

The Linguistic Foundations of Neologism Formation in Arabic Terminology

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Abstract. Arabic, a language with a rich morphological system and a long history of language planning, has developed multiple strategies for coining new terminology to accommodate evolving needs. This article provides a comprehensive examination of the linguistic foundations of Arabic neologism formation, spanning from classical heritage to modern innovations. It discusses the historical context and motivations behind coinage of new terms – from the Abbasid-era translation movement to the 19th–20th century renaissance (Nahda) – and analyzes the major word-formation methods employed in Arabic. These methods include derivation (*al-ishtiqāq*), arabization (*at-ta’rīb* or borrowing foreign words), compounding/blending (*an-naḥt*), metaphorical extension (*al-majāz*), and loan translation (*calquing*). Both classical and modern perspectives are considered, with particular attention to the influence of Arabic language academies in standardizing and promoting new terms. Modern scientific and technological advancements have continually driven the creation of neologisms, as Arabic speakers and institutions strive to balance linguistic authenticity with effective communication. The article is structured as a peer-reviewed academic paper, with sections for literature review of prior scholarship, methodology of analysis, detailed discussion of each word-formation process with examples, and a conclusion that reflects on the success and challenges of Arabic neologism development. Authoritative sources in both Arabic and English are cited to support the analysis, highlighting how Arabic’s linguistic creativity and planning institutions together address the challenges of an ever-expanding lexicon.

Introduction

The need to create new words – or neologisms – in Arabic has been a recurring challenge and opportunity throughout the language’s history. Whenever Arabic-speaking societies encountered new concepts, technologies, or cultural influences, they faced a choice: either adopt foreign terms or coin equivalent expressions from native linguistic resources. The motivations behind Arabic neologism creation have thus been both practical and ideological. Practically, new fields of knowledge (from early medicine and philosophy to modern computing and the internet) required vocabulary that did not previously exist in Arabic. Ideologically, Arab scholars have often viewed Arabic as a language of great heritage and capacity, insisting that new terms should ideally be formed using Arabic’s own rich morphological system in order to preserve the language’s integrity and authenticity[1][2]. This tension between embracing foreign loanwords and maintaining linguistic purity has shaped the development of Arabic terminology over centuries.

Historical context: Arabic’s engagement with neologism formation can be traced back at least to the early Islamic and medieval periods. During the Abbasid Golden Age (8th–10th centuries CE), a massive translation movement saw Greek, Persian, Indian, and other scientific and philosophical works translated into Arabic. This influx of knowledge forced Arab translators and scholars to devise

Arabic equivalents for a host of new concepts[3][4]. Historical records indicate that pioneer translators like Ibn Ishāq in the Abbasid era had to “coin new words or derive new vocabulary from old ones to enrich Arabic with new medical and philosophical terms”[5]. These efforts included both reviving obscure classical words and inventing entirely new terms. The success of the Abbasid translation movement established Arabic as the lingua franca of science for centuries, illustrating Arabic’s capacity to expand its lexicon. In the late 19th and early 20th centuries (during the Arab *Nahda* or renaissance), a renewed encounter with European science and modernization again highlighted gaps in Arabic’s lexicon[6]. Western colonial influence and the flood of scientific terms from English and French prompted what scholars call a “lexical reform” in Arabic[7]. During this period, educated elites and translators urgently worked to either adapt foreign terminology or create new Arabic terms, leading eventually to the establishment of official language academies in the Arab world[8].

Arabic language academies and their role: In the modern era, Arabic language academies (*majāmi‘ al-lugha*), beginning with the first academy founded in Damascus in 1919, have played a central role in neologism formation[9]. These academies (subsequently established in Cairo, Baghdad, Amman, and other cities) were tasked with standardizing Arabic terminology, especially in scientific and technical domains[9]. Their mission has been to coin or approve new terms that can replace or Arabize foreign vocabulary, thereby “reviving Arabic in order to assume its position as the medium of education and culture”[10][2]. The academies encourage avoiding foreign loanwords when possible, aligning with the purist view that Arabic’s own resources should be harnessed to meet modern needs[1][11]. Indeed, the very name of the first academy in Damascus was *al-Majma‘ al-‘Ilmī al-‘Arabī* (“The Arab Scientific Academy”), highlighting its focus on scientific term creation[9]. Since then, academies in Egypt, Iraq, Jordan and elsewhere have collectively coined thousands of terms. For example, the Egyptian Academy (*Majma‘ al-Lugha al-‘Arabiyya* in Cairo) published glossaries with proposed terms for inventions like *tīfāz* (طيفاز) or *talfazah* (تلفزة) for “television”, and *hāsūb* (حاسوب) for “computer” – attempting to introduce Arabic-