequate intake (AI)* and وزن ظرف (وف) /væzn-e zærf/ for *tare weight (tare)*. Term frequency does not appear to be a criterion either.

This result supports Jazayery's opinion (1966) that the coinage of abbreviated forms in Persian is chiefly a response to western languages' influences on contemporary Persian.

Result 2- The coinage of Persian abbreviated equivalents is chiefly a reaction to English abbreviated forms, rather than a need rooted in the Persian language per se.

In order to understand the rate of the different abbreviation methods in English and Persian, the typologies introduced in *ISO 704: Terminology Work— Principles and Methods* (International Organization for Standardization: 2009) and *the Principles and Regulations of Terminology* (Academy of Persian Language and Literature: 2009b) were applied to categorize non-Persian and Persian abbreviated forms respectively (Table 5.2 and Table 5.3).

Accordingly, non-Persian (mainly English) abbreviated forms were classified into five categories: short forms, clipped terms, abbreviations, initialisms and acronyms (Table 5.2). In constructing some abbreviated forms, a combination of two or more abbreviation methods were employed. However, for the purpose of this study, such cases were irrelevant and hence, they were considered in only the highest relevant classification.

5.2.1. Non-Persian abbreviated forms

As mentioned above, the Academy of Persian Language and Literature examined 837 English abbreviated forms during the period of 1997 to 2013 (Table 5.1). Table 5.2 shows that the number of short forms, clipped terms, abbreviations, initialisms and acronyms in the examined non-Persian data were 24, 30, 50, 679 and 54 respectively. Blends are not considered to be abbreviated forms according to *ISO 704*, thus they are addressed separately in the last row of the Table. The data applying to rows 1 to 5 in Table 5.2 contains a breakdown of the items in each categorization.

Bold lines show general information on each type of abbreviated form and the relevant figures, while the lighter lines present the data in more detail. A slash sign (/) is used when a term has a second abbreviated form; for instance, short form/initialism refers to the terms that enjoy both a short form and an initialism, such as *follow-up mode* that enjoys *follow-up* (a short form) and *FU* (an initialism). A plus sign (+) denotes that an abbreviated form is the result of the combination of more than one abbreviation method, such as in the case of *RtoV* for *raster to vector conversion* that is both a short form and an abbreviation. Square brackets ([]) indicate those cases not considered as types of abbreviated forms in the relevant categorization documents: short forms in Persian abbreviation that are not listed in *the Principles and Regulations of Terminology*; and blends that are not considered abbreviated forms in *ISO 704: Terminology Work — Principles and Methods*. The word *modification* refers to the cases where terms have undergone extraordinary manipulations in coining the abbreviated forms, such the addition of vocals or the inversion of words to obtain phonologically pleasant abbreviate forms. Tables 5.4 to 5.9, at the end of this chapter, present and categorize the English abbreviated forms examined in this study.

Table 5.2- Types of examined non-Persian abbreviated forms

| | Types of abbreviated forms | Number |
|-----------------|--|--|
| 1 | Short forms Pure short forms Short forms / initialisms Short forms / acronyms Short forms + abbreviations | 24 19 2 1 2 |
| 2 | Clipped terms Pure clipped terms Clipped terms + abbreviation Clipped terms + initialisms Clipped terms + initialisms + modification | 30 25 1 3 1 |
| 3 | Abbreviations Pure abbreviations Abbreviations (partial) Abbreviations + initialisms Abbreviations + acronyms Abbreviations+ modification Abbreviations+ short forms | 50 27 2 2 2 16 1 |
| 4 | Initialisms Pure initialisms Initialisms (partial) Initialisms / short forms Initialisms / acronyms Initialisms / Initialism+ Acronym Initialisms + short forms Initialisms + abbreviations Initialisms + clipped forms Initialisms + acronyms Initialisms + modification Initialisms + modification + short forms | 679 606 49 3 3 2 4 3 1 4 3 1 |
| 5 | Acronyms Pure acronyms Acronyms (partial) Acronyms + modification Acronyms + blends | 54 50 2 1 1 |
| Total | | 836 |
| [Blends] | | [9] |

5.2.2. Persian abbreviated forms

Table 5.3 contains the data extracted from Persian abbreviated forms approved by the Academy of Persian Language and Literature, including both those with and without English abbreviated forms. As discussed above, the Academy of Persian Language and Literature coined only 174 Persian abbreviated forms during the period of 1997 to 2013 (Table 5.1). This total figure comprised 11 initialisms, 3 clipped forms, 80 contracted forms, 20 blends

and 60 acronyms. Short forms are mentioned at the bottom of the table separately because they are not considered to be abbreviated forms according to *the Principles and Regulations of Terminology*. Moreover, the Academy also approved four English abbreviated forms for use in Persian. Table 5.3, rows 1-6, shows the breakdown of each categorization into sub-category. Tables 5.10 to 5.16, at the end of this chapter, present the approved Persian abbreviations in my corpus of data, broken down by type of abbreviated form.

Table 5.3- Types of approved Persian abbreviated forms

| | Types of abbreviated forms | Number |
|---|---|---------------|
| 1 | Single-letter abbreviations | 0 |
| 2 | Initialisms | 11 |
| | Pure Initialisms | 1 |
| | Initialisms (partial) | 7 |
| | Initialisms (partial) + modifications | 1 |
| | Initialisms + short forms + modifications | 2 |
| 3 | Clipped forms | 3 |
| 4 | Contracted forms | 80 |
| | Pure contracted forms | 41 |
| | Contracted forms (partial) | 7 |
| | Contracted forms (partial) + short forms | 4 |
| | Contracted forms + acronyms | 1 |
| | Contracted forms + modifications | 5 |
| | Contracted forms + short forms | 21 |
| | Contracted forms + short forms+ modifications | 1 |
| 5 | Blends | 20 |
| | Pure blends | 11 |
| | Blends (partial) | 5 |
| | Blends + short forms | 1 |
| | Blends + short forms+ modifications | 3 |
| 6 | Acronyms | 60 |
| | Pure acronyms | 50 |
| | Acronyms (partial) | 5 |
| | Acronyms partial + short forms | 1 |
| | Acronyms + modifications | 1 |
| | Acronyms + short forms | 3 |
| Total | | 174 |
| [Short forms] | | [37] |
| [Approved English abbreviated forms] | | [4] |

5.2.2.1. A closer look at the Persian data

In theory, the Academy of the Persian Language and Literature should coin abbreviated forms on the basis of *the Principles and Regulations of Terminology* (Academy of Persian Language and Literature: 2009b). In the following section, I will examine the 174

abbreviated forms coined in the context of the six Persian abbreviated categories identified in the Principles. Subsequently, I will make some observations on short forms and the English abbreviated forms approved by the Academy.

5.2.2.1.1. Single-letter abbreviated forms

No single-letter abbreviated form was coined. One reason for this may be the increasingly complex nature of modern scientific concepts, affecting the number of constituting morphemes and words in technical and scientific terminologies.

5.2.2.1.2. Initialisms

The total number of initialisms amongst the Persian approved terms was 11 (Table 5.3). As Table 5.10 on page 137 shows, eight of them were partial abbreviated forms, that is, they included at least one word in its full form. Therefore, the abbreviated forms were a combination of word(s) and initialisms. The Academy may have coined partial abbreviated forms for a number of different reasons, for instance: due to the impossibility of including all words of a term in abbreviated form in such a manner as to suit Persian morphology; or as a deliberate strategy to increase transparency of the coined terms. In two further cases the full forms could not be completely traced through their abbreviated equivalents; these outcomes may therefore be considered short forms as well as initialisms.

Three of the initialisms had undergone some kind of modification to form an abbreviated form, either in the form of a rearrangement of letters or a substitution of numbers for letters. Although I cannot explain it, it is interesting to note one of the instances in which the arrangement of letters was changed, **سلاح‌های هسته‌ای، میکروبی، شیمیایی** for **سلاح‌های ش.م.ه.** (nuclear, biological and chemical weapons). However, the Persian abbreviated form refers to the weapons in the following order: chemical, biological and then nuclear. There is no indication given as to whether the letters should be pronounced by the name of the letters or by their sounds.

An important point in regard with initialisms is how to pronounce them: by the name or the sound of their letters. With respect to some orthographic abbreviated forms, such as **خ** /x/ for **خیابان** /xiyābān/ (street), Persian speakers are unlikely to experience difficulty because they are always pronounced as full forms. However, one of the difficulties with initialisms in Persian is that some Persian letters that are pronounced alike (such as the sets of **ص، ث، س** or **ذ، ز، ض، ظ**) and there is no complete concurrence over the pronunciation of the names of

these letters. Further, the pronunciation of their names is not economical. In order to solve this problem, the Committee for Abbreviation has recently suggested new names for three of letters, that is, ث, ح and ها for ث, ح and ها respectively.

Of the eleven initialisms, only one could be considered a pure initialism, coined using a single coinage method and without any further modification.

5.2.2.1.3. Clipped forms

In one of the three clipped forms approved, the English abbreviated form has been used: *log* for *logarithm*. The other two are only grammatically different: one is a noun and the other an adjective (Table 5.11, p. 138).

The very small number of clipped forms (only three from the 174 abbreviated forms) implies that the application of this type of abbreviation method to coin approved terms is rare.

5.2.2.1.4. Contracted forms

Since Persian tends to favor word-like abbreviated forms (Harati Tehrani: 2007 among others), contraction was the most popular abbreviation method used by the Academy. The loosely defined patterns of contracted forms make it easier to build terms that focus on the desired outcome rather than faithfulness to the full form. It may be observed from the data that letter(s) and/or syllable(s) from the beginning, middle and end elements of terms are variably selected to form contractions. It appears therefore that the choice was wholly motivated by a desire to produce outcomes that sounded like Persian words. As discussed earlier, contraction as a method is defined as 'omitting two or more letters from the middle of a word or parts of the middle of a phrase or sentence' in the *Principles and Regulations of Terminology*. However, the examples accompanying the official definition, as well as the approved examples in my data (Table 5.12), show that in order to form contractions, the Academy applied omission to letter(s) and/or syllable(s) of words, phrases and sentences regardless of position. Moreover, in the coinage of a number of contracted forms, other strategies such as various modifications and short form formation, have also been used. Table 5.3 shows that the number of abbreviated forms coined through applying more than one method is relatively high. As Harati Tehrani (2007) asserts, the combined use of two or more methods in constructing abbreviated forms increases the chance of irregularity.

It is notable that in a seminar on abbreviation held on 2 October 2013 in Tehran, the speakers from the Academy of Persian Language and Literature distributed handouts entitled the

Principles, Regulations and Methods of Selecting Abbreviated Forms. Repeating the six types of Persian abbreviated forms set out in the *Principles and Regulations of Terminology* (Academy of Persian Language and Literature: 2009b), the handout introduced a new method called *special method*. The new definition is likely the result of an extensive number of approved abbreviated forms that are not easily categorized. Although the handout gave no definition for the method, several examples were given, including رنگوپخت /rængupox̄t/ for رنگدانه گوشت پخته عمل آمده /rængdāne-ye gušt-e pox̄te-ye ʔæmæɪ ʔāmæde/ (cooked cured-meat pigment), انفاب /ʔenfāb/ for انرژی مصرفی فعالیت بدنی /ʔenerʒi-ye mæsræfi-ye fæʔāliyət-e bædæni/ (energy expended in physical activity), and روزاک /ruzāk/ for روزدریافت برآوردی ایمن و کافی /ruzdæryāft-e bæʔāværdi-ye ʔimæn væ kāfi/ (estimated safe and adequate daily dietary intake). The examples resemble contracted forms. Based on the examples given, we may conclude that *special method* is simply contraction method. The alternative would be to accept that almost half of the coined abbreviation forms enjoy their own special and unique term formations.

The addition of some arbitrary vowels in abbreviated forms might be a result of the Committee for Abbreviation's suggestion that adding vowels to the beginning, middle or end of abbreviated forms in order to make pronunciation more pleasant should be allowed (see Zakeri: 2001). However, the use of arbitrary letters is likely to mislead language users seeking to decode abbreviated forms.

The formation of some of the contracted forms was not at all clear. In these cases, I contacted the relevant terminology committee to understand the method they had applied. For instance, a member of the Terminology Committee of Addiction explained that ترکل /tærkol/ for مقدار الکلی تعرقی /meqdār-e ʔælkol-e tæʔārroqi/ (*transdermal alcohol content*) was the outcome of: 1) omission of the first word of the term to obtain the short form; 2) selection of the second syllable of the second word beside the first syllable and the third letter of the third word; and 3) inversion of the selected items.

It might be because of the problems using the categorization set out in the *Principles and Regulations of Terminology* that Samaei (2011), a member of the Committee for Abbreviation, suggested another categorization for the abbreviated forms. He sorted the approved abbreviated forms into four types, suggesting they were built either by: 1) selecting first letters of the words; 2) selecting acronyms of some of the words; 3) selecting some parts of the words; or 4) initialism. New definitions in this study for well-known terms make this

categorization too complicated to be followed. For instance, the definition of *acronym* covers the use of letters in the middle and end positions to abbreviate terms. Moreover, the differentiation between second and third classes is not clear because abbreviated forms containing both beginning and final letters of words appear to fall into both classes, for example *برفاد* /bærfād/ for *برنامهریزی فرض بنیاد* /bærnāmerizi-ye færzbonýād/ (assumption-based planning) and *اکسل* /ʔoksel/ for *اکسیژن محلول* /ʔoksižen-e mæhlul/ (dissolved oxygen).

The modifications made to *آنتن پکود* /ʔānten-e pækud/ for *پایانه کوچک دهانه* /pāyāne-ye kučæk-dæhāne/ (very-small-aperture terminal antenna) is interesting. The word *آنتن* /ʔānten/, not part of the Persian full form, has appeared in the abbreviated form. The need to increase the motivation of the abbreviated form might have contributed to this strategy.

Finally, it is important to reiterate that almost half of the Persian abbreviated forms coined by the Academy of Persian Language and Literature were contracted forms. As discussed above, the contraction method is the method most widely interpreted by the Academy. In other words, almost half of the coined abbreviated forms lacked regularity and consistency in their formation patterns, and were coined on a case-by-case basis. This being the case, it is difficult to regard them as productive – the word *creative* may be more apt.

5.2.2.1.5. Blends

Some of the abbreviated forms falling into this categorization could also be labeled as contracted forms due to their vague formation. Nonetheless, the interesting point here is that the splinters (the constituents of blends) are rarely of Arabic origin (Table 5.13, p. 143). The difference between the capability of originally Persian and originally Arabic words in forming splinters deserves specific investigation beyond the scope of the present study.

The modifications employed to coin blends included the inversion of words constituting terms.

5.2.2.1.6. Acronyms

A variety of strategies has been applied to coin acronyms, including the use of prepositions, affixes and conjunctions where they could sound as vowels. For instance, in the formation of *نوبک* /nobæk/ for *نشت و برخاست کوتاه* /nešæst væ bærxāst-e kutāh/ (short take off and landing) the conjunction *و* (which means *and*) and may be pronounced as /o/ has been used. The preposition *از* (which means *from*) has also been used in several cases because it could be pronounced as /ā/; an example is *پهپاد* /pæhpād/ for *پرنده هدایت پذیر از دور* /pærænde-ye

hedāyāt-pæzir ʔæz dur/ (unmanned aerial vehicle). However, not all prepositions are used in this way; the preposition با (meaning *with*) lacks such capacity and has been never used in the construction of acronyms. In some cases, such as ردا /rædā, redā, or rodā (?)/ for رسوبده /rosub-deh-e ʔelekteroʔestātiki/ (electrostatic precipitator), both the first letter of the first word and also the first letter of its suffix have been used in the abbreviated form. In زنگام /zængām/ for ابرمتی /zæbān-e nešāne-gozāri-ye æbær-mætni/ (hypertext markup language), the first letter of the last word as well as the first letter of its prefix appeared in the acronym.

It is reasonable to assume that the Academy justifies its irregular approach to acronyms by pointing to the range of approved acronyms that sound like potential or existing Persian words; thus its approach enables the formation of acronyms that are compatible with Persian phonotactics (Table 5.14).

5.2.2.1.7. Short forms

As mentioned above, the Academy of Persian Language and Literature does not recognize short forms as a method of abbreviation. However, an examination of approved terms shows that in several cases short forms are approved (Table 5.15). The data also reveals inconsistency in how such short terms are labeled. In some cases, like سیاست مهار for مهار الكل (alcohol policy/ alcohol control) the short form is called an abbreviated form, while in other cases such as سیاست مهار مواد for مهار مواد (drug policy/ drug control), the short form is called a synonym.

Interestingly, regardless of the Academy's lack of recognition of short forms as abbreviated forms in Persian, the above-mentioned statistics show that more short forms were approved than the combined total of four recognized methods, namely, single-letter abbreviated forms, initialisms, clipped forms and blends (Table 5.3). It is likely that native Persian speakers will use short forms for many of approved terms they choose to adopt, as an economical strategy triggered by their cognitive linguistic patterns. In my experience as a terminologist at the Academy, terminology committees usually prefer to present full forms for approval and take it for granted that users will coin short forms.

Like speakers of many other languages, Persian speakers exhibit a general tendency to reduce long compounds to their shorter form. The most common method of abbreviation in Persian is probably short forms although this method is not officially recognized as an abbreviation

method by the Academy. Kafi (1991) complains that the extensive use of short forms hinders the dynamicity of abbreviation methods in Persian. Harati Tehrani's MA thesis (2007) also concludes that short forms are common in Persian, and laments the sparseness of abbreviated forms as a consequence of the extensive use of short forms.

5.2.2.1.8. English abbreviated forms approved by the Academy

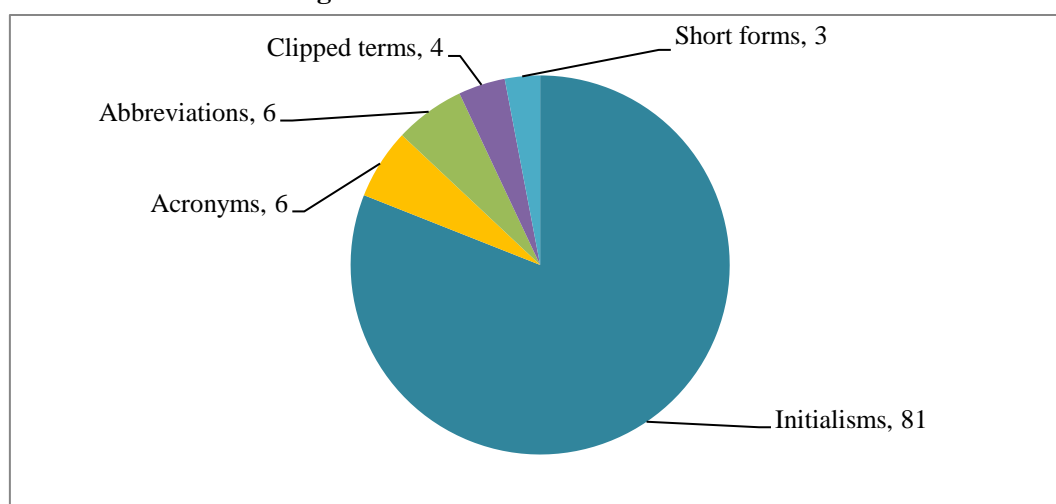
According to official terminology policy and planning in Iran, international terms do not necessarily obtain Persian equivalents; although the definition of international terms is always under discussion. Therefore, a small number of English abbreviated forms, such as *AIDS* and *laser* have been approved by the Academy of Persian Language and Literature; in two cases they are also accompanied by Persian equivalents (Table 5.16, p. 149).

As Akmajian and others (2001, 25) indicate, abbreviated forms become new independent words even in primary term formation, because speakers quickly forget their origins. We can therefore assume that when abbreviated forms are borrowed, their independent identity is separated from their original components and formation from the moment of borrowing.

5.2.3. Comparison between non-Persian and Persian abbreviated forms

The comparison of data of each language under discussion reveals that there are some meaningful differences in the productivity of abbreviation methods in English and Persian (Chart 5-1 and Chart 5-2).

Chart 5-1- Percentage of a total of non-Persian abbreviated forms instances



Abbreviation methods in English may be ranked according to the frequency of the relevant abbreviated forms as follows:

1. Initialisms (81%)
2. Acronyms (6%), Abbreviations (6%)
3. Clipped terms (4%)
4. Short forms (3%)

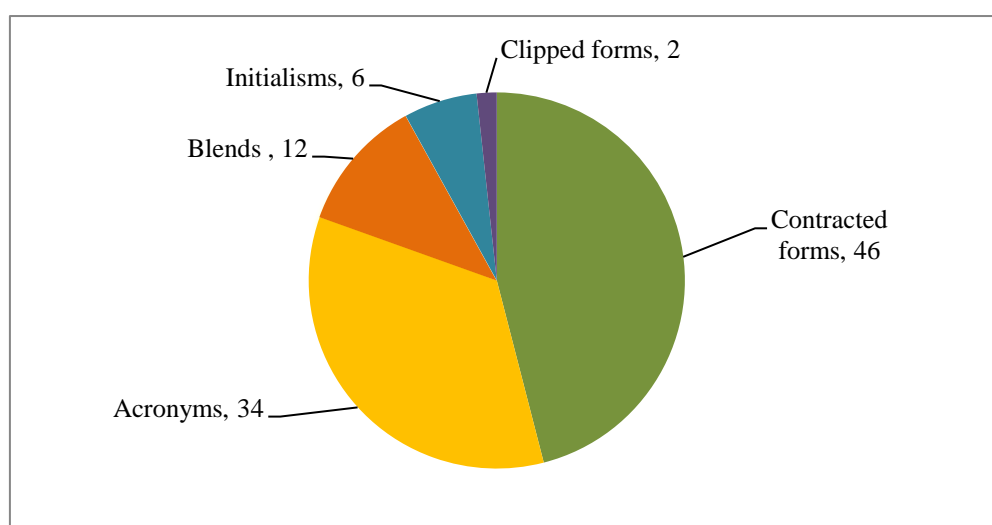
| |
|--|
| Result 3- In my corpus of data, initialism was the most productive English abbreviation method. |
|--|

While initialism in English is seen in as many as more than 80 per cent of cases (Chart 5-1) initialism comprises only almost 6 per cent of Persian abbreviated forms (Chart 5-2). This considerable difference reveals that the productivity of this method is quite different between Persian and English. English initialisms' ease of pronunciation and their status as the abbreviation method with the highest degree of regularity, combined with English speakers' cognitive patterns, could account for the relatively extensive number of initialisms in English. As Chart 5-1 shows, English abbreviation methods other than initialism are together used to coin less than 20 per cent of abbreviated forms; up to a maximum of 6 per cent each.

On the other hand, Persian abbreviation methods are used in very different proportions to English ones (Chart 5-2). The recognized methods are ranked according to the frequency of abbreviated forms in the data as follows:

1. Contracted forms (46%)
2. Acronyms (34%)
3. Blends (12%)
4. Initialisms (6%)
5. Clipped forms (2%)

Chart 5-2- Percentage of a total of Persian abbreviated forms instances



Unlike the case of English in which almost 80 per cent of the abbreviated forms are initialisms, in Persian about 80 per cent of abbreviated forms are the outcomes of contraction or acronymy, while initialisms form only about 6 per cent of all abbreviated forms. As Algeo (1975, 231-232 cited in Cannon: 1989) comments, 'English initialisms are easier to make than a word of any other category, letting every person be creative'.

Result 4- The Academy uses contraction and acronymy to coin most abbreviated forms.

Close to half of the coined Persian abbreviated forms are contracted forms. This could be due to the indeterminate nature of the official definition of contracted forms, rendering it an umbrella term for a wide range of irregular abbreviated forms.

It is important to be mindful that we cannot consider contraction and acronymy as the most productive abbreviation methods in Persian for so long as the outcomes do not enter the terminologies of native speakers. Aronoff and Feudeman (2011) stress the role of acceptance of words and rightly indicate that 'to say that a given morphological pattern is more productive than another is to say that there is a higher probability of a potential word in the first pattern being accepted in the language than there is of a potential word in the second pattern.'

Result 5- The majority of English abbreviated forms enjoy one of the most regular term formations to encode and decode (initialism), while almost half of all coined Persian abbreviated forms are contracted forms that lack clear clues to assist in decoding and are irregularly formed.

It should be noted that the results contained in Chart 5-2 only contain the abbreviation methods recognized by the Academy of Persian Language and Literature. Following on from earlier discussion in this chapter, if the short forms of all approved terms were mentioned in the collections of approved terms, the proportions would change substantially.

These results can be compared with Samaei's study (2011), which examined 38 approved abbreviated forms published in *a Collection of Terms Approved by the Academy of Persian Language and Literature*, volumes one to seven. His study, which of all the studies I have reviewed is the most similar to mine, was based on a much smaller sample size than mine. A striking difference between his and this study is observed in the results. He claims that the data in his study shows that acronyms form the majority of Persian abbreviated forms, as in the case of English. However, the present study reveals that Persian and English are not alike in this regard. The present study shows that the majority of Persian coined abbreviated forms are contracted forms (46 per cent) while the number of initialisms amongst the English abbreviated forms is considerably higher (81 per cent). Moreover, the number of English initialisms in the corpus of this study is almost 12 times greater than the prevalence of acronyms (81 per cent versus 6 per cent respectively while the difference between the proportion of initialisms and acronyms in Persian is very different. In Persian, the number of acronyms is almost 6 times greater than initialisms' (34 per cent versus 6 per cent).

The results of this study are in concordance with Cannon's study on abbreviated forms in English, which showed that initialisms outnumber acronyms. (Cannon uses the term 'abbreviation' for what is called 'initialism' in this study.)

Encoding irregularities in abbreviated forms, such as those evident in the range of contracted forms in Persian, present several problems. The most severe is perhaps the likelihood that language users will experience difficulty when seeking to decode the terms. This point is particularly pertinent when Persian contracted forms are compared with English initialisms, both of which are most prevalent in their respective languages; while contractions are irregular in Persian, initialisms are the most regular abbreviation method in English.

5.3. Summary

The results of this study provide evidence-based material that should be considered by scholars who support abbreviation in Persian, and by the Academy in designing a terminology plan for addressing English abbreviated forms. The quantitatively and qualitatively limited capacity of the Persian language in forming abbreviated forms makes the implementation of the current plan very challenging.

Table 5.4- English short forms

| | Specification filed | English term | English abbreviated form | Comments |
|----|------------------------|---|--------------------------------|----------------|
| 1 | food technology | air blast freezer | blast freezer | |
| 2 | information technology | alt key | alt | |
| 3 | medicine | appendix vermiformis | appendix, appendices | |
| 4 | military science | arch finger print | arch | |
| 5 | information technology | backbone network | backbone | |
| 6 | information technology | backspace key | backspace | |
| 7 | nutrition | bacteriostatic agent | bacteriostat | |
| 8 | agriculture | berseem clover | berseem | |
| 9 | medicine | complementary and alternative medicine | complementary medicine, CAM | / Acronym |
| 10 | audiometry | conditioned orientation reflex audiometry | conditioned orientation reflex | |
| 11 | water transport | follow-up mode | follow-up, FU | / Initialism |
| 12 | information technology | HTTP cookie | cookie | |
| 13 | information technology | insert key | insert | |
| 14 | medicine | malignant melanoma | melanoma | |
| 15 | psychology | memory trace | trace | |
| 16 | water transport | non-follow up mode | non-follow up, NFU | / Initialism |
| 17 | information technology | num lock key | num lock | |
| 18 | information technology | pause key | pause | |
| 19 | cartography | raster to vector conversion | R2V, RtoV | + Abbreviation |
| 20 | astronomy | solar apex | apex | |
| 21 | water transport | tare weight | tare | |
| 22 | sport | three-day event(ing) | eventing | |
| 23 | cinematography | TV season | season | |
| 24 | cartography | vector to raster conversion | V2R, VtoR | + Abbreviation |

Table 5.5- English clipped terms

| | Specification filed | English term | English abbreviated form | Comments |
|----|------------------------|----------------------------|--------------------------|--------------------------------|
| 1 | information technology | acknowledgement | ACK | |
| 2 | mathematics | antilogarithm | antilog | |
| 3 | environmental science | biological mass | biomass | |
| 4 | cinematography | cinéma vérité | ciné vérité | |
| 5 | telecommunications | conference calling | CONF | |
| 6 | air transport | critical Mach number | Mcrit | + Initialism + modification |
| 7 | library science | Document1 | doc | |
| 8 | library science | Document2 | doc | |
| 9 | physics | electromotor | motor | |
| 10 | cinematography | exterior shot | EXT | |
| 11 | general language | facsimile | fax | |
| 12 | technology management | high technology | high tech | |
| 13 | technology management | low technology | low tech | |
| 14 | technology management | medium technology | medium tech | |
| 15 | astronomy | Microscopium, Microscope | Mic | |
| 16 | military science | navigation countermeasures | NAVCM | + initialism |
| 17 | psychology | nicotine anonymous | NICA | + abbreviation |
| 18 | cartography | photograph | photo | |
| 19 | information technology | pop-over advertisement | pop-over ad | |
| 20 | cinematography | properties | prop(s) | |
| 21 | cinematography | property assistant | prop assistant | |
| 22 | cinematography | property master | prop master | |
| 23 | genetics | recombinant DNA | recDNA | + Initialism |
| 24 | cinematography | satellite TV | sat TV | + Initialism |

| | Specification filed | English term | English abbreviated form | Comments |
|----|-----------------------|---|--------------------------|----------|
| 25 | technology management | soft technology | soft-tech | |
| 26 | biology | spermatozoid | sperm | |
| 27 | astronomy | Telescopium | Tel | |
| 28 | cartography | trigonometric levelling | trig levelling | |
| 29 | cartography | trigonometric traverse | trig traverse | |
| 30 | Telecommunications | tropospheric scattering/ tropospheric scatter | troposcatter | |

Table 5.6- English abbreviations

| | Specification filed | English term | English abbreviated form | Comments |
|----|------------------------|--------------------------------|--------------------------|----------|
| 1 | music | acciaccatura | ACC | |
| 2 | astronomy | Andromeda | And | |
| 3 | music | anticipation | ANT | |
| 4 | astronomy | Auriga | Aur | |
| 5 | forestry | carbon sequestration | C sequestration | |
| 6 | astronomy | Caelum | Cae | |
| 7 | astronomy | Chamaeleon | Cha | |
| 8 | astronomy | Circinus | Cir | |
| 9 | astronomy | Canis Major | Cma | |
| 10 | astronomy | Canis Minor | Cmi | |
| 11 | air transport | cruise | CRZ | |
| 12 | Astronomy | Canes Venatici | CVn | |
| 13 | astronomy | Draco | Dra | |
| 14 | atmospheric science | forecast amendment | FCST AMND | |
| 15 | atmospheric science | forecast cancellation | FCST CNL | |
| 16 | library science | information & referral | I&R | |
| 17 | genetics | initiator element | INR element, Inr | |
| 18 | psychology | ichnospecies | isp | |
| 19 | telecommunications | mobile commerce | m-commerce | |
| 20 | astronomy | Monoceros | Mon | |
| 21 | dramatic arts | opposite, opposite prompt side | OP | |
| 22 | astronomy | Perseus | per | |
| 23 | music | trill | tr | |
| 24 | astronomy | Tucana | tuc | |
| 25 | information technology | verification & validation | V&V | |

| | Specification filed | English term | English abbreviated form | Comments |
|----|------------------------|--------------------------------------|--------------------------|----------------|
| 26 | sport | cross-country skiing | XC skiing | |
| 27 | sport | cross-country ski | XC-ski | |
| 28 | information technology | [user identification] | user ID | (partial) |
| 29 | information technology | [web television] | web TV | (partial) |
| 30 | medicine | neural cell adhesion molecule | N-CAM | + Acronym |
| 31 | telecommunications | very-small-aperture terminal antenna | VSAT antenna | + Acronym |
| 32 | astronomy | Corona Australis | CrA | + Initialism |
| 33 | astronomy | Corona Borealis | CrB | + Initialism |
| 34 | information technology | business-to-business | B2B | + modification |
| 35 | information technology | business-to-consumer | B2C | + modification |
| 36 | information technology | business-to-employee | B2E | + modification |
| 37 | information technology | business-to-government | B2G | + modification |
| 38 | information technology | business-to-machines | B2M | + modification |
| 39 | information technology | consumer-to-business | C2B | + modification |
| 40 | information technology | consumer-to-consumer | C2C | + modification |
| 41 | information technology | citizen-to-government | C2G | + modification |
| 42 | cinematography | day-for-night | D/N | + modification |
| 43 | tourisms | food and beverage | F&B | + modification |
| 44 | genetics | first filial generation | f1 | + modification |
| 45 | genetics | second filial generation | f2 | + modification |
| 46 | information technology | government-to-business | G2B | + modification |
| 47 | information technology | government-to-citizen | G2C | + modification |
| 48 | information technology | government-to-employee | G2E | + modification |
| 49 | information technology | government-to-government | G2G | + modification |
| 50 | air transport | grooved runway | GRVD | + short form |

Table 5.7- English initialisms

| | Specification filed | English term | English abbreviated form | Comments |
|----|------------------------|---|--------------------------|----------------|
| 1 | cartography | [global positioning system receiver] | GPS receiver | (partial) |
| 2 | tourisms | [global positioning system tour] | GPS tour | (partial) |
| 3 | information technology | [hypertext markup language text] | HTML text | (partial) |
| 4 | information technology | [Universal Serial Bus port] | USB port | (partial) |
| 5 | audiometry | absolute bone conduction | absolute BC | (partial) |
| 6 | nutrition | acceptable macronutrient distribution range | AMDR | |
| 7 | telecommunications | acceptable use policy | AUP | |
| 8 | telecommunications | account authority digital signature | AADS | |
| 9 | telecommunications | account card calling | ACC | |
| 10 | telecommunications | account executive | AE | |
| 11 | geology | acid mine drainage | AMD | |
| 12 | geology | acid neutralizing capacity | ANC | |
| 13 | geology | acid rock drainage | ARD | |
| 14 | information technology | active server page | ASP | |
| 15 | environmental science | actual oxygen transfer efficiency | AOTE | |
| 16 | nutrition | adequate intake | AI | |
| 17 | health management | admission-discharge-transfer system | ADT | |
| 18 | environmental science | advanced oxidation processes | AOPs | |
| 19 | military science | advanced threat infrared countermeasures | ATIRCM | + modification |
| 20 | telecommunications | advice of charge | AOC | |
| 21 | air transport | Aeronautical Information Publication | AIP | |
| 22 | health science | age-specific fertility rate | ASFR | |
| 23 | audiometry | air conduction | AC | |
| 24 | air transport | air data computer | ADC | |
| 25 | military science | air defence identification zone | ADIZ | |

| | Specification filed | English term | English abbreviated form | Comments |
|----|------------------------|---|--------------------------|----------------|
| 26 | military science | air mobility command | AMC | |
| 27 | military science | air mobility division | AMD | |
| 28 | military science | air mobility element | AME | |
| 29 | military science | aircraft carrier | CV | |
| 30 | psychology | alcoholics anonymous | AA | |
| 31 | forestry | allowable cut effect | ACE | |
| 32 | forestry | all-terrain vehicle | ATV | |
| 33 | mathematics | almost everywhere | AE | |
| 34 | health management | ambulatory medical record | AMR | |
| 35 | health management | ambulatory medical record system | AMRS | |
| 36 | physics | amplitude modulation | AM | |
| 37 | telecommunications | anonymous call rejection | ACR | |
| 38 | oceanology | Antarctic bottom water | ABW | |
| 39 | information technology | Application Service Provider | ASP | |
| 40 | nutrition | appropriate for gestational age | AGA | |
| 41 | air transport | area navigation | RNAV, R-nav | + clipped term |
| 42 | military science | area of responsibility | AoR | |
| 43 | information technology | arithmetic-logic unit | ALU | |
| 44 | military science | Armistice Demarcation Line | ADL | |
| 45 | air transport | arrival sequencing program | ASP | |
| 46 | information technology | artificial intelligence | AI | |
| 47 | futuristics | assumption-based planning | ABP | |
| 48 | telecommunications | asymmetrical digital subscriber line | ADSL | |
| 49 | atmospheric science | atmospheric boundary layer | ABL | |
| 50 | psychology | attention-deficit/ hyperactivity disorder | ADHD | + modification |
| 51 | audiometry | audibility index | AI | |
| 52 | audiometry | auditory evoked response | AER | |

| | Specification filed | English term | English abbreviated form | Comments |
|----|------------------------|--|----------------------------------|-----------|
| 53 | audiometry | auditory steady-state response | ASSR | |
| 54 | rail transport | automatic brake system | ABS | |
| 55 | air transport | automatic direction-finder | ADF | |
| 56 | audiometry | automatic gain control | AGC | |
| 57 | rail transport | automatic half-barrier crossing | AHBC | |
| 58 | rail transport | automatic route setting | ARS | |
| 59 | rail transport | automatic train operation | ATO | |
| 60 | rail transport | automatic train protection system | ATP system | (partial) |
| 61 | rail transport | automatic train stop | ATS | |
| 62 | rail transport | automatic warning system | AWS | |
| 63 | air transport | auxiliary power unit | APU | |
| 64 | environmental science | average daily flow | ADF | |
| 65 | agriculture | average daily gain | ADG | |
| 66 | air transport | balanced field length | BFL | |
| 67 | military science | Base defense zone | BDZ | |
| 68 | audiometry | behavioural observation audiometry | BOA | |
| 69 | audiometry | behind-the-ear hearing aid, over-the-ear hearing aid | BTE hearing aid, OTE hearing aid | (partial) |
| 70 | environmental science | best available technology | BAT | |
| 71 | futuristics | big- hairy-audacious goal | BHAG | |
| 72 | nutrition | binge-eating disorder | BED | |
| 73 | environmental science | biochemical oxygen demand | BOD | |
| 74 | nutrition | bioelectrical impedance analysis | BIA | |
| 75 | information technology | blind carbon copy | bcc | |
| 76 | psychology | blood alcohol level | BAL | |
| 77 | nutrition | body-mass index | BMI | |
| 78 | physics | boiling-water reactor | BWR | |
| 79 | audiometry | bone conduction | BC | |

| | Specification filed | English term | English abbreviated form | Comments |
|-----|------------------------|--------------------------------------|--------------------------|----------------|
| 80 | cinematography | box office | BO | |
| 81 | audiometry | brainstem response audiometry | BRA | |
| 82 | military science | bridge head | BH | |
| 83 | urban transport | bus transit system | BTS | |
| 84 | information technology | business intelligence | BI | |
| 85 | cinematography | cable television | CATV | |
| 86 | telecommunications | call forwarding busy | CFB | |
| 87 | telecommunications | call transfer | CT | |
| 88 | telecommunications | call waiting | CW | |
| 89 | telecommunications | calling name delivery | CNAM | |
| 90 | telecommunications | calling number delivery | CND | |
| 91 | telecommunications | calling party pays | CPP | |
| 92 | information technology | carbon copy | cc | |
| 93 | telecommunications | care of ... | c/o | + modification |
| 94 | physics | cathode-ray tube | CRT | |
| 95 | corrosion | cathodic protection | CP | |
| 96 | nutrition | central parenteral nutrition | CPN | |
| 97 | information technology | central processing unit | CPU | |
| 98 | metallurgy | ceramic-matrix composites | CMC | |
| 99 | information technology | certificate authority | CA | |
| 100 | cryptology | certification policy | CP | |
| 101 | environmental science | chemical oxygen demand | COD | |
| 102 | library science | chief information officer | CIO | |
| 103 | psychology | chronic fatigue syndrome | CFS | |
| 104 | telecommunications | closed user group | CUG | |
| 105 | military science | closed-loop infrared countermeasures | CLIRCM | + abbreviation |
| 106 | cinematography | close-up, close shot | CU, CS | |

| | Specification filed | English term | English abbreviated form | Comments |
|-----|------------------------|--|--------------------------|-----------------------------|
| 107 | atmospheric science | cloud condensation nuclei | CCN | |
| 108 | forestry | coarse woody debris, large woody debris, large organic debris, down woody debris | CWD, LWD, LOD, DWD | |
| 109 | air transport | cockpit voice recorder | CVR | |
| 110 | food technology | cocoa butter alternative | CBA | |
| 111 | food technology | cocoa butter equivalent | CBE | |
| 112 | food technology | cocoa butter extender | CBEx | |
| 113 | food technology | cocoa butter improver | CBI | |
| 114 | food technology | cocoa butter replacer | CBR | |
| 115 | food technology | cocoa butter substitute | CBS | |
| 116 | environmental science | coefficient of haze | COH | |
| 117 | military science | coherent directed infrared countermeasures | CDIRCM | + abbreviation |
| 118 | metallurgy | cold welding | CW | |
| 119 | microbiology | colony forming unit | cfu | |
| 120 | information technology | command-line interface | CLI | |
| 121 | telecommunications | commerce service provider | CSP | |
| 122 | geophysics | common midpoint | CMP | |
| 123 | geophysics | common-depth-point | CDP | |
| 124 | telecommunications | communication forwarding | CF | |
| 125 | telecommunications | communication forwarding busy | CFB | |
| 126 | telecommunications | communication forwarding no reply | CFNR | |
| 127 | telecommunications | communication forwarding on not logged-in | CFNL, not logged-in | / short form |
| 128 | telecommunications | communication forwarding on subscriber not reachable | CFNRc | + short form + modification |
| 129 | telecommunications | communication forwarding unconditional | CFU | |
| 130 | telecommunications | communication service provider | CSP | |
| 131 | genetics | complementary DNA, copy DNA | cDNA | |
| 132 | genetics | complementary RNA | cRNA | |

| | Specification filed | English term | English abbreviated form | Comments |
|-----|------------------------|---|--------------------------|-----------|
| 133 | telecommunications | Completion of Communications to Busy Subscriber | CCBS | |
| 134 | chemistry | compressed natural gas | CNG | |
| 135 | rail transport | computer based interlocking | CBI | |
| 136 | military science | computer virus countermeasures | CVCM | |
| 137 | information technology | computer-based training | CBT | |
| 138 | cinematography | computer-generated image | CGI | |
| 139 | information technology | configuration management | CM | |
| 140 | telecommunications | connected line identification restriction | COLR | |
| 141 | water transport | container freight station | CFS | |
| 142 | water transport | container yard | CY | |
| 143 | addiction | contingency management | CM | |
| 144 | water transport | continuous discharge book | CDB | |
| 145 | rail transport | continuous welded rail | CWR | |
| 146 | food technology | controlled atmosphere packaging | CAP | |
| 147 | food technology | controlled atmosphere storage | CA | |
| 148 | food technology | cooked cured-meat pigment | CCMP | |
| 149 | military science | cooperative engagement | CE | |
| 150 | military science | cooperative engagement processor | CEP | |
| 151 | military science | cooperative engagement system | CES | |
| 152 | project management | cost of quality | CQ | |
| 153 | project management | cost performance index | CPI | |
| 154 | project management | cost variance | CV | |
| 155 | project management | cost-plus-fixed-fee contract | CPFF contract | (partial) |
| 156 | project management | cost-plus-incentive-fee contract | CPIF contract | (partial) |
| 157 | air transport | crash locator beacon | CLB | |
| 158 | linguistics | critical discourse analysis | CDA | |

| | Specification filed | English term | English abbreviated form | Comments |
|-----|--|---|--------------------------|----------|
| 159 | futuristics | critical futures studies | CFS | |
| 160 | polymer science | critical pigment volume concentration | CPVC | |
| 161 | agriculture | crop growth rate | CGR | |
| 162 | general language | curriculum vitae | cv | |
| 163 | telecommunications | customised ringback tone | CRBT | |
| 164 | telecommunications | customised ringing tone | CRT | |
| 165 | microbiology | cytopathic effect | CPE | |
| 166 | nutrition | daily reference values | DRVs | |
| 167 | water/rail transport, military science | dangerous goods | DG | |
| 168 | food technology | dark firm dry defect | DFD | |
| 169 | information technology | data dictionary management system | DDMS | |
| 170 | information technology | data encryption standard | DES | |
| 171 | information technology | data flow diagram | DFD | |
| 172 | information technology | database | DB | |
| 173 | information technology | database management system | DBMS | |
| 174 | information technology | decision support system | DSS | |
| 175 | telecommunications | dedicated access line | DAL | |
| 176 | oceanology | deep scattering layer | DSL | |
| 177 | oceanology | deep water | DW | |
| 178 | astronomy | deformable mirror | DM | |
| 179 | water transport | delivery note | DN | |
| 180 | water transport | delivery order, landing order | DO | |
| 181 | dentistry | dental hygienist | DH | |
| 182 | genetics | deoxyribonucleic acid | DNA | |
| 183 | air transport | departure sequencing program, departure sequencing, departure spacing program | DSP | |
| 184 | tourisms | detailed passenger itinerary | DPI | |

| | Specification filed | English term | English abbreviated form | Comments |
|-----|------------------------|---|--------------------------|----------------|
| 185 | audiometry | detection threshold, speech detection threshold, speech awareness threshold | SDT, SAT | |
| 186 | forestry | diameter outside bark | DOB | |
| 187 | rail transport | diesel multiple unit | DMU | |
| 188 | nutrition | dietary reference intakes | DRIs | |
| 189 | air transport | digital flight data recorder | DFDR | |
| 190 | library science | digital object identifier | DOI | |
| 191 | cartography | digital photogrammetric workstation | DPW | |
| 192 | telecommunications | digital subscriber line | DSL | |
| 193 | telecommunications | direct dialing-in | DDI | |
| 194 | military science | directional infrared countermeasures | DIRCM | + abbreviation |
| 195 | linguistics | discourse analysis | DA | |
| 196 | environmental science | dissolved oxygen | DO | |
| 197 | air transport | Distance Measuring Equipment | DME | |
| 198 | telecommunications | distinctive ringing | DR | |
| 199 | dentistry | disto-occlusal cavity | DO cavity | (partial) |
| 200 | telecommunications | do not disturb | DND | |
| 201 | telecommunications | do not disturb override | DNDO | |
| 202 | library science | document delivery service | DDS | |
| 203 | biology | domain antibody | dAb | |
| 204 | nutrition | doubly labeled water | DLW | |
| 205 | addiction | driving under the influence | DUI | |
| 206 | agriculture | dry matter | DM | |
| 207 | medicine | ductal carcinoma in situ | DCIS | |
| 208 | information technology | Dynamic Random Access Memory | DRAM | + Acronym |
| 209 | audiometry | dynamic range | DR | |
| 210 | project management | earned value management | EVM | |

| | Specification filed | English term | English abbreviated form | Comments |
|-----|-----------------------|---|--------------------------|-----------|
| 211 | audiometry | effective masking | EM | |
| 212 | rail transport | electric multiple unit | EMU | |
| 213 | rail transport | electro-hydraulic brake | EH brake | (partial) |
| 214 | corrosion | electrolytic corrosion test | EC test | (partial) |
| 215 | rail transport | electro-mechanical brake | EM brake | (partial) |
| 216 | audiometry | electroneurography | ENG, ENOG | |
| 217 | military science | electronic attack | EA | |
| 218 | military science | electronic counter countermeasures | ECCM | |
| 219 | military science | electronic countermeasures | ECM | |
| 220 | cartography | electronic distance measurement | EDM | |
| 221 | health management | electronic health record | EHR | |
| 222 | rail transport | electro-pneumatic brake | EP brake | (partial) |
| 223 | environmental science | electrostatic precipitator | ESP | |
| 224 | psychology | employee assistance programs | EAPs | |
| 225 | forestry | endangered species | EN | |
| 226 | military science | endgame countermeasures | EGCM | |
| 227 | rail transport | end-of-train detector | EOT detector | (partial) |
| 228 | rail transport | end-of-train device | EOT device | (partial) |
| 229 | biology | endoplasmic reticulum | ER | |
| 230 | nutrition | energy expended in physical activity | EEPA | |
| 231 | cinematography | enhanced [definition] TV | EDTV | |
| 232 | telecommunications | enhanced service provider | ESP | |
| 233 | environmental science | environmental lapse rate | ELR | |
| 234 | water transport | equipment interchange receipt | EIR | |
| 235 | nutrition | estimated average requirement | EAR | |
| 236 | nutrition | estimated safe and adequate daily dietary intakes | ESADDIs | |
| 237 | water transport | estimated time of arrival | ETA | |

| | Specification filed | English term | English abbreviated form | Comments |
|-----|--|---------------------------------------|--------------------------|--------------|
| 238 | health management | evidence-based medicine | EBM | |
| 239 | medicine | excitatory postsynaptic potential | EPSP | |
| 240 | military science | exoatmospheric kill vehicle | EKV | |
| 241 | telecommunications | extremely high frequency | EHF | |
| 242 | telecommunications | extremely low frequency | ELF | |
| 243 | nutrition | extremely low-birth weight | ELBW | |
| 244 | forestry | fall-over protective structures | FOPS | |
| 245 | physics | far-ultraviolet radiation | FUV radiation | (partial) |
| 246 | futuristics | field anomaly relaxation method | FAR | + short form |
| 247 | information technology | file transfer protocol | FTP | |
| 248 | project management | firm fixed-price contract | FFP contract | (partial) |
| 249 | environmental science | fixed suspended solids | FSS | |
| 250 | water/rail transport, military science | flashing light | FL | |
| 251 | nutrition | flat sour spoilage | F.S.S. | |
| 252 | air transport | flight data recorder, recorder flight | FDR | |
| 253 | air transport | flight level | FL | |
| 254 | corrosion | flow-induced localized corrosion | FILC | |
| 255 | air transport | fly by light | FBL | |
| 256 | air transport | fly by wire | FBW | |
| 257 | nutrition | food frequency questionnaire | FFQ | |
| 258 | rail/ urban transport | footpath level crossing | FP | |
| 259 | air transport | foreign object damage | FOD | |
| 260 | forestry | forest management unit | FMU | |
| 261 | water transport | forty-foot equivalent unit | FEU | |
| 262 | geology | fracture spacing index | FSI | |
| 263 | geology | fracture spacing ratio | FSR | |
| 264 | library science | freedom of information | FOI | |

| | Specification filed | English term | English abbreviated form | Comments |
|-----|-------------------------|--|--------------------------|--------------|
| 265 | water transport | freight demurrage and defense | FDD | |
| 266 | water transport | freight release | FR, release | / short form |
| 267 | information technology | frequently-asked questions | FAQ | / Acronym |
| 268 | water transport | full container load | FCL | |
| 269 | audiometry | full-on gain | FOG | |
| 270 | health management | full-time equivalent | FTE | |
| 271 | audiometry | functional gain | FG | |
| 272 | metallurgy | functionally graded materials | FMGs | |
| 273 | psychology | gamblers anonymous | GA | |
| 274 | physics | gamma-ray burst | GRB | |
| 275 | health science | general fertility rate | GFR | |
| 276 | telecommunications | general packet radio service | GPRS | |
| 277 | health management | general practitioner | GP | |
| 278 | psychology | general problem solver | GPS | |
| 279 | nutrition | genetically modified food | GMF | |
| 280 | cartography | geospatial information system | GIS | |
| 281 | military science | global broadcast system | GBS | |
| 282 | air transport, tourisms | global distribution system | GDS | |
| 283 | water transport | Global Maritime Distress and Safety System | GMDSS | |
| 284 | cartography | global positioning system | GPS | |
| 285 | telecommunications | global system for mobile communications | GSM communication(s) | (partial) |
| 286 | information technology | graphical user interface | GUI | |
| 287 | water transport | gross tonnage | GT | |
| 288 | air transport | ground power unit | GPU | |
| 289 | military science | ground-controlled interception | GCI | |
| 290 | astronomy | guest observer | GO | |
| 291 | forestry | habitat conservation area | HCA | |

| | Specification filed | English term | English abbreviated form | Comments |
|-----|------------------------|--|--------------------------|-----------|
| 292 | forestry | habitat conservation plan | HCP | |
| 293 | health management | health information system | HIS | |
| 294 | health management | health maintenance organization | HMO | |
| 295 | health management | health technology assessment | HTA | |
| 296 | air transport | height above touchdown | HAT | |
| 297 | cinematography | high definition television | HDTV | |
| 298 | telecommunications | high frequency | HF | |
| 299 | chemistry | high-density polyethylene | HDPE | |
| 300 | metallurgy | high-strength low-alloy steel | HSLA steel | (partial) |
| 301 | astronomy | holography element [Holographic optical element] | HOE | |
| 302 | telecommunications | horizontal radiation pattern | HRP | |
| 303 | information technology | hosting service provider | HSP | |
| 304 | dramatic arts | house manager | HM | |
| 305 | medicine | human immunodeficiency virus | HIV | |
| 306 | information technology | hypertext markup language | HTML | |
| 307 | nutrition | ideal body weight, Healthy Body Weight | I.B.W., HBW | |
| 308 | military science | identification friend or foe | IFF | |
| 309 | cartography | image-motion compensation | IMC | |
| 310 | telecommunications | incident response plan | IRP | |
| 311 | addiction | index of drug involvement | IDI | |
| 312 | audiometry | individual transition plan | ITP | |
| 313 | audiometry | individualized educational plan | IEP | |
| 314 | audiometry | individualized family service plan | IFSP | |
| 315 | health science | infant mortality rate | IMR | |
| 316 | information technology | information and communication technology | ICT | |
| 317 | library science | information literacy | IL | |

| | Specification filed | English term | English abbreviated form | Comments |
|-----|------------------------|---|--------------------------|-----------|
| 318 | library science | information provider | IP | |
| 319 | library science | information quality | IQ | |
| 320 | library science | information retrieval | IR | |
| 321 | information technology | Information Technology | IT | |
| 322 | military science | infrared countermeasures | IRCM | |
| 323 | medicine | inhibitory postsynaptic potential | IPSP | [prefix] |
| 324 | polymer science | innerliner separation | ILS | [prefix] |
| 325 | air transport | Instrument Flight Rules | IFR | |
| 326 | air transport | Instrument Landing System | ILS | |
| 327 | forestry | integrated area management | IAM | |
| 328 | medicine | intelligence quotient | IQ | |
| 329 | military science | intercontinental ballistic missile | ICBM | [prefix] |
| 330 | genetics | intergenic single nucleotide polymorphism | intergenic SNP | (partial) |
| 331 | political science | intergovernmental organisation | IGO | [prefix] |
| 332 | military science | intermediate-range ballistic missile | IRBM | |
| 333 | information technology | international computer driving licence | ICDL | |
| 334 | telecommunications | international direct dialing security | IDD security | (partial) |
| 335 | water transport | international safety management code | ISM code | (partial) |
| 336 | water transport | international ship and port facility code | ISPF code | (partial) |
| 337 | water transport | international ship security certificate | ISSC | |
| 338 | cinematography | internegative | IN | [prefix] |
| 339 | information technology | Internet Message Access Protocol | IMAP | + Acronym |
| 340 | information technology | Internet Protocol | IP | |
| 341 | information technology | Internet Service Provider | ISP | |
| 342 | telecommunications | internet telephony service provider | ITSP | |
| 343 | telecommunications | internet television service provider | ITVSP | |
| 344 | cinematography | interpositive | IP | |

| | Specification filed | English term | English abbreviated form | Comments |
|-----|------------------------|---|--------------------------|-----------------------|
| 345 | genetics | intragenic single nucleotide polymorphism | intragenic SNP | (partial) |
| 346 | medicine | intrauterine device | IUD | [prefix] |
| 347 | nutrition | intrauterine growth retardation | IUGR | |
| 348 | addiction | inventory of drug-taking situations | IDTS | |
| 349 | geophysics | isothermal remanent magnetization | IRM | |
| 350 | information technology | Joint Photographic Experts Group | JPEG | / Initialism+ Acronym |
| 351 | military science | kinetic kill vehicle | KKV | |
| 352 | information technology | knowledge discovery in databases | KDD | |
| 353 | information technology | knowledge-based system | KBS | |
| 354 | cartography | land information system | LIS | |
| 355 | military science | landing force | LF | |
| 356 | environmental science | Langelier saturation index | LSI | |
| 357 | tourisms | language study tour provider | LSP | |
| 358 | nutrition | large for gestational age | LGA | |
| 359 | telecommunications | large-scale integration | LSI | |
| 360 | metallurgy | laser beam welding | LBW, laser welding | / Short form |
| 361 | military science | laser target designator | LTD | |
| 362 | psychology | learning disability | LD | |
| 363 | psychology | learning disorder | LD | |
| 364 | information technology | learning platform | LP | |
| 365 | information technology | learning service provider | LSP | |
| 366 | water transport | less than container load | LCL | |
| 367 | air transport | life-limited part, limited life part | LLP | |
| 368 | air transport | lift /drag ratio | L/D | + short form |
| 369 | rail transport | light rail transit | LRT | |
| 370 | telecommunications | line hunting | LH | |
| 371 | atmospheric science | line of sight | LOS | |

| | Specification filed | English term | English abbreviated form | Comments |
|-----|------------------------|---|--------------------------|-----------|
| 372 | genetics | linkage disequilibrium | LD | |
| 373 | chemistry | liquefied natural gas | LNG | |
| 374 | chemistry | liquefied petroleum gas | LPG | |
| 375 | information technology | liquid crystal display | LCD | |
| 376 | air transport | load factor | LF | |
| 377 | health management | long-term care | LTC | |
| 378 | telecommunications | low frequency | LF | |
| 379 | atmospheric science | low level jet | LLJ | |
| 380 | nutrition | low-birth weight | LBW | |
| 381 | chemistry | low-density polyethylene | LDPE | |
| 382 | physics | magnetic resonance imaging | MRI | |
| 383 | urban transport | major activity centre, activity centre area | MAC | |
| 384 | air transport | manoeuvring speed | VNO | |
| 385 | audiometry | masking level difference | MLD | |
| 386 | military science | mast-mounted sensor | MMS | |
| 387 | health science | maternal and child health services | MCH services | (partial) |
| 388 | health science | maternal mortality rate | MMR | |
| 389 | microbiology | matrix protein | MP | |
| 390 | air transport | maximum landing weight | MLW | |
| 391 | air transport | maximum take-off weight | MTOW | |
| 392 | environmental science | mean cell residence time | MCRT | |
| 393 | health management | medical record | MR | |
| 394 | telecommunications | medium frequency | MF | |
| 395 | chemistry | medium-density polyethylene | MDPE | |
| 396 | military science | medium-range ballistic missile | MRBM | |
| 397 | telecommunications | medium-scale integration | MSI | |
| 398 | psychology | mental retardation | MR | |

| | Specification filed | English term | English abbreviated form | Comments |
|-----|------------------------|---|--------------------------|-----------------------|
| 399 | dentistry | mesio-occlusal cavity | MO cavity | (partial) |
| 400 | dentistry | mesio-occlusodistal cavity | MOD cavity | (partial) |
| 401 | atmospheric science | mesoscale convective complex | MCC | |
| 402 | atmospheric science | mesoscale convective system | MCS | |
| 403 | genetics | messenger RNA | mRNA | |
| 404 | metallurgy | metal-matrix composites | MMC | |
| 405 | military science | military airspace management system | MAMS | |
| 406 | military science | mine countermeasures | MCM | |
| 407 | audiometry | minimum audible pressure | MAP | |
| 408 | air transport | minimum connection time, minimum connecting time | MCT | |
| 409 | nutrition | minimum daily requirement | MDR | |
| 410 | nutrition | minimum daily requirement | MDR | |
| 411 | telecommunications | mobile internet service provider | MISP | |
| 412 | military science | mobility air forces | MAF | |
| 413 | addiction | moderation management | MM | |
| 414 | food technology | modified atmosphere packaging | MAP | |
| 415 | food technology | modified atmosphere storage | MA | |
| 416 | environmental science | most probable number | MPN | |
| 417 | information technology | Motion Picture Experts Group Layer 3 | MP3 | + Short form |
| 418 | information technology | Moving Picture Experts Group, Motion Picture Experts Group | MPEG | / Initialism+ Acronym |
| 419 | telecommunications | multilevel precedence and preemption service | MLPP | + Short form |
| 420 | general language | multimedia message service | MMS | |
| 421 | telecommunications | multimedia ringback tone | MRBT | |
| 422 | military science | multiple independent reentry vehicle | MIRV | / Acronym |
| 423 | military science | multiple kill vehicle | MKV | |

| | Specification filed | English term | English abbreviated form | Comments |
|-----|------------------------|--|--------------------------|-----------|
| 424 | medicine | multiple sclerosis | MS | |
| 425 | telecommunications | multiple subscriber number | MSN | |
| 426 | cinematography | music television | MTV | |
| 427 | psychology | narcotics anonymous | NA | |
| 428 | information technology | natural language processing | NLP | |
| 429 | health science | neonatal mortality rate | NMR | |
| 430 | nutrition | net protein ratio | NPR | |
| 431 | nutrition | net protein utilization | NPU | |
| 432 | water transport | net tonnage | NT | |
| 433 | information technology | network information center | NIC | |
| 434 | telecommunications | network service provider | NSP | |
| 435 | nutrition | neural tube defect | NTD | |
| 436 | technology management | new technology-based firm | NTBF | |
| 437 | nutrition | night eating questionnaire | NEQ | |
| 438 | nutrition | night eating syndrome | NES | |
| 439 | nutrition | no effect level | NEL | |
| 440 | audiometry | noise induced permanent threshold shift | NIPTS | |
| 441 | audiometry | noise induced temporary threshold shift | NITTS | |
| 442 | general language | non-governmental organization | NGO | |
| 443 | medicine | nonsteroidal anti-inflammatory drug | NSAID | |
| 444 | atmospheric science | North Equatorial Countercurrent | NECC | |
| 445 | atmospheric science | North Equatorial Current | NEC | |
| 446 | psychology | not otherwise specified | NOS | |
| 447 | genetics | nuclear DNA | nDNA | |
| 448 | military science | nuclear, biological and chemical weapons | N.B.C weapon | (partial) |
| 449 | atmospheric science | numerical weather prediction | NWP | |
| 450 | information technology | object orientation | OO | |

| | Specification filed | English term | English abbreviated form | Comments |
|-----|------------------------|---------------------------------------|--------------------------|-----------|
| 451 | information technology | object oriented languages | OO languages | (partial) |
| 452 | information technology | object oriented programming | OO programming | (partial) |
| 453 | audiometry | occlusion effect | OE | |
| 454 | atmospheric science | ocean station vessel | OSV | |
| 455 | forestry | off-road vehicle, off-highway vehicle | ORV | |
| 456 | polymer science | off-the-road tyre, off-the-road | OTR | |
| 457 | genetics | open reading frame | ORF | |
| 458 | water transport | open-top container, open top | OT | |
| 459 | air transport | operational development model | ODM | |
| 460 | military science | operational readiness | OR | |
| 461 | military science | optical counter-countermeasures | optical CCM | (partial) |
| 462 | information technology | optical character recognition | OCR | |
| 463 | military science | optical countermeasures | OCM | |
| 464 | optics | optical rotatory dispersion | ORD | |
| 465 | nutrition | oral allergy syndrome | OAS | |
| 466 | dentistry | oral and maxillofacial surgery | OMFS | |
| 467 | audiometry | oral communication | OC | |
| 468 | health management | outpatient | OP | |
| 469 | rail transport | overlap | OL | |
| 470 | cinematography | over-the-shoulder shot | OSS | |
| 471 | environmental science | ozone-depleting potential | ODP | |
| 472 | cinematography | pay television | pay TV | |
| 473 | telecommunications | payload type identifier | PTI | |
| 474 | military science | peace operations | PO | |
| 475 | biology | peptide fragmentation fingerprint | PFF | |
| 476 | cryptology | perfect forward secrecy | PFS | |
| 477 | nutrition | peripheral parenteral nutrition | PPN | |

| | Specification filed | English term | English abbreviated form | Comments |
|-----|------------------------|---|--------------------------|-----------|
| 478 | audiometry | permanent threshold shift | PTS | |
| 479 | information technology | personal digital assistant | PDA | |
| 480 | telecommunications | personal number service | PNS | |
| 481 | telecommunications | personal unblocking key code | PUK code | (partial) |
| 482 | agriculture | pesticide management plan | PMP | |
| 483 | polymer science | pigment binder ratio | PBR | |
| 484 | polymer science | pigment volume concentration | PVC | |
| 485 | air transport | pilot flying, handling pilot | PF | |
| 486 | air transport | pilot in command | PIC | |
| 487 | air transport | pilot not flying, pilot monitoring, non-handling pilot | PNF | |
| 488 | atmospheric science | planetary boundary layer | PBL | |
| 489 | military science | plan-position indicator | PPI | |
| 490 | cinematography | point of view shot | POV | |
| 491 | cinematography | point of view, standpoint | POV | |
| 492 | metallurgy | polymer-matrix composites | PMC | |
| 493 | telecommunications | postal parcel, colis postal | CP | |
| 494 | air transport | precision approach path indicator | PAPI / Papi | |
| 495 | air transport | precision approach radar | PAR | |
| 496 | military science | precision-guided munitions | PGM | |
| 497 | military science | pre-emptive infrared countermeasures | pre-emptive IRCM | (partial) |
| 498 | rail transport | preferred rail laying temperature, desired rail temperature | PRLT | |
| 499 | air transport | prepaid ticket advice | PTA | |
| 500 | air transport | pre-production aircraft | PPA | |
| 501 | physics | pressurized water reactor | PWR | |
| 502 | telecommunications | private automatic branch exchange | PABX | |
| 503 | telecommunications | private branch exchange | PBX | |

| | Specification filed | English term | English abbreviated form | Comments |
|-----|------------------------|--|--------------------------|-----------|
| 504 | telecommunications | private numbering plan | PNP | |
| 505 | cinematography | production manager | PM | |
| 506 | project management | project management body of knowledge | PMBOK | + Acronym |
| 507 | project management | project management information system | PMIS | |
| 508 | project management | project management office | PMO | |
| 509 | nutrition | protein efficiency ratio | PER | |
| 510 | nutrition | protein-energy malnutrition | PEM | |
| 511 | agriculture | pruning shear | PS | |
| 512 | urban transport | pulverised fuel ash, fly ash | PFA | |
| 513 | mathematics | quality control | QC | |
| 514 | tourisms | quick-service restaurant | QSR | |
| 515 | information technology | r, universal resource locator | URL | / Acronym |
| 516 | military science | radar cross section | RCS | |
| 517 | military science | radar cross section reduction | RCS reduction | (partial) |
| 518 | military science | radar warning receiver | RWR | |
| 519 | water transport | rate of turn | RoT | |
| 520 | military science | reactive armour | RA | |
| 521 | military science | reactive infrared countermeasures | reactive IRCM | (partial) |
| 522 | nutrition | recommended daily allowance | RDA | |
| 523 | nutrition | recommended daily intake | RDI | |
| 524 | military science | reentry vehicle | RV | |
| 525 | environmental science | refuse derived fuel | RDF | |
| 526 | audiometry | relative bone conduction | relative BC | (partial) |
| 527 | nutrition | relative protein value | RPV | |
| 528 | metallurgy | resistance butt welding, upset welding, upset butt welding | UW | |
| 529 | chemistry | resonance ionization spectroscopy | RIS | |

| | Specification filed | English term | English abbreviated form | Comments |
|-----|------------------------|--|-------------------------------|-----------|
| 530 | nutrition | resting metabolic rate | RMR | |
| 531 | rail transport | restricted overlap | ROL | |
| 532 | music | retrograde inversion | RI | |
| 533 | genetics | ribonucleic acid | RNA | |
| 534 | genetics | ribosomal RNA | rRNA | |
| 535 | environmental science | rotating biological contactor | RBC | |
| 536 | air transport | runway acceptance rate | RAR | |
| 537 | air transport | runway incursion | RWI | |
| 538 | air transport | runway visibility value | RVV | |
| 539 | air transport | runway visual range | RVR | |
| 540 | water transport | safe working load | SWL | |
| 541 | water transport | safety management certificate | SMC | |
| 542 | library science | selective dissemination of information | SDI | |
| 543 | psychology | self-help groups | SHG | |
| 544 | environmental science | sequencing batch reactor | SBR | |
| 545 | telecommunications | service level agreement | SLA | |
| 546 | telecommunications | service provider | SP | |
| 547 | telecommunications | service provider interface | SPI | |
| 548 | psychology | sex addicts anonymous | SAA | |
| 549 | water transport | ship sanitation certificate, ship sanitation control certificate | SSC | |
| 550 | telecommunications | short message service | SMS | |
| 551 | military science | short-range ballistic missile | SRBM | |
| 552 | military science | shrouding ballistic missile defence countermeasures | shrouding BMD countermeasures | (partial) |
| 553 | environmental science | sick building syndrome | SBS | |
| 554 | genetics | silent single nucleotide polymorphism | silent SNP | (partial) |
| 555 | information technology | Simple Mail Transfer Protocol | SMTP | |

| | Specification filed | English term | English abbreviated form | Comments |
|-----|-----------------------|--|--------------------------|-----------|
| 556 | food technology | single cell oil | SCO | |
| 557 | food technology | single cell protein | SCP | |
| 558 | genetics | single nucleotide polymorphism | SNP, SNIP | |
| 559 | genetics | single nucleotide polymorphism profiling | SNP profiling | (partial) |
| 560 | genetics | single nucleotide polymorphism scanning | SNP scanning | (partial) |
| 561 | genetics | single nucleotide polymorphism scoring | SNP scoring | (partial) |
| 562 | genetics | single nucleotide polymorphism map | SNP map | (partial) |
| 563 | archaeology | site(-)catchment analysis | SCA | |
| 564 | environmental science | sludge volume index | SVI | |
| 565 | nutrition | small for gestational age | SGA | |
| 566 | genetics | small inhibitory RNA | siRNA | |
| 567 | telecommunications | small-scale integration | SSI | |
| 568 | health science | socioeconomic status | SES | |
| 569 | food technology | solids not fat | SNF | |
| 570 | rail transport | solid-state interlocking | SSI | |
| 571 | audiometry | sound field | SF | |
| 572 | atmospheric science | South Equatorial Countercurrent | SECC | |
| 573 | atmospheric science | South Equatorial Current | SEC | |
| 574 | military science | space-based interceptor | SBI | |
| 575 | dramatic arts | stage left, house right, prompt side | PS | |
| 576 | air transport | standard instrument departure | SID | |
| 577 | environmental science | standard oxygen transfer efficiency | SOTE | |
| 578 | audiometry | standard threshold shift | STS | |
| 579 | addiction | structured relapse prevention | SRP | |
| 580 | military science | submarine-launched ballistic missile | SLBM | |
| 581 | telecommunications | super high frequency | SHF | |
| 582 | environmental science | suspended particulate matter | SPM | |

| | Specification filed | English term | English abbreviated form | Comments |
|-----|------------------------|---|--------------------------|-----------|
| 583 | environmental science | suspended solids | SS | |
| 584 | information technology | Synchronous Dynamic Random Access Memory | SDRAM | + Acronym |
| 585 | military science | tactical air control centre | TACC | |
| 586 | military science | tactical air coordinator | TAC | |
| 587 | military science | tactical combat force | TCF | |
| 588 | technology management | technology assessment | TA | |
| 589 | information technology | technology-based training | TBT | |
| 590 | audiometry | temporary threshold shift | TTS | |
| 591 | dentistry | temporomandibular joint | TMJ | |
| 592 | atmospheric science | terminal aerodrome forecast | TAF | |
| 593 | audiometry | test ear | TE | |
| 594 | cartography | thematic mapper | TM | |
| 595 | environmental science | threshold limit value | TLV | |
| 596 | environmental science | threshold limit value-ceiling | TLV-C | |
| 597 | environmental science | threshold limit value-short term exposure limit | TLV-STEL | |
| 598 | environmental science | threshold limit value-time weighted average | TLV-TWA | |
| 599 | cartography | time difference of arrival | TDOA | |
| 600 | audiometry | tinnitus retraining therapy | TRT | |
| 601 | audiometry | total communication | TC | |
| 602 | environmental science | total dissolved solids | TDS | |
| 603 | health science | total fertility rate | TFR | |
| 604 | nutrition | total parenteral nutrition, hyperalimentation | TPN | |
| 605 | environmental science | total solids | TS | |
| 606 | air transport | touchdown rate of descent | touchdown ROD | (partial) |
| 607 | air transport | touchdown runway visual range | touchdown RVR | (partial) |
| 608 | tourisms | tourist information centre | TIO | |

| | Specification filed | English term | English abbreviated form | Comments |
|-----|------------------------|--|--------------------------------|-----------|
| 609 | water transport | traffic separation scheme | TSS | |
| 610 | military science | trajectory ballistic missile defence countermeasures | trajectory BMD countermeasures | (partial) |
| 611 | addiction | transdermal alcohol content | TAC | |
| 612 | genetics | transfer RNA | tRNA | |
| 613 | air transport | transition altitude | TA | |
| 614 | air transport | transition level | TLV | |
| 615 | medicine | transitional cell carcinoma | TCC | |
| 616 | information technology | Transmission Control Protocol | TCP | |
| 617 | telecommunications | transport layer security | TLS | |
| 618 | telecommunications | tremendously high frequency | THF | |
| 619 | telecommunications | tremendously low frequency | TLF | |
| 620 | futuristics | trend impact analysis | TIA | |
| 621 | microbiology | triple sugar iron agar | TSI | |
| 622 | telecommunications | trunked mobile radio | TMR | |
| 623 | rail transport | tunnel boring machine | TBM | |
| 624 | water transport | twenty-foot equivalent unit | TEU | |
| 625 | chemistry | ultra high molecular weight polyethylene | UHMWPE | |
| 626 | nutrition | ultra long-chain fatty acid | ULCFA | |
| 627 | chemistry | ultra low density polyethylene | ULDPE | |
| 628 | telecommunications | ultrahigh frequency | UHF | |
| 629 | astronomy | ultrahigh-energy cosmic ray | UHECR | |
| 630 | telecommunications | ultra-large-scale integration | ULSI | |
| 631 | air transport | ultralight aircraft | UL | |
| 632 | military science | unconventional warfare | UW | |
| 633 | telecommunications | undetected error ratio, residual error ratio | UER | |
| 634 | polymer science | uniform chromaticity-scale diagram | UCS diagram | (partial) |
| 635 | telecommunications | uniform memory access | UMA | |

| | Specification filed | English term | English abbreviated form | Comments |
|-----|------------------------|--|--------------------------|----------|
| 636 | telecommunications | unit interval | UI | |
| 637 | telecommunications | universal digital loop carrier | UDLC | |
| 638 | telecommunications | universal mobile telecommunications system | UMTS | |
| 639 | telecommunications | universal personal telecommunications | UPT | |
| 640 | information technology | Universal Serial Bus | USB | |
| 641 | telecommunications | universal service obligation | USO | |
| 642 | military science | unmanned aerial vehicle | UAV | |
| 643 | military science | unmanned ground vehicle | UGV | |
| 644 | military science | unmanned underwater vehicle | UUV | |
| 645 | telecommunications | User Datagram Protocol | UDP | |
| 646 | information technology | user-friendly interface | UFI | |
| 647 | atmospheric science | VAD wind profile | VWP | |
| 648 | telecommunications | value-added service | VAS | |
| 649 | atmospheric science | velocity-azimuth display | VAD | |
| 650 | telecommunications | vendor-managed inventory | VMI | |
| 651 | telecommunications | vertical radiation pattern | VRP | |
| 652 | air transport | vertical speed indicator | VSI | |
| 653 | air transport | vertical take off and landing | VTOL | |
| 654 | telecommunications | very high frequency | VHF | |
| 655 | water transport | very large crude carrier | VLCC | |
| 656 | air transport | very light aircraft | VLA | |
| 657 | nutrition | very low calorie diet | VLCD | |
| 658 | chemistry | very low density polyethylene | VLDPE | |
| 659 | telecommunications | very low frequency | VLF | |
| 660 | nutrition | very low-birth weight | VLBW | |
| 661 | telecommunications | very-large-scale integration | VLSI | |
| 662 | telecommunications | vestigial sideband | VSB | |

| | Specification filed | English term | English abbreviated form | Comments |
|-----|------------------------|--|--------------------------|-----------|
| 663 | telecommunications | vestigial sideband amplitude modulation | VSB-AM | |
| 664 | telecommunications | vestigial-sideband transmission | VSB transmission | (partial) |
| 665 | telecommunications | via net loss | VNL | |
| 666 | cinematography | virtual reality | VR | |
| 667 | air transport | Visual Flight Rules | VFR | |
| 668 | audiometry | visual reinforcement audiometry | VRA | |
| 669 | environmental science | volatile suspended solids | VSS | |
| 670 | water transport | voyage data recorder, black box, voyage event recorder | VDR, VER | |
| 671 | food technology | warmed over flavour | WOF | |
| 672 | information technology | web-based learning | WBL | |
| 673 | information technology | web-based training | WBT | |
| 674 | telecommunications | wireless application service provider | WASP | |
| 675 | telecommunications | wireless internet service provider | WISP, wireless ISP | (partial) |
| 676 | chemistry | Wiswesser line notation | WLN | |
| 677 | atmospheric science | world area forecast center | WAFC | |
| 678 | atmospheric science | world area forecast system | WAFS | |
| 679 | information technology | world wide web | www | |

Table 5.8- English acronyms

| | Specification filed | English term | English abbreviated form | Comments |
|----|------------------------|--|--------------------------|-----------|
| 1 | telecommunications | [write once and read many times] media | WORM media | |
| 2 | telecommunications | [write once and read many times] memory | WORM memory | |
| 3 | medicine | acquired immunodeficiency syndromes | AIDS | |
| 4 | military science | anti-radiation missile | ARM | |
| 5 | telecommunications | basic input/output system | BIOS | |
| 6 | telecommunications | calling line identification presentation | CLIP | |
| 7 | telecommunications | calling line identification restriction | CLIR | |
| 8 | information technology | campus area network | CAN | |
| 9 | atmospheric science | clear-air turbulence | CAT | |
| 10 | military science | Combat Air Patrol | CAP | |
| 11 | military science | computer emergency response team | CERT | |
| 12 | information technology | computer-aided design | CAD | |
| 13 | information technology | computer-aided manufacturing | CAM | |
| 14 | information technology | computer-aided software engineering | CASE | |
| 15 | military science | concept of operations | CONOPS | |
| 16 | telecommunications | connected line identification presentation | COLP | |
| 17 | telecommunications | custom local access signalling services | CLASS | |
| 18 | atmospheric science | differential absorption lidar thermometer | DIAL thermometer | (partial) |
| 19 | water transport | feeder for lighter aboard ship | FLASH | |
| 20 | atmospheric science | flight forecast | FIFOR | |
| 21 | physics | gamma-ray laser | graser | [+ blend] |
| 22 | information technology | global area network | GAN | |

| | Specification filed | English term | English abbreviated form | Comments |
|----|------------------------|---|----------------------------|-------------------------|
| 23 | military science | head-up display | HUD | |
| 24 | military science | high-speed anti-radiation missile | HARM | |
| 25 | information technology | home area network | HAN | |
| 26 | physics | light amplification by stimulated emission of radiation | laser | |
| 27 | water transport | lighter aboard ship | LASH | |
| 28 | information technology | local area network | LAN | |
| 29 | genetics | long interspersed nuclear elements | LINE elements, LINES, LINE | (partial) |
| 30 | military science | maneuverable reentry vehicle | MaRV | |
| 31 | sport | men artistic gymnastics | MAG | |
| 32 | information technology | metropolitan area network | MAN | |
| 33 | water transport | mobile offshore drilling unit | MODU | |
| 34 | telecommunications | nonuniform memory access | NUMA | |
| 35 | environmental science | not in my backyard | NIMBY | |
| 36 | orthopedics | open reduction and internal fixation | ORIF | |
| 37 | environmental science | persistent organic pollutants | POPs | |
| 38 | information technology | personal area network | PAN | |
| 39 | telecommunications | personal identification number | PIN | |
| 40 | information technology | point of presence | pop | |
| 41 | information technology | Random Access Memory | RAM | |
| 42 | information technology | Read Only Memory | ROM | |
| 43 | genetics | short interspersed nuclear elements | SINES, SINE | |
| 44 | air transport | short take off and landing | STOL | |
| 45 | atmospheric science | significant weather chart | SIGWX | Modification (/sigwex/) |
| 46 | air transport | standard terminal arrival route | STAR | |
| 47 | information technology | storage area network | SAN | |

| | Specification filed | English term | English abbreviated form | Comments |
|----|------------------------|---|--------------------------|----------|
| 48 | telecommunications | subscriber identity module card | SIM card | |
| 49 | telecommunications | value-added network services | VANS | |
| 50 | audiometry | vestibular evoked myogenic potential | VEMP | |
| 51 | air transport | visual approach path indicator <i>syn.</i> visual approach slope indicator | VAPI/VASI | |
| 52 | information technology | wide area network | WAN | |
| 53 | sport | women artistic gymnastics | WAG | |
| 54 | telecommunications | write once and read many times | WORM | |

Table 5.9- English blends

| | Specification filed | English term | English abbreviated form | Comments |
|---|---------------------|----------------------------------|--------------------------|----------|
| 1 | library science | information security | INFOSEC | |
| 2 | physics | linear accelerator | linac | |
| 3 | military science | operational documentation | OPDOC | |
| 4 | rail transport | refrigerator [and freezer] wagon | reefer | |
| 5 | water transport | ro-ro/container ship | con-ro ship | |
| 6 | cinematography | science-fiction film | sci-fi | |
| 7 | audiometry | simultaneous communication | SimCom | |
| 8 | military science | tactical intelligence | TACINTEL | |
| 9 | telecommunications | transmitter-receiver | transceiver | |

Table 5.10- Persian initialism

| | Specification filed | Persian equivalent | Persian abbreviated equivalent | Comments |
|----|------------------------|-----------------------------------|--------------------------------|--------------------------------|
| 1 | military science | سلاحهای هسته‌ای، میکروبی، شیمیایی | سلاح‌های ش.م.ه | (partial) + modification |
| 2 | information technology | کشف دانش در دادگان | ک.د.د | |
| 3 | health science | میزان اختصاصی سنی باروری | میزان الف.س.ب | (partial) |
| 4 | health science | میزان عمومی باروری | میزان ع.ب | (partial) |
| 5 | health science | میزان کلی باروری | میزان ک.ب | (partial) |
| 6 | health science | میزان مرگ و میر نوزادان | میزان م.ن | (partial) |
| 7 | health science | میزان مرگ و میر شیرخواران | میزان م.ش | (partial) |
| 8 | health science | میزان مرگ و میر مادران | میزان م.م | (partial) |
| 9 | genetics | نسل فرزندی اول | ف ۱ | + short form + modification |
| 10 | genetics | نسل فرزندی دوم | ف ۲ | + short form + modification |
| 11 | futuristics | هدف بزرگ و مهیج و بی‌باکانه | هدف ب.م.ب | (partial) |

Table 5.11- Persian clipped terms

| | Specification filed | Persian equivalent | Persian abbreviated equivalent | Comments |
|---|---------------------|--------------------|--------------------------------|----------|
| 1 | mathematics | پادلگارِیتم | پادلگ | |
| 2 | biology | گیازامه | زامه | |
| 3 | biology | گیازامه ای | زامه ای | |

Table 5.12- Persian contracted forms

| | Specification filed | Persian equivalent | Persian abbreviated equivalent | Comments |
|----|------------------------|--|--------------------------------|------------------------|
| 1 | general language | [جای پرونده] | پرونجا | + modification |
| 2 | audiometry | اختلاف تراز پوشش | اتراپ | |
| 3 | environmental science | اکسیژن محلول | اکسل | |
| 4 | environmental science | آلاینده های آلی دیرپا | آلاد | + short form |
| 5 | audiometry | آموزش درمانی وزوز | اوز | |
| 6 | information technology | آموزش رایانه بنیاد | آراب | |
| 7 | information technology | آموزش فن بنیاد | آفن | |
| 8 | information technology | آموزش وب بنیاد | آوب | |
| 9 | nutrition | انرژی مصرفی فعالیت بدنی | انفاب | + short form |
| 10 | water transport | بارکار ایمن | باکا | + short form |
| 11 | water transport | بارگنج مشترک | بام | |
| 12 | water transport | بارگنجان | باگ | |
| 13 | environmental science | بازده انتقال اکسیژن استاندارد | بازاک استاندارد | (partial) + short form |
| 14 | environmental science | بازده انتقال اکسیژن واقعی | بازاک واقعی | (partial) + short form |
| 15 | audiometry | برنامه خدمات خانواده ویژه | برخان | + short form |
| 16 | audiometry | برنامه فردی گذار | بافگ | |
| 17 | futuristics | برنامهریزی فرض بنیاد | برفاد | |
| 18 | environmental science | بهترین فناوری موجود | بهفم | |
| 19 | military science | پادکنش پدافند موشک پرتابشی مهمات فرعی | پداموپ مهمات فرعی | (partial) + short form |
| 20 | military science | پادکنش شکنی الکترونیکی | پادگشال | |
| 21 | audiometry | پاسخ برانگیخته شنوایی | پابش | |
| 22 | audiometry | پاسخ حالت پایایی شنوایی | پایاش | + short form |
| 23 | telecommunications | پایانه کوچک دهانه | آنتن پکود | + modification |
| 24 | audiometry | پتانسیل ماهیچه ای دهلیز انگیزه | پتام | (partial) + short form |

| | Specification filed | Persian equivalent | Persian abbreviated equivalent | Comments |
|----|------------------------|---|--------------------------------|--------------|
| 25 | addiction | پیشگیری ساختمند از بازگشت | پیسات | |
| 26 | audiometry | تغییر آستانه معیار | تار | |
| 27 | audiometry | تمام بهره | تماب | |
| 28 | telecommunications | خدمات خاص مرکز تلفن | خدمت | + short form |
| 29 | health science | خدمات سلامت مادر و کودک | خدمات سماک | (partial) |
| 30 | nutrition | دریافت کافی | درک | |
| 31 | nutrition | دریافتهای مینا | درم | |
| 32 | genetics | دنای مکمل | دنام | |
| 33 | genetics | دنای نو ترکیب | دنان | |
| 34 | genetics | دنای هسته‌ای | دناس | |
| 35 | audiometry | رسانش استخوانی | رسا | |
| 36 | audiometry | رسانش استخوانی مطلق | رسای مطلق | (partial) |
| 37 | audiometry | رسانش استخوانی نسبی | رسای نسبی | (partial) |
| 38 | audiometry | رسانش هوایی | رسه | |
| 39 | genetics | رنای بازدارنده کوچک / رنای تداخلگر کوچک | رناتک | + acronym |
| 40 | genetics | رنای پیک | رناپ | |
| 41 | genetics | رنای رناتنی | رنار | |
| 42 | genetics | رنای مکمل | رنام | |
| 43 | genetics | رنای ناقل | رنان | |
| 44 | food technology | رنگدانه گوشت عمل آمده پخته | رنگوپخت | + short form |
| 45 | nutrition | روز دریافت برآوردی ایمن و کافی | روزاک | + short form |
| 46 | futuristics | روش بی هنجار کاهی | بی کا | + short form |
| 47 | political science | سازمان بینادولتی | سیاد | |
| 48 | telecommunications | سامانه جهانی ارتباطات سیار | ساجاس | |
| 49 | information technology | سامانه مدیریت دادگان | سامد | |
| 50 | information technology | سامانه مدیریت داده نامه | سامدان | |
| 51 | military science | سامانه مدیریت فضای پرواز نظامی | سامپن | + short form |

| | Specification filed | Persian equivalent | Persian abbreviated equivalent | Comments |
|----|------------------------|---|--------------------------------|--------------------------------|
| 52 | military science | سامانه برخوردگريز | سابگ | |
| 53 | military science | سامانه پدافند هوايي همراه | ساپه همراه | (partial) |
| 54 | military science | سامانه عارضه گريز | ساعگ | |
| 55 | water transport | سبك ساز بر | ساب | + modification |
| 56 | water transport | سبك ساز بر واسطه | سابو | + modification |
| 57 | addiction | سياهه تسريع كننده هاي بازگشت | سيات | + short form |
| 58 | addiction | سياهه موقعيت هاي لغزش را | سيام | + short form |
| 59 | addiction | شاخص گرفتاري اعتياد | شاخص گرا | (partial) |
| 60 | audiometry | شنوايي سنجي پاسخ ساقه مغز | شنوايي سنجي پاسام | (partial) |
| 61 | genetics | عناصر هسته اي پراكنده بلند، پراكنه بلند | پر اب | + short form |
| 62 | genetics | عناصر هسته اي پراكنده کوتاه، پراكنه کوتاه | پراك | + short form |
| 63 | information technology | فراهم ساز خدمات يادگيري | فراياد | + short form |
| 64 | audiometry | فشار شنيدپذيري كمينه | فشينه | |
| 65 | information technology | فناوري اطلاعات و ارتباطات | فاتا ؟؟؟؟؟ | |
| 66 | psychology | قماربازان گمنام | قماگ | |
| 67 | military science | مرکز واپايش هوايي راه كنشي | ماهره | + modification |
| 68 | health management | معادل تمام وقت | مت | + short form |
| 69 | psychology | معتادان جنسي گمنام | مُجگم | |
| 70 | addiction | مقدار الكل تعرقی | تركل (تعرق + الكل) | + short form + modification |
| 71 | military science | منطقه شناسايي پدافند هوايي | منشاپ هوايي | (partial) |
| 72 | nutrition | نمايه توده بدن | نماتوب | |
| 73 | information technology | نمايشگر بلور مابيع | نماب | + short form |
| 74 | nutrition | نياز ميانگين برآوردي | نياب | + short form |
| 75 | atmospheric science | هسته هاي ميعان ابر | هماب | |
| 76 | military science | هماهنگ كننده هوايي راه كنشي | همراه | + short form |
| 77 | military science | واحد آماده سازي پرواز | واپر | + short form |

| | Specification filed | Persian equivalent | Persian abbreviated equivalent | Comments |
|----|---------------------|--|--------------------------------|--------------|
| 78 | water transport | واحد بیست‌پایی | واب | |
| 79 | water transport | واحد چهل‌پایی | واچ | |
| 80 | physics | واکنشگاه آب تحت فشار، راکتور آب تحت فشار | واف | + short form |

Table 5.13- Persian blends

| | Specification filed | Persian equivalent | Persian abbreviated equivalent | Comments |
|----|------------------------|--------------------------------|--------------------------------|--------------------------------|
| 1 | atmospheric science | [آتش باد] | تشباد | |
| 2 | information technology | [وب تلویزیون] | ویزیون | |
| 3 | audiometry | ارتباط هم زمان | ارمان | |
| 4 | psychology | الکلیهای گمنام | الگم | |
| 5 | military science | پادکنش الکترونیکی | پادکال | |
| 6 | medicine | پتانسیل پس همایه‌ای تحریکی | پتاپس تحریکی | (partial) |
| 7 | medicine | پتانسیل پس همایه‌ای مهاري | پتاپس مهاري | (partial) |
| 8 | telecommunications | تک‌نویس-بس‌خوان | تک-بس | |
| 9 | genetics | چندشکلي تک نوکلئوتیدی | چندتک | |
| 10 | telecommunications | حافظه تکنویس - بس‌خوان | حافظه تک بس | (partial) |
| 11 | telecommunications | رسانه تک‌نویس - بس‌خوان | رسانه تک بس | (partial) |
| 12 | psychology | سیگاریهای گمنام | سیگم | |
| 13 | audiometry | شنوایی‌سنجی دیدار پاداشی | شنوایی‌سنجی دیداپا | (partial) |
| 14 | telecommunications | فرستنده گیرنده | فرست‌گیر | |
| 15 | technology management | فناوری بالا سطح، فناوری بالا | بالافن | + short form + modification |
| 16 | technology management | فناوری پایین سطح، فناوری پایین | پایین فن | + short form + modification |
| 17 | technology management | فناوری میان سطح، فناوری میانه | میان فن | + short form + modification |
| 18 | information technology | کار ساز دادگان | کارداد | |
| 19 | atmospheric science | هم‌تافت هم‌رفتی میان‌مقیاس | هم هم | + short form |
| 20 | information technology | یادگیری وب-بنیاد | یاد-وب | |

Table 5.14- Persian acronyms

| | Specification filed | Persian equivalent | Persian abbreviated equivalent | Comments |
|----|------------------------|---|--------------------------------|------------------------|
| 1 | information technology | [قرارداد انتقال پرونده] + گاه | قایگاه | |
| 2 | air transport | [نشست و برخاست کوتاه] | نوبک | |
| 3 | water transport | آیین نامه بین المللی امنیت کشتیها و تسهیلات بندری | آیین نامه باکوب | (partial) + short form |
| 4 | water transport | آیین نامه بین المللی مدیریت ایمنی | آیین نامه بما | (partial) |
| 5 | audiometry | برنامه آموزش فردی | باف | |
| 6 | food technology | بسته بندی با جو اصلاح شده | بجا | |
| 7 | food technology | بسته بندی با جو کنترل شده | بجک | |
| 8 | military science | پرندۀ هدایت پذیر از دور | پهپاد | |
| 9 | audiometry | تغییر آستانۀ دائم | تاد | |
| 10 | audiometry | تغییر آستانۀ موقت | تام | |
| 11 | military science | توانمندی انهدام چندگانه | تاچ | |
| 12 | telecommunications | خط رقمی مشترک | خطِ رم | (partial) |
| 13 | telecommunications | خط رقمی مشترک نامتقارن | خطِ رمن | (partial) |
| 14 | environmental science | خواست اکسیژن زیست شیمیایی | خاز | + short form |
| 15 | environmental science | خواست اکسیژن شیمیایی | خاش | |
| 16 | genetics | دی اکسی ریبونوکلیک اسید | دنا | + short form |
| 17 | military science | رادار شناخت دوست از دشمن | رشداد | |
| 18 | information technology | رسانندۀ خدمات کاربردی | رُخک | |
| 19 | environmental science | رسوب ده الکترواستاتیکی | ردا | |
| 20 | genetics | ریبونوکلیک اسید | رنا | |
| 21 | information technology | زبان نشانه گذاری ابرمتنی | زنگام | |
| 22 | geology | زهاب اسیدی سنگ | زاس | |
| 23 | geology | زهاب اسیدی معدن | زام | |
| 24 | general language | سازمان مردم نهاد | سمن | |
| 25 | military science | سامانۀ ارتباط داخلی | ساد | |

| | Specification filed | Persian equivalent | Persian abbreviated equivalent | Comments |
|----|------------------------|------------------------------------|--------------------------------|-----------|
| 26 | cartography | سامانه اطلاعات زمین | ساز | |
| 27 | cartography | سامانه اطلاعات مکانی | سام | |
| 28 | health management | سامانه پذیرش ترخیص انتقال | سامانه پتا | (partial) |
| 29 | water transport | سامانه جهانی اضطرار و ایمنی دریایی | سجاوادی | |
| 30 | atmospheric science | سامانه همرفتی میانمقیاس | سهم | |
| 31 | air transport | سرعت امن برخاست | ساب | |
| 32 | military science | سطح مقطع ر اداری | سمر | |
| 33 | chemistry | شمار اتصال لیگاند | شال | |
| 34 | military science | شناور هدایت پذیر از دور | شهپاد | |
| 35 | information technology | صفحه فعال کار ساز | صفک | |
| 36 | environmental science | فرایندهای اکسایش پیشرفته | فاپ | |
| 37 | information technology | فناوری اطلاعات | فا | |
| 38 | information technology | قرارداد انتقال پرونده | قاپ | |
| 39 | telecommunications | قرارداد بستک کاربر | قَبک | |
| 40 | military science | کاهش سطح مقطع ر اداری | کاهش سمر | (partial) |
| 41 | environmental science | کل مواد جامد | کَمَج | |
| 42 | environmental science | کل مواد جامد محلول | کَمَجَم | |
| 43 | military science | گروه و اکشن اضطراری رایانه‌ای | گوار | |
| 44 | water transport | گواهینامه بین المللی امنیت کشتی | گباک | |
| 45 | water transport | گواهینامه مدیریت ایمنی | گما | |
| 46 | military science | گیرنده هشدار ر اداری | گهر | |
| 47 | telecommunications | مدار تعادل و تطبیق | متوت | |
| 48 | telecommunications | مرکز تلفن داخلی | متد | |
| 49 | information technology | مرکز اطلاعات شبکه | ماش | |
| 50 | tourisms | مرکز اطلاعات گردشگری | ماگ | |
| 51 | psychology | معتادان گمنام | مُگ | |
| 52 | environmental science | مواد جامد معلق | مَجَم | |

| | Specification filed | Persian equivalent | Persian abbreviated equivalent | Comments |
|----|-----------------------|------------------------------------|--------------------------------|----------------|
| 53 | environmental science | مواد جامد معلق | مَجَم | |
| 54 | environmental science | مواد جامد معلق ثابت | مَجَمَث | |
| 55 | environmental science | مواد جامد معلق فرار | مَجَمَف | |
| 56 | water transport | واحد سیار حفاری فراساحل | وسحاف | + modification |
| 57 | physics | واکنشگاه آب جوشان، راکتور آب جوشان | واج | |
| 58 | water transport | وزن ظرف | وَف | |
| 59 | military science | وسیله زمینی هدایت پذیر از دور | ز هپاد | + short form |
| 60 | medicine | ویروس انسانی کمبود ایمنی | واکا | |

Table 5.15- Persian short forms

| | Specification filed | Persian equivalent | Persian abbreviated equivalent | Comments |
|----|------------------------|---|--------------------------------|----------|
| 1 | medicine | ایزار درون ز هدانی | درون ز هدانی | |
| 2 | military science | اثر انگشت کمانی | کمانی | |
| 3 | astronomy | آماج خورشیدی | آماج | |
| 4 | tourisms | بخش غذانوشابه | غدانوشابه | |
| 5 | water transport | حالت پیرو | پیرو | |
| 6 | water transport | حالت ناپیرو | ناپیرو | |
| 7 | telecommunications | خدمات تکمیل ارتباط با مشترک مشغول | تکمیل با مشغول | |
| 8 | telecommunications | خدمات هدایت ارتباط بی پاسخ | خدمات هدایت بی پاسخ | |
| 9 | telecommunications | خدمات هدایت ارتباط بی ورود | خدمات هدایت بی ورود | |
| 10 | telecommunications | خدمات هدایت ارتباط مشترک خارج از دسترس | خدمات هدایت خارج از دسترس | |
| 11 | telecommunications | خدمات هدایت ارتباط مشغول | خدمات هدایت مشغول | |
| 12 | telecommunications | خدمات هدایت ارتباط نامشروط | خدمات هدایت نامشروط | |
| 13 | information technology | دستیار رقمی شخصی | دستیار | |
| 14 | environmental science | ذرات معلق در هوا | ذارت معلق | |
| 15 | urban transport | راه شریانی | شریانی | |
| 16 | sport | سوارکاری سه روزه | سه روزه | |
| 17 | addiction | سیاست مهار الکل | مهار الکل | |
| 18 | addiction | سیاست مهار مواد | مهار مواد | |
| 19 | air transport | سیستم فرود با دستگاه/ سامانه فرود با دستگاه | فرود با دستگاه | |
| 20 | medicine | سیه تود بدخیم | سیه تود | |
| 21 | information technology | شبکه ذخیره سازی | شبکه ذخیره | |
| 22 | political science | قاتل سیاسی | قاتل | |
| 23 | rail transport | قطار سبک شهری | قطار سبک | |
| 24 | information technology | کلید پس بر | پس بر | |
| 25 | information technology | کلید درج | درج | |

| | Specification filed | Persian equivalent | Persian abbreviated equivalent | Comments |
|----|------------------------|--------------------|--------------------------------|----------|
| 26 | information technology | کلید دگرساز | دگرساز | |
| 27 | information technology | کلید قفل اعداد | قفل اعداد | |
| 28 | information technology | کلید مکث | مکث | |
| 29 | chemistry | گاز طبیعی فشرده | گاز فشرده | |
| 30 | chemistry | گاز طبیعی مایع | گاز مایع | |
| 31 | chemistry | گاز نفت مایع | گاز نفت | |
| 32 | information technology | گزینگان بالا پر | بالا پر | |
| 33 | information technology | گزینگان پایین پر | پایین پر | |
| 34 | air transport | مقررات پرواز بادید | پرواز با دید | |
| 35 | air transport | مقررات پرواز کور | پرواز کور | |
| 36 | physics | موتور برقی | موتور | |
| 37 | cartography | موقعیت یاب جهانی | موقعیت یاب | |

Table 5.16- English abbreviated forms approved by the Academy of Persian Language and Literature

| | Specification filed | English terms | Persian equivalent | Persian abbreviated equivalent | Comments |
|---|------------------------|---|-----------------------------|--------------------------------------|-----------|
| 1 | medicine | AIDS (acquired immunodeficiency syndromes) | نشانگان اکتسابی کمبود ایمنی | ایدز، ناکا | / acronym |
| 2 | medicine | appendix (appendix vermiformis) | _____ | آپاندیس، آویزه | |
| 3 | physics | laser (light amplification by stimulated emission of radiation) | _____ | لیزر | |
| 4 | medicine | MS (multiple sclerosis) | تصلب پراکنده | ام. اس. | |

6. Discussion

6.1. Introduction

Most publications addressing abbreviation in Persian suggest that the language would benefit from increased dynamicity and frequency of abbreviated forms. These studies present lists of existing vernacular abbreviated forms (mostly appellations rather than terminologies) for dissemination.

The present corpus-based study takes a more nuanced approach to assessing the applicability of abbreviation in Persian, rather than merely encouraging it or identifying ways to increase the number of abbreviated forms in the language. The results also provide a context in which we can examine several theoretical issues that, while crucial, are often disregarded in simpler studies.

In this chapter, I will first consider whether the abbreviated forms coined by the Academy are good terms. To answer this question I will refer to the requirements for good terms that were discussed in Chapter 1. I will then discuss Zipf's Principle of Least Effort, often regarded as the theoretical base for abbreviation terminology planning, and its application to Persian abbreviated forms. I will consider whether the coining of abbreviated forms in Persian constitutes the borrowing of a term formation method from English, and address the socioterminological factors affecting the Academy's terminology plan for abbreviation. Finally, I will examine the consequences of the terminology plan for abbreviation and the key issues facing language planners that remain unresolved, and suggest strategies to resolve them.

6.2. Are the coined Persian abbreviated forms good terms?

The results of the current study show that the coinage of abbreviated forms in Persian, even through the implementation of an official terminology plan to increase them, is a difficult task. Furthermore, while the majority of English abbreviated forms in the corpus of this study were the outcomes of initialisms, one of the most regular term formation methods, close to half of the outcomes of the Persian plan were contracted forms constructed with a high degree of irregularity. As mentioned in Chapter 1, scholars in the field of terminology identify several characteristics of good terms, including accuracy in order to be correctly

comprehensible. This study indicates that language planners are not always able to apply such characteristics to new term formation, and that terms that enjoy only a small number of the characteristics of good terms are more likely to fail. Thus, we may agree with the consensus view that the greater number of characteristics of good terms a given new term has, the greater its chance of success in designating a new concept or replacing a loan word. While it is difficult to evaluate the relative importance of each characteristic, and thus produce an enumerative assessment of new terms, scholars have given particular emphasis to the importance of motivation and precision. Some of the other characteristics of good terms are linguistic economy, consistency with the formation of concept system, semantic appropriateness, productivity, aesthetics, distinctiveness (lack of competition) and acceptability (see Chapter 1).

Among these characteristics, linguistic economy may be considered the most prominent characteristic of abbreviated forms. Clarification of the term *linguistic economy* may assist in its interpretation and the extent to which it may be applied to all languages and all speaking communities. The *ISO 704* (International Organization for Standardization: 2009, 34-41) restricts linguistic economy to the length of a term, while Tauli (1968) and Fawwaz (1998) suggest that it covers a term's shortness, the simplicity of its linguistic structure and its ease of use in both speaking and listening. Sager (1990) states that 'economy [in specialized language] is not simply concerned with strategies for concise transmission, but with all aspects of the reduction of effort in the transmission of information. These include compactness of substantive realization, the exploitation of non-linguistic codes, and the co-ordination of content and intention for ease of coding and decoding.'

In concordance with Tauli, Fawwaz and Sager, I argue that the reduction of all efforts, as well as ease in coding and decoding for speaker and listener should be considered as elements of linguistic economy. Linguistic economy covers not only morphological features of terms but also their psycholinguistic and cognitive aspects. In the other words, the small magnitude of a term by itself does not guarantee that the term is economical; rather, the sum of the physical work and time to pronounce it along with the cognitive effort to decode, analyze, learn and memorize it should be taken into account.

Abbreviation, like any other word/term formation method, has its limitations. Nevertheless, in the Persian language, general rules of word-formation governing mostly unplanned developments in Persian terminology to date have resulted in a limited number of vernacular

abbreviated forms. Moreover, the success of the official terminology plan that aimed to coin Persian abbreviated forms to replace English ones was quantitatively and qualitatively limited. Accordingly, it is likely that the existing linguistic norms and lexical patterns of the Persian language restrict the coinage of abbreviated forms. On the other hand, the appropriateness of strategies taken by the Academy to address these limitations may be called into question. For instance, as mentioned in Chapter 3, the pronunciation of several coined abbreviated forms is ambiguous; the Academy's suggested solution to this issue is that relevant experts should decide how to pronounce the abbreviated forms coined by the Academy. It has also introduced new guidelines for the pronunciation of the Persian alphabet. This *laissez-faire* strategy is implemented in spite of general advice from the International Organization for Standardization (2010) that 'terminology planning shall be based as much as possible or feasible on the existing linguistic norm. The linguistic norm is an informal standard form of the language used by all groups and sectors of a language community or groups of language communities of a country or region.'

Another crucial matter is the likelihood of new terms being accepted, when linguistic economy—in the strictest sense—is the foremost and seemingly sole consideration, to the extent that other characteristics of good terms, such as conformity with linguistic norms and existing lexical patterns, are ignored. No scholar advocates that linguistic economy should be given this degree of prominence. On the contrary, Sager (1990, 89-90) highlights the importance of precision in comparison to linguistic economy, stating that conciseness is important so long as it does not displace precision. Pavel and Nolet (2001, 21) state that such factors as conciseness, handleability and productivity should not overshadow motivation because motivation is the most important factor in the coinage of new terms.

Finally, a lack of distinctiveness is one of the most significant factors precluding the acceptability of the coined abbreviated forms. It is extremely difficult for the recently-coined Persian abbreviated forms, with all their deficiencies, to compete with English ones, especially when the latter are outcomes of primary term formation methods, enter other languages readily with the support of modern communication systems, and are considered by speakers of other languages to be prestigious.

6.3. Is Persian encountering a borrowed term formation method?

The scarceness of vernacular Persian abbreviated forms, especially in the language of science, their lack of establishment in lexicons and native speakers' tendency to pronounce

their full forms in speech (as discussed in earlier chapters), suggest that abbreviation is a marginally productive term formation method in Persian. Further, the nature of the official terminology plan to encourage abbreviation in Persian is essentially a reaction to the extensive presence of English abbreviated forms in Persian rather than any insufficiency of Persian itself in communicating within general or specific domains. Sadeghi (2001b, 248-251), a member of the Terminology Council at APLL, suggests that the current situation of the Persian language necessitates an expansion of term formation methods, to the extent that only one existing example need exist before a method is identified. In his opinion, the increasing need for new terms demands the revitalization of semi-productive and even obsolete term formation methods. This opinion is in stark contrast with Bauer (2004, 58) who writes that ‘morphological processes which are instantiated in a single word cannot be assumed to be productive.’ Accordingly, Bauer relies on the common morphological patterns of a given speaking community while Sadeghi explores every possibility for developing new lexical patterns. The terminology plan for supporting abbreviation in Persian follows the latter approach, and resulted in outcomes that do not reflect well-known and transparent patterns for the construction of new words and terms. Moreover, the outcomes are not products of a combination of existing morphemes. In the other words, they are neither **type-familiar** nor **item-familiar**: however, as Schmid (2011) and Lipka (2002) explain, speakers are more likely to retain and use new terms that are built from terms and structures they already recognize. Schmid (2011) emphasizes the role of familiarity in speakers’ understanding of new terms. He writes that complex words built from familiar elements, such as *computer virus*, effectively convey complicated concepts using little linguistic material. This method of word formation is beneficial because speakers do not need specific advice about the meaning of the new word, they can rely on their existing knowledge and **schemas** to gain an accurate understanding. Schemas are routinized, or cognitively entrenched, patterns of experience that cause a cognitive framework to be formed. In Forrester’s (1996, 34) words, ‘we are born into a culture with its own particular set of social practices, everyday activities, institutions and conventions which form the presuppositional framework underpinning language practices.’ In speakers’ experience of morphology, existing word-formation patterns are schemas that speakers use as a framework for understanding new terms, or creating **pseudo-concepts** for them. A pseudo-concept is a plausible hypothesis about the meaning of a new lexeme, made by hearers or readers of new formations, before such formations are fully integrated into the relevant language. Pseudo-concepts are computed (rather than retrieved) based on the constituting morphemes already stored and

accessible in speakers' memory lexicons (see Schmid: 2011 and Kemmer: 2003). Terms that are coined through abbreviation methods lack morphemes, so the process of pseudo-conceptualization is more complex and less likely to be accurate, resulting in a higher risk that abbreviated terms will lack motivation.

Accordingly, word-formation patterns that are uncommon in a given language are difficult to process through native speakers' established morphological schemas. Abbreviation word-formation patterns are uncommon in Persian and thus Persian native speakers' morphological schemas are unlikely to process abbreviated forms consistently and accurately.

Aronoff and Feudeman's (2011) definition of morphology includes not only the branch of linguistics that deals with words, their internal structure, and how they are formed, but also 'the mental system involved with word formation'. I refer to the cognitive function in which schemas influence the understanding, use and coinage of words as speakers' **cogno-morphology**. General appropriateness of new words and terms are judged on the basis of each speaking community's cogno-morphology.

In the case of Persian, native speakers' cogno-morphology has permitted only limited dynamicity in abbreviation methods to date. In addition, certain aspects of cogno-morphology may vary between two different language speaking communities. For example, the dynamicity of abbreviation in the cogno-morphology of American English speakers is more similar to the cogno-morphology of Bahasa Indonesian speakers than it is to the Persian speaking community. (For more information on abbreviation in Bahasa Indonesian, see Chapter 3). Similarly, as Ashouri (2010, 32) states, criteria of aesthetics in languages may differ from one language ecology to another, just as culture relating to the consumption of food may differ from one culture to another. In the other words, differences in the cogno-morphology of language speaking communities cause the productivity of various morphological processes to differ. **Productivity**, as Bauer (2004, 211, 213) explains:

'...deals with the number of new words that can be coined using a particular morphological process, and is ambiguous between the sense 'availability' and the sense 'profitability'. The availability of a morphological process is its potential for repetitive rule-governed morphological coining, either in general or in a particular well-defined environment or domain. Availability is determined by the language system, and any process is either available or unavailable, with no middle ground. It creates psychologically real distinctions between available ('living') and unavailable ('dead')

processes, which can be tested in a number of ways. The profitability of a morphological process reflects the extent to which its availability is exploited in language use, and may be subject unpredictably to extra-systemic factors. Where a single morphological process has easily distinguishable meanings or sub-uses, these may be assessed independently for both availability and profitability.... Availability is a yes/no matter, but profitability is a matter of degree.’

We may conclude from the scarcity of abbreviated forms in Persian that abbreviation is an available term formation method in the language but not a widely profitable one. This is especially clear in scientific terminologies.

On the other hand, the official terminology plan for abbreviation in Persian is aimed at increasing the profitability of this term formation method diachronically. Such a goal may feasibly be achieved because it is possible for schemas of a language community, such as term formation methods, to change. For example, schemas may be borrowed between language communities or the schemas in one language community may provoke another language community to dynamize their own semi-productive or obsolete schemas. However, Persian terminology planners should note that although productivity is not absolute, nevertheless, ‘some are more possible than others’ and ‘though there are infinitely many potential words in a language, some are more likely to become actual words than others’ (Aronoff and Feudeman: 2011).

6.4. Does Principle of Least Effort support the terminology plan for abbreviation?

Some of the scholars who consider that abbreviation should be increased in the Persian language use the Principle of Least Effort to support their arguments. These scholars claim that abbreviation methods lead to more concise new terms that, in turn, increase the chance of their acceptance and establishment. In order to evaluate this claim, I will review the Principle of Least Effort.

George Kingsley Zipf, a professor of philology at Harvard University, introduced the Principle of Least Effort in 1949. He suggested that behaviors of human beings, including linguistic behaviors, are carried out in ways that minimize effort:

‘In simple terms, the Principle of Least Effort means, for example, that a person in solving his immediate problems will view these against the background of his future problems, *as estimated by himself*. Moreover, he will strive to solve his problems in such

a way as to minimize the *total work* that he must expend in solving *both* his immediate problems and his probable future problems. That in turn means that the person will strive to minimize the *probable average rate of his work-expenditure* (over time). And in so doing he will be minimizing his *effort*... Least effort, therefore, is a variant of least work.' (Zipf: 1949) (Italics in original)

Zipf's Principle of Least Effort has been modified by a number of scholars since 1949 (see Mandelbrot: 1954; Manning and Schütze: 1999). In 1981, Wyllys strongly criticized the Principle in his paper entitled *Empirical and Theoretical Bases of Zipf's Law*, citing Herdan:

'As one commentator, the statistician Gustav Herdan [1966], has put it: "Mathematicians believe in [Zipf's law] because they think that linguists have established it to be a linguistic law, and linguists believe in it because they, on their part, think that mathematicians have established it to be a mathematical law."' (Wyllys: 1981, 53)

In querying the Principle's widespread citation in bibliometrics and more broadly in quantitative linguistics, Wyllys (1981, 64) concluded that 'we can continue to surprise ourselves with the ubiquity of the Zipf phenomenon and to enjoy the intellectual challenge of achieving a full, rational understanding of it.'

Regardless of any argument in favor of or against the application of the Principle of Least Effort, Zipf's definition of the Principle is open to interpretation. First, according to Principle of Least Effort, in solving problems one 'will strive to minimize the *probable average rate of his work-expenditure*' over time and 'in such a way as to minimize the *total work* that he must expend.' (Zipf, 1949) There is no evidence for restricting *average rate of work-expenditure* and *total work* to mere physical activities, so it would seem reasonable to include mental activities. As speech is the outcome of both physical effort and mental exertion, psycholinguistic factors cannot be ignored. Yarmohammadi (2005) emphasizes the psychological aspect of Principle of Least Effort and indicates that a multiple-word term may require less effort to be understood than a condensed form. As Leopold (1930, 102) argues, 'linguistic development follows not one tendency, but two opposing ones: towards distinctness and towards economy. Either of these poles prevails, but both are present and alternately preponderant.' The results of this study show that the Persian language has a tendency towards distinctness at the expense of economics.

Zipf's (1949) suggestion that 'any non-economical change, which would bring about an excessive cost in terms of efforts and constitute an obstacle to comprehension, will be automatically removed or avoided' should also be considered. If we restrict the notion of least effort to the physical efforts of speech, then the Principle cannot explain the appearance of extensive synonymy in Persian phrases, a phenomenon that emerged following the entry of Arabic words into Persian throughout the sixteenth to eighteenth centuries, that has persisted since (see Chapter 2).

Interestingly, some of characteristics of good terms as suggested by scholars play a role in the construction of cognitively economical new terms. For instance, when a new term is linguistically correct, that is, if it is formed on the basis of common morphological, morphosyntactic, and phonological norms of the target language, it may be perceived as an unmarked regular linguistic item. Moreover, the general rules of word formation in a language, which already exist in the cogno-morphology of its native speakers, facilitate speakers' understanding of new items. Accordingly, although abbreviated forms seem to be linguistically economical (in the strictest sense), one cannot be sure that they are cognitively economical for Persian native speakers. Rather, full forms that are consistent with existing linguistic schemas may be more cognitively economical for Persian speakers than abbreviated forms.

In addition, in another law introduced by Zipf, called the *Law of Abbreviation*, he examines the economical aspects of language and explicitly states his opinion regarding the correlation between frequency of use and abbreviation.

Zipf establishes the Law of Abbreviation from evidence derived from his investigations of units of length in three languages: the morpheme in Mandarin Chinese, the average number of syllables in Plautine Latin and the average number of phonemes in American newspaper English. His investigations demonstrate a correlation between a small number of words appearing at high frequency, and their shortness of length:

- '(1) ...the magnitude of words tends, on the whole, to stand in an inverse (not necessarily proportionate) relationship to the number of occurrences.
- (2) ...the number of different words (i.e. variety) seems to be ever larger as the frequency occurrence becomes ever smaller (Zipf: 1936, 25).'

Zipf notes that some speakers occasionally avoid long words out of respect for the youth, inexperience, or low mentality of a particular auditor, while other speakers prefer longer words, even when shorter more common words are available: ‘Yet in neither case are the preferences for brevity or length followed without respect for the meanings of the words which are selected’ (1936, 29).

Zipf considers that slang and technical terms save time as they conveniently represent concepts that may be excessively long if fully articulated in standard language. However, he emphasizes that ‘...there seems no cogent reason for believing that the small magnitude of a word is the cause of its high frequency of usage’. On the contrary, he argues strongly that the small magnitude of a word is merely a consequence of an increase in the frequency of its occurrence.

Zipf uses the term *abbreviation* to designate the outcomes of such shortenings, applying it to (1) truncations and (2) substitutions, whether permanent or temporary. In clarifying the meaning of truncation Zipf states that:

‘...truncation occurs primarily with the frequent long words, presumably for the purpose of saving time and effort, is a proposition which is too self-evident to require demonstration. When any object, act, relationship, or quality becomes so frequent in the experience of a speech-community that the word names it develops a high frequency of occurrence in the stream of speech, the word will probably become truncated. A development of this sort is reflected in histories of the words *movies*, *talkies*, *gas*, which are shortenings of *moving pictures*, *talking pictures*, *gasoline*. The shortenings result from frequent usages, a frequency due to the rapid increase of frequency of movies, talkies and gas in our daily experience. Longer words than these, such as *constitutionality*, *quintessentially*, *idiosyncrasy* are not truncated because they are not frequently used (1936, 30).’

Although Zipf uses the term *abbreviation* somewhat differently to the way in which the term is commonly used today, his references to shortening are consistent with the modern understanding of abbreviation and thus relevant to the present discussion.

In addition, Zipf does not restrict the scope of the Law of Abbreviation to solely the length of words (1936, 39); rather, he classifies the abbreviatory acts of substitution into two types: 1) durable and 2) temporary. Zipf characterizes durable abbreviatory substitutions as context-free. They may appear in the whole speech community (such as *car* for *automobile*) or within

minor speech-groups within the large speech community, like the jargon and slang of various professional groups. Zipf states that the most readily observable cases are instances in which a single word substitutes for a 'complex of words', like *potatoes* for *Irish potatoes*, used in the northern parts of the United States in Zipf's time. He stresses that substitutions may be used in order to increase the vividness of expression or articulatedness (his word) of meaning, not necessarily for time-saving purposes. On the other hand, Zipf states that temporary abbreviatory substitutions occur only in particular contexts, such as the use of a pronoun rather than a noun in a text, or a simple adverb for an adverbial phrase.

It is also worth noting that Zipf (1936, 38) considers the Law of Abbreviation to be a reflection of the propensity of language to maintain equilibrium between term length and frequency.

Ultimately, Zipf concludes that the frequency of usage is not the result of word length, but rather a cause of it. He adds, 'it seems that on the whole the comparative length or shortness of a word cannot be the cause of its relative frequency of occurrence because a speaker selects his words not according to their lengths, but solely according to the meanings of the words the ideas he wishes to convey' (1936).

In short, although conciseness may be a positive characteristic of a new term, it is not necessarily a product of the Principle of Least Effort. Zipf's Law of Abbreviation clearly rebuts this misinterpretation of his Principle of Least Effort, stating that: 1) the high frequency of a word's occurrence is the cause of its shortening, not the result, and 2) in normal situations, exactness (not conciseness) is the key criteria for word/term selection. It follows that the attribution of an increase in the frequency of terms to their smaller length is a common misinterpretation of the Principle of Least Effort.

Accordingly, the Principle of Least Effort cannot be regarded as the basis upon which Persian abbreviated forms are coined; rather, the high frequency of structurally and cognitively unfamiliar outcomes may impose the need for additional effort to be expended by the speaking community to learn and memorize them.

6.5. Socioterminological aspects

Although the socioterminological aspects of abbreviation in Persian do not comprise a key consideration of the present study, some brief remarks on this matter are provided following for illustrative purposes.

The acceptability of new terms by the target speaking community is often cited as a characteristic of good terms, and further, is often the key goal of official language plans. In the case of a language and/or terminology plan, acceptance by the speaking community cannot be taken for granted nor considered a matter of guesswork or intuition. Rather, socioterminological surveys are needed in order to gauge the speaking community's views. A successful language and/or terminology plan is informed by continuous feedback from the intended target community. Unfortunately, no comprehensive socioterminological survey focusing exclusively on coined abbreviated terms in Persian has been conducted. Further, the scattered and irregular polls in which the Academy does seek experts' opinion on the approved terms usually receive no response (Who proposed *bāspār*?: 2010). However, as mentioned in Chapter 3, some of the feedback gathered in the course of surveys on related matters showed that the Persian-speaking community does not show a strong tendency towards the adoption of abbreviated forms. In addition, Ahmadipour's (2006) field study sought the general opinion of the Persian speakers towards the terms approved by the Academy of Persian Language and Literature; although she did not focus specifically on approved abbreviated forms, the study's result may be applicable to them also. Ahmadipour distributed 450 questionnaires in three provinces of Iran (Tehran, Esfahan and Kerman) and conducted 60 interviews. The results of the questionnaires confirmed the existence of a direct correlation between evaluation and usage as two substantial variables in the acceptance and dissemination of neologisms. Moreover, Ahmadipour concluded that the Persian speaking community tends to apply familiar words rather than approved terms; the interviews revealed that unfamiliarity with the approved terms and the fear of being ridiculed by interlocutors were the two main obstacles to the usage of approved terms. In the other words, the respondents considered the unfamiliar approved terms neither useful for their communication nor prestigious. Therefore, it is probable that speakers would be even more critical of approved items that were neither type- nor item-familiar terms, as in the case of many coined abbreviated forms.

In another sociolinguistic study on abbreviation in Persian, Pahlavan Shilgani (2010) showed that semantic intransparency and lack of euphony were the two major impediments to the acceptance of abbreviated forms. Interestingly, two other characteristics were identified as factors that precluded the acceptance of abbreviated forms by the speaking community: length (being too short) and irregularity of structure. The results also showed that even abbreviated forms that could be easily pronounced were infrequently acceptable due to a lack

of prestige associated with their use. Furthermore, the study demonstrated that the relative prevalence of abbreviated forms in media discourse and in dictionaries does not necessarily correlate with the acceptance of such terms by the speaking community. For instance, ج‌ا for نگاه کنید /jomhuri-ye ʔeslāmi-ye ʔirān/ (Islamic Republic of Iran) and نک for به /negāh konid be/ (see) appeared relatively frequently in media and dictionaries respectively, but neither was considered acceptable by more than 75 per cent of respondents.

These studies suggest that abbreviated forms are not able to meet the *dignity* for terms that the Persian-speaking community expects and is cognitively accustomed to. Moreover, the speaking community considers abbreviated forms to be lacking in prestige.

A further matter pertaining to the socioterminological aspects of language/terminology planning is variable need. Bauer (2004, 208) emphasizes the role of language planning in fulfilling a pragmatic demand, suggesting:

‘This is one of the reasons why morphological processes which are used for transpositional purposes are likely to be more productive (profitable) than those used for purpose of lexical innovation: there are fewer pragmatic constraints of this type on transposition than on lexical creation.’

This need is not observed in Persian speaking community, because speakers either use full forms, short forms or foreign abbreviated forms, most often borrowed from English.

Moreover, speaking communities show a tendency to adopt new linguistic behavior only when they feel that new behavior is ‘better’ than behaviors to which they are accustomed. A key factor in the determination of what is ‘better’ linguistic behavior, like many other human activities, is influenced by the practices of people of high social status and prestige. Prestige is considered to be one of the most important factors affecting linguistic borrowings from other languages or dialects of the same language (Arlotto: 1981). This notion can be applied to the dissemination of new terms as well; it is logical to speculate that new linguistic items are most likely to initially appear in an **acrolect**, which is the most prestigious variety or dialect of a particular language, and then gradually enter general lexicons and terminologies.

Prestige, as a key social factor affecting the dissemination and establishment of new linguistic items, also fills some theoretical gaps in understanding non-economical linguistic behavior. The desirability of prestigious language explains borrowing and the establishment

of non-economical lexical patterns in Persian, such as the substitution of simple verbs with compound ones, or the prevalence of pleonasm following the language's interaction with Arabic. It also explains the rapid entrance of ostensibly economical English abbreviated forms into other languages at the time that English has been the main language of science in the world as well as the world language.

Linguistic patterns, like other social patterns, have different degrees of prestige in different communities. For instance, while abbreviation is fashionable amongst English and Bahasa Indonesian speakers, abbreviation is so lacking in prestige in Persian that speakers risk ridicule if they use such forms.

One of the difficulties facing the Academy in implementing its abbreviation plan arises from the need to disseminate its coined abbreviated forms. It will not be easy for the Academy to convince people that they *need* such unfamiliar constructs if they do not have strong motivation. The Academy would be well advised to carry out socioterminological surveys to inform the design of a revised abbreviation plan. The results of such surveys may answer the vital question of whether there is any chance that Persian speakers will accept Academy-approved abbreviated forms; alternately, the results may indicate that abbreviated forms are unlikely to be accepted as *Persian* terms by current speakers. As Sadeghi states (1988), the induction of any intentional change in any language needs the speaking community's acceptance in order to be incorporated into language systems; without such acceptance, imposed changes are likely to fail.

6.6. Why are abbreviated forms not coined vigorously in Persian?

Despite the scarceness of vernacular abbreviated forms in Persian, Kafi (1991), Terminology Council member at the Academy, claims that there is no serious obstacle to Persian abbreviation processes; although he does not explain what he means by *obstacle*. Nevertheless, Kafi admits that a number of factors hinder abbreviation in Persian, namely: 1) the extensive use of short forms; 2) the use of foreign abbreviated forms; 3) the incorrect belief that Persian writing and pronunciation conventions render abbreviated forms inappropriate and unpleasant respectively; 4) the tendency for Persian speakers to discount the need for abbreviation; and 5) the lethargy of the Persian language due to its long history. Famian (2008) considers that the cursive nature of the Persian writing system hinders abbreviation in Persian, while Pahlavan Shilgani (2010) suggests that abbreviated forms are unpopular in contemporary Persian for two key reasons, the absence of superscript diacritics

for three short vowels (/æ/, /e/ and /o/) in the Persian alphabet and the lack of prestige associated with abbreviation use.

The aforementioned factors are examples of some of the linguistic and sociolinguistic constraints that may hinder the productivity of morphological processes in a language. Aronoff and Feudeman (2011) suggest that the following linguistic constraints contribute to or perhaps determine the productivity of a particular word formation:

1. Phonological constraints: such as in the case of the suffix *-al* in that may only attach to verbs possessing stress on the final syllable in English.
2. Morphological constraints: such as the suffixes in English that may only attach to unsuffixed bases.
3. Syntactic constraints: where grammatical categories determine permitted affixes, for instance, English *re-* may attach to verbs only.
4. Semantic constraints: such as the case of the English suffix *-ee* that must have sentient referents (see Barker: 1998).

In addressing cognitive considerations, Schmid (2011) suggests that knowledge of the potential limitations of new term formations in a speech community is stored in native speakers' minds. He classifies restrictions on productivity into three types:

- '1. Pragmatic and cognitive restrictions, including: existence of referents, exclusion of the meaning of the self-evident, nameability.
2. General structural restrictions, including: blocking by synonym (including competition of word-formation patterns) and blocking by homonyms, etymological restrictions, haplology.
3. Word-formation model-specific restrictions, including: phonological, morphological and semantic restrictions.'

Such restrictions may also be observed at the sociolinguistic level. As Schmid (2011) states, it is not only individual speakers who adhere to rules and restrictions, but also the language community itself that acts in a collectively sanctioning manner. Nonetheless, speakers' knowledge of morphology is not in the form of strict rules; rather speakers store knowledge of patterns that may be varied to permit exceptions for new formations. Such processes may result in the formation of schemas in speakers' minds who are beyond the early stages of language acquisition, turning non-morphemic parts of words into productive morphemes. In

alcoholic/workaholic, *Watergate* and *hamburger*, the process of schema formation started from one or few but sufficiently prominent words.

Nevertheless, such constraints are not interminable. If the conditions of a speaking community change, they may provoke linguistic changes too. As Forster (1976) observes, 'the overall system was designed for accessing familiar forms, not classifying unfamiliar forms. If normal day-to-day language processing regularly required us to identify non-words as such, then no doubt we would have evolved more efficient procedures [for dealing with them]' (cited in Garman (1990, 268-269)). It is even possible to find instances of linguistic change that cut across the linguistic system, writing system and language family of given language. One of the most interesting examples of this is *المادة المتفجرة TNT* in Arabic for *TNT explosive material*. It not only contains a combination of the Arabic cursive script and the English abbreviated form in one term, but also the usage of the Arabic definite article for the English abbreviated form.

As this section has shown, a number of socioterminological restraints, such as lack of need and lack of prestige, restrict the creation and dissemination of Persian abbreviated forms. In conclusion, Persian abbreviation use is hindered by both cogno-morphological and socioterminological factors.

6.7. Is the infrequency of abbreviation in Persian a problem?

In the Persian language, as the report by the Committee for Abbreviation (2000) mentions, while abbreviated forms are not established in spoken or written Persian, full forms are repeatedly used without being acknowledged as a source of annoyance. The report adds that the most common method of shortening messages, occurring in both written and oral communication, is the use of short forms, in which the first or key word(s) of a phrase substitute(s) the full form. It also confirms that the majority of Persian abbreviated forms appear in dictionaries, encyclopedia, and some geographical dictionaries, but are rarely used in other scientific texts; even if they appear in such texts, they are mostly pronounced as full forms. Evidently, this represents a balance between the existing balance between conciseness and precision in Persian; as Vicentini (2003) comments on economy in language, 'language as a whole shows a proper balance resulting from the right distribution of all internal and external forces.' Vicentini's principle explains why Persian, and indeed any other given language, employs its own methods for shortening terms/appellations and avoiding annoying repetitions, and in such a way that is in accordance with the structure of the language itself as

well as the cognitive paradigms of the speaking community. The principle also supports *ISO 704* (International Organization for Standardization: 2009), namely, that term formation patterns and abbreviation rules differ from one language to another.

However, it seems that Iran's terminology planners seek a linguistic assimilation to English in terminological domains. If, as the Committee for Abbreviation (2000) mentions, the lack of abbreviated forms is not a source of annoyance in communicating in Persian, the reason behind this linguistic assimilation might be Americanization, as Fishman (2000, 50) warns:

'language planning – when engaged in under auspices of modernization and with modernization as the goal, generally results in making languages even more capable of translating American life, even when suffusing the translations with the aura and the pretense of greater or lesser degrees of indigenization.'

On the other hand, the challenges experienced as a result of English abbreviation might be beneficial for the terminology planners in Iran in the long-term. In spite of the popularity of abbreviation in common and specialized English vocabularies, a number of communication and academic writing experts as well as editors warn that abbreviation poses a threat to the communicability of the language. In discussing the profusion of abbreviated forms in English, Helen Moody (2005), trainer and consultant in scientific and technical writing, comments that 'we have worked hard to be intelligible!' She argues that abbreviated forms may save space on the page or screen, but they do so at the cost of clarity. Such reservations were also expressed more than 20 years earlier, when English abbreviated forms were less extensive than today. In 1984, the editor of *Accounts of Chemical Research* warned chemists that the increased number of abbreviated forms was problematic. He gave some examples of the use of abbreviated forms leading to misunderstandings, suggesting that: 'the saving of one syllable to pronounce cannot be worth the additional mental clutter generated in the minds of members of the team... perhaps we can laugh at the problem, until the use of an acronym instead of real words seriously impairs our own efforts to communicate an idea, and is recognized as the cause of disappointment if not failure' (Bunnett: 1984). In a similar manner, Casteel and Grayson (1977) cite a number of examples showing the ambiguity caused by abbreviated forms, as well as many of the terms they designate, in the field of faunal analysis. They suggest that:

'...even when explicitly defined, different concepts may often be referred to by the same symbol and the same concepts are often referred to by different symbols. Given these

problems, it is difficult to see how quantitative faunal analysis will progress far unless and until we devise methods and standards for assuring that we know what it is we are talking about.’

Cannon (1989, 103-110) compares abbreviated forms to dehydrated foods (using Daniel’s (1946) words) and his study shows that abbreviated forms are almost always homonyms of identical sequences recorded in other dictionaries, a tradition dating back to Walther (1745). Cannon also argues that the pronunciation of abbreviated forms is not always clear; there are abbreviated forms that are pronounced as acronyms by some speakers and as initialisms by others, such as CAD (computer-aided design) and VAT (value-added tax). Further, abbreviation spelling conventions may be graphemically diverse, as in AIDS (American) versus Aids (British). Greater complexity arises in the case of graphemic pairs of abbreviated forms that designate different concepts when they are pronounced differently: ASP as initialism denotes *American Selling Price* but the acronym means *Anglo-Saxon Protestant*. Cannon concludes that ‘the creation of abbreviated forms as a password within a particular group who know the item is not of much advantage today, since several identical sequences may make that particular meaning ambiguous elsewhere.’

A number of themes emerge from the arguments of the aforementioned and other scholars critical of abbreviation. In summary, scholars in opposition to abbreviated forms suggest that such forms cause one or more of the following disadvantages (See Akbari: 2014):

- increased homonymy and ambiguity
- intransparency of terms
- an encrypted language to be created within the same language
- potential obstacles to communication due to lack of precision
- phonological variants
- an enlargement of the gap between generations, between professionals and non-professionals, between professionals from different disciplines and even between professionals from the same discipline
- barriers between industry and academia
- imposition of costs associated with the time spent searching for and decoding terms, including the publication of abbreviation dictionaries.

The lesser transparency of abbreviated forms in comparison with regular term formations obstructs the purpose of normal linguistic utterances, namely, to make oneself understood. Moreover, outputs cannot be judged according to grammaticality while ‘regular word formation always produces morphologically transparent words’ (Ronneberger-Sibold: 2010).

Lastly, Sager (1997: 40) points out that one of the most tragic consequences of secondary term formation is observed in the languages of developing countries:

‘Term formation habits are influenced by perception and observation. When this perception is first-hand and carried out in the observers’ first language, they will use the means of that language to designate the concepts they discover or establish. Acquiring knowledge in a second language not only influences term formation habits in the direction of that language, it also inhibits the natural growth of the first language because the first language is excluded from the cognitive processes that lead to concept naming.’

The question emerges as to whether, in the long term, the benefits of Persian abbreviated forms will be sufficient to outweigh their many deficiencies.

6.8. Future prospects and recommendations

The terminology plan for abbreviation is apparently an open-ended plan with the purpose of constructing equivalents for English abbreviated forms, implemented through the designation of new items by the Academy on a case-by-case basis. However, the plan does not employ a regular (productive) term formation method, which is more likely to enhance the development of terminology by the wider community than a case-by-case approach. We are now in the position to consider the crucial question of what result(s) the plan will achieve in the long-term. The continuation of current practice is likely to lead to the coinage of a modest number of Persian abbreviated forms each year, largely products of irregular formation methods. As discussed earlier, and worth reiterating here, abbreviated forms are coined by small groups of experts either in terminology committees, terminology councils or the newly reestablished Committee for Abbreviation. The opinions of the members of these committees and councils do not necessarily reflect the opinions of the speaking community, and further, the use of a particular morphological process by a limited number of speakers does not mean it will be adopted by the speaking community as a whole (see Bauer 2004: 206-207). In practice, this means that:

1. Since the number of English abbreviated forms is increasing much more quickly than the rate at which the Academy coins equivalents, the gap between input and output increases every day.
2. The high rate of irregularity in the construction of coined abbreviated forms means that the quality of Persian abbreviated forms is comparatively poor in contrast to the English forms they are intended to replace.
3. The plan has a prescriptive approach and is implemented by small groups of experts in isolation from the wider population. The groups of experts do not represent the entirety of the speaking community; furthermore, the morphological constructions made by these groups differ markedly from the formations that the native speakers—who enjoy full competence of the language—apply to develop lexicons or terminologies.
4. There is no evidence showing that the speaking community at which the plan is directed has adopted the coined abbreviated forms; on the contrary, it appears the community does not need them and does not find them prestigious.
5. Even if the speaking community were to use the coined abbreviated forms in speech, there is a high possibility that the items needed by speakers would not be coined, due to the limited number of approved Persian outcomes compared to English equivalents.
6. The formation methods that are currently used are not productive enough to allow speakers to meet their own abbreviation needs, should this situation arise.

This study does not advocate the elimination of abbreviation in Persian but indicates that the Academy's plan for abbreviation in Persian requires reconsideration and 'Persian language planners can play a valuable role in streamlining abbreviation in the language' (Akbari: 2014). Ronneberger-Sibold (2014, 276) warns 'the indisputable difficulties for certain communication caused by shortening result from an exaggeration and a misuse of this linguistic instrument in the wrong place than from an inherent deficiency of the instrument itself.' For example, as Akbari (2014) suggests, language planners could 'delimit the scope of abbreviation usage and application as far as possible to reduce non-advantageous uses and applications' and 'define abbreviation and its methods clearly so that the outcomes would be more intelligible for the language community and thus enhance communication in both general and professional contexts. The Academy needs to consider all existing and *possible* Persian-specific methods.' For instance, short form formation, as the most popular abbreviation method in Persian, not only meets Principle of Least Effort to a moderate extent

but also avoids some of the disadvantages of abbreviation cited above. The efficacy of short form formation should be considered a strength of the Persian language.

In addition, my suggestion is that the Academy terminology planners should place more emphasis on increasing linguistic awareness, particularly among specialists (across all fields of study), in order to enable them to coin the terms they need in accordance with Persian structural rules. In other words, the Academy could lead by providing specialists with the terminological knowledge and linguistic tools they need to coin their own terms, instead of spending time constructing irregular equivalents through what is essentially an alien word-formation method, with the hope that specialists from academia and industry will use them in the future. Moreover, this strategy would resolve, to some extent, the critical need for Persian to keep up with the rapid increase of English scientific and technical terms, including abbreviated forms, entering the language. In order to meet this need, socioterminological surveys should be conducted in order to obtain feedback on the outcomes of the current terminology plan for abbreviation. The survey results would also inform language planners about the needs of the targeted speaking community and possible strategies to address such needs. The valuable feedback from the two decades of the current plan's implementation could be collected, with the results likely to provide several insights that would assist planners to design a new plan to address the emergence of English abbreviated forms.

The success of such a plan would be dependent on several theoretical and practical issues being resolved. First, every language possesses different characteristics; 'each language has its own rules for the abbreviation process and language-specific conventions dictate whether a term will consist of a single lexical element, several morphological elements combined to form a single unit, several words arranged in a string, or a terminological phrase' (International Organization for Standardization: 2009, 51). The results of the current study show that the Persian language is not cogno-morphologically capable of constructing abbreviated forms. Moreover, it does not seem that socioterminological conditions demands such a plan and the associated outcomes.

Second, there are supporters of abbreviation who are displeased by the infrequency of abbreviated forms in Persian but who nonetheless believe that the language is capable of communicating effectively even at high and specialised levels (Mansouri: 2007, Committee for Abbreviation: 2000). As Akbari (2014) suggests, this apparent inconsistency begs the question of whether rapidly increasing English abbreviated forms create intimidation

amongst Persian speakers, resulting in abbreviation becoming a highly intriguing topic in Persian, or whether there is a real need to enhance abbreviation in Persian.

The other issue, if the Academy persists in pursuing its current abbreviation plan, is what reaction it expects from the language community towards the coined abbreviated forms and how realistic such an expectation is.

In the implementation of language planning in general, Cillia (2014: Interview) suggests that language plans should initially be implemented on a small scale as pilot projects, and later modified based on feedback and learnings from a study of the pilot. In order to initiate a revised plan on a small scale, the Academy could consider a modified version of the method practiced by the Swedish national center for terminology (TNC) since the 1940s. Following this method, urgent terminological inquiries received via email, telephone or online query forms are answered within 24 hours by TNC terminologists. A summary of each query and the response provided are stored in an internal terminology database to be used for future queries and other terminological undertakings (Dobrina: 2010). I specially recommend that the Academy follow this model for several reasons. First and foremost, the model responds to empirical evidence of the needs of the speaking community. Terminological recommendations that address the real needs of the society are much more likely to be accepted than prescribed items created by terminologists without any such need being expressed. Second, the direct contact between enquirers and the terminologists facilitates the exchange of ideas between the addressee and addresser, each of whom may gain practical insights from the other's expertise. Third, feedback is able to be collected instantly for any modification necessary. Finally, the policy of 24-hour responses encourages language users to make contact with the TNC. The Academy could apply this method exclusively in the case of the terminology plan for abbreviation in the case of budgetary constraints, although the method, as illustrated in the activities of the TNC itself, is also applicable to any other terminological inquiry.

The existing infrastructure at the Academy of Persian Language and Literature should assist it to pursue such a strategy, especially its two public relations teams—one for the Academy in general and one for the Terminology Department exclusively—about 70 terminology committees across different disciplines and about 40 researchers actively making Persian equivalents for foreign terms.

However, despite my suggestions above, as Akbari (2014) warns, the key issue remains unresolved, that is, whether abbreviation contributes to the efficacy and development of communication, science and knowledge in all languages.

6.9. Summary

This chapter has revealed that a misunderstanding of the Principle of Least Effort has formed the theoretical basis of the terminology plan to encourage abbreviation in Persian. However, as we have seen, the Law of Abbreviation denounces the notion that conciseness of new terms will result in their acceptance and establishment.

This study suggests that the significant inequality between the dynamicity of abbreviation methods in different languages is due to the diverse morphological structure of languages and cognitive paradigms of speaking communities. This is likely to be true in other instances of dissimilarity between languages, but certainly applies in the case of abbreviation. Furthermore, a number of socioterminological factors, such as need and prestige, may play a role in either provoking or preventing the adoption of prescriptive changes. Each of these factors should be considered in any language and/or terminology planning.

Accordingly, I recommend that the current terminology plan for abbreviation in Persian be revised. The revision should be based on observations rather than any individual or groups' belief. This study has addressed the factors precluding the successful implementation of the plan from the point of view of language and terminology planning in general, and with regard to morphological and terminological aspects in particular. The results of this study, alongside comprehensive socioterminological surveys, would provide Persian language planners with a valuable theoretical foundation from which to revise the plan. With this information in hand, the revised plan could and should be designed to take into account the structure of the Persian language, as well as the cogno-morphology of, current needs of and trends followed by its speakers. In addition, all advantages, disadvantages and consequences of abbreviation should be considered. After such thorough analysis has taken place and a revised plan has been designed, it should be initially implemented on a small scale and then modified according to the feedback received. Obviously, this task will take time and effort, but these are necessary investments if the acceptance and establishment of new outcomes are the ultimate aims of the Academy of Persian Language and Literature and its plan.

7. Conclusions

To focus only on the first captivating element of an unfamiliar situation is downfall for a film director.

Asghar Farhadi, director of *A Separation*

Most existing publications addressing the issue of abbreviation in Persian suggest that it is necessary to increase abbreviation in the language. They point to the extensive number of abbreviated forms in other languages, especially English, and argue that English abbreviated forms enter Persian because of their conciseness. Proponents of this view often claim that the Principle of Least Effort, which states that speakers favor linguistic behaviors that save time and effort, demonstrates that abbreviated forms are universally popular. However, many scholars of this view rely on personal opinions and interpretations rather than research- or evidence-based methodologies. This study is important because it examines the issue of abbreviation through an in-depth analysis of relevant linguistic theories and the structure and social context of the Persian language itself, rather than beginning from an assumption that the English language is the ideal linguistic model.

In this study, I examined the official terminology plan for encouraging abbreviation in Persian, a plan that was underpinned by the assumptions described above: that English provides an ideal linguistic model and that the Principle of Least Effort proves that abbreviated forms are universally popular. The plan was initiated and implemented by the Academy of Persian Language and Literature, and appears to have been envisaged to continue indefinitely. The corpus of my study was the term approved by the Academy of Persian Language and Literature during the period of 1997 to 2013 and the outcomes—the abbreviated forms—of the plan, approved within the framework of the Academy's principles and regulations for term formation. The main aims of my study were to understand the applicability of the plan from a morphological perspective, and following, the extent to which abbreviation as a term formation method is compatible with the Persian language.

The results showed that the outcomes of the plan have not always been quantitatively and qualitatively comparable with English abbreviated forms: not all English abbreviated forms gained a Persian equivalent and the majority of coined Persian abbreviated forms are difficult to decode due to their irregular construction. The study also challenged the theoretical basis of the plan, showing that the Principle of Least Effort does *not* support a direct correlation

between term conciseness and their popularity. Further, this study has explained that newly coined terms, especially if they bear little resemblance to the linguistic habits of native speakers, may not necessarily be accepted by the speaking community, and thus the impact of the Academy's plan is unclear.

In addition, the current study represented a new approach to the dynamicity of term formation methods across languages. It gave an explanation for the low dynamicity of abbreviation in Persian, and suggested that difference in the dynamicity of abbreviation between English and Persian may be due to differences the structures of the languages as well as in the cogno-morphology and socioterminological motivations of their speakers.

The study also showed that the entry of English abbreviated forms into other languages is primarily due to the status of the English language in the world, rather than the conciseness of the terms themselves.

All these findings demonstrate that an alternative approach is necessary in order to address the extensiveness of English abbreviated forms in Persian. Persian, like any other language, has its own characteristics and, consequently, strategies to be economical. The designers of the terminology plan for abbreviation at the Academy could respond to this study in three possible ways. First, the Academy could make no policy change, if it is not concerned by inconsistencies and irregularities in its approved abbreviated forms, or the lack of adoption of its coined terms by the speaking community. Second, the Academy could attempt to change the nature of the Persian language to more easily incorporate abbreviated forms. A third option would be for the Academy to adapt its plan to take into account the current morphological tendencies of the speaking community, such as by integrating short forms, which are probably the most powerful method of abbreviation in Persian. If it takes the first or third option, the Academy should consider the costs and benefits of its chosen plan, both in the context of public opinion and the time and resources necessary to coin each abbreviated form. In any case, the Academy should note that the results of this study, in short, reveal that in Persian morphology *small is NOT beautiful*.

This study suggests that the Academy needs to consider the structure of the Persian language and the cogno-morphology as well as the socioterminological factors of the speaking community in order to increase the likelihood that its strategies will achieve success. If, after reconsideration of the plan, language planners maintain the view that the coinage of

abbreviation in Persian should be supported, then the methodology of the plan's implementation would need to be revised in order to produce outcomes that are likely to be accepted.

David Crystal's warning that one should 'never predict the future with language' (Zimmer: 2011) may be applied to the outcomes of language/terminology planning. However, equally compelling is the argument that language/terminology planning that is both linguistically effective and sociolinguistically motivating is more likely to overcome the rigidities of languages. In the other words, the goals of language/terminology planning should be compatible with the structure of the language in question and its social context. In pursuit of such a goal, preliminary studies undertaken before the implementation of a wide scale plan are likely to reveal unforeseen issues. Such studies are especially important when the plan aims to address complicated matters, such as the interchange between languages. Preliminary studies help language planners to estimate the extent to which the plan is applicable and to develop cost-effective plans.

More importantly, it should be noted that terminology planning can play an important role in the enhancement of communication and, consequently, knowledge in both general and professional contexts if it leads to an elegantly simple language of science. The application of more familiar term formation methods, especially for the construction of equivalents in secondary term formation, is most effective in realizing this goal. Familiarity makes the transfer of terms from terminologies to vocabularies easier. In contrast, designation of non-native concepts with new terms that have non-familiar constructions result in terminologies that seem 'more alien' to the speaking community than the original (mainly English) terms. The policy to replace English terms with non-familiar constructions hinders communication both interlingually and intralingually; it causes confusion within the Persian speaking community itself and as well as frustrating bilingual speakers' efforts to communicate with the wider world.

It is increasingly recognized that the language of habitual use is highly desirable for use in teaching science and technology. Such language is an important means through which newly learnt concepts enter everyday discourse. In order to bridge the gap between the highly educated sections of society and the lower socio-economic groups, the application of native, familiar sounding mechanisms of secondary term formation are most effective. The use of such mechanisms is a vital step towards the localization of knowledge and, consequently,

improved production of knowledge in local communities (see Sager and Nkweni-Azeh: 1989 and Sager: 1990).

Finally, the removal of linguistic changes from their background and context causes a misleading oversimplification of the issues at hand. As Ashouri (2007) notes, language is not an instrument for conveying phenomena, but it is a part of the phenomena. Similarly, the language of science develops in and along with the development of science. Societies that import the products of science, mainly in the form of technology, should acknowledge that English items and features enter their languages because English is a part of modern life in almost all domains of science, technology, economics and so on. Accordingly, the significant degree to which English abbreviated forms are borrowed by Persian, or any other language, is chiefly a result of the importation of terms alongside science and its products, not as a result of any characteristic of the terms themselves, such as conciseness.

One of the negative consequences of world languages is that their domination can result in a reduction of confidence among speakers of other languages, and worse, language planners of other languages. The domination of world languages may lead other language planners to develop a bias in favor of certain linguistic items and features of the world language, without considering their disadvantages. As a consequence, false needs may be perceived and hasty decisions made. If such decisions involve the implementation of changes to the target language, additional linguistic and communication challenges are likely to emerge.

Language and terminology planning requires epistemological knowledge of the relationship between cause and effect in the domain of language. The benefit of epistemological insight may help language planners to avoid focusing on the impression of an unfamiliar situation, and instead encourage them to develop policies that reflect the context and characteristics of the target language. A well-informed approach increases the chance of a prescriptive language plan's success because correct diagnosis of a problem is a part of its solution.

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Education

M.A. Teaching Persian to Non-Natives, Allameh Tabataba'i University, Tehran, 1998-2002.

B.A. The English Language-Translation, Islamic Azad University, Tehran, 1989-1996.

B.Sc. Obstetrics, Shahid Beheshti University of Medical Sciences, Tehran, 1989-1993.

Related Trainings

Termnet International Terminology Summer School, Vienna, 9-13 Jul. 2012.

Termnet International Terminology Summer School, Vienna, 24-28 May 2010.

Termnet ECQA Certified Terminology Manager-Basic, 30 Jun. 2010.

Online Postgraduate Course- Introduction to Terminology, Universitat Pompeu Fabra, 18 Feb- 15 Apr. 2009.

NAATI Accreditation (NAATI accredited translator, English-Persian), The National Accreditation Authority for Translators and Interpreters, Australia, 2006.

Terminology Workshop, Instructor: Professor Dr. Gerhard Budin, held in Tehran, 2003.

Children's Literature Workshops, Children's Book Council, Tehran, Oct. 2000- Jul. 2001.

Terminology Training Course, the Academy of Persian Language and Literature, Oct. 1997- Jul. 1998.

Academic Achievements

Ranked 3rd, Master National Entrance Exam to governmental universities in Iran, 1998.

Ranked 9th, Bachelor National Entrance Exam to non-governmental universities in Iran, 1989.

Work Experience

Terminologist, The Academy of Persian Language and Literature, Sep. 1998- present.

Representative of the Academy of Persian Language and Literature to Infoterm, Jan. 2013- present.

Research Assistant (Supervisor: Prof. Dr. Yahya Modarresi), Bibliography of Teaching Persian to Non-Natives. Cultural Research Bureau of Iran (CRB), 2000- 2010.

Lecturer in Persian and Iranian Studies, The Australian National University (ANU), Feb. 2006- Dec. 2006.

Persian Instructor, The International Center for Persian Studies, Tehran University, 2004.

Persian Instructor, The Indian Embassy in Iran, Nov. 2003- Apr. 2004.

English Instructor, Iranian Academic Centre for Education, Culture and Research, Sep. 1996- Nov. 1998.

Responsible Expert, Statistical Center of Iran, May 1996- Apr. 1997.

Obstetrician, Shahid Bahonar & Ziayian Hospitals, Apr. 1994-Jun. 1996.

Publications and Presentations

Articles:

2014. "Persian Language Planning: Abbreviation." In *Languages for Special Purposes in a Multilingual, Transcultural World, Proceedings of the 19th European Symposium on Languages for Special Purposes, 8-10 July 2013, Vienna*. Edited by Gerhard Budin and Vesna Lušicky, 135–142. Vienna: University of Vienna. https://typo3.univie.ac.at/fileadmin/user_upload/k_lsp2013/LSP2013_Proceedings/02_CLR/LSP2013_Akbari.pdf
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2007. "Contrastive Analysis of Culture Images in Persian, English and German Language Textbooks", (with Yahya Modarresi and Faranak Hashemi), National Conference on Linguistics and Language Teaching, 16-17 May 2007, Tehran. Tehran: Islamic Azad University.
2003. "A Sociolinguistic Study on Persian Proverbs: Suggestions for Selecting Appropriate Proverbs for Teaching Persian to Non-Native Speakers", *Name-ye Parsi (ISBN 964-6371-89-2)*, 2003; 30: 25-50 (presented in The Fourth International Congress of Professors of Persian Language and Literature).
2003. "Teaching Proverbs." Presented in *The Fourth International Congress of Professors of Persian Language and Literature, Tehran, 20-22 Oct.* Tehran: Tehran University.
2003. "Diversity in Iran", In *World Peace in the 21st Century: Building our Society through Synergy of Diversity (Global Youth Exchange Program)*, 5-18 Oct. Tokyo, Kyoto and Sapporo. Tokyo: the Ministry of Foreign Affairs of Japan.
- 2003- 24 Monthly articles in Obstetrics, In *Medical Journal of Dard*.
2005

Bibliography:

Bibliography of Teaching Persian to Non-Natives, Cultural Research Bureau of Iran (CRB).

Translation:

ISO/TC 37 704: Terminology Work– Principles and Methods. 2000. Tehran: The Academy of Persian Language and Literature.

Language Competence

Persian, native speaker

English, fluent

German, intermediate

Arabic, elementary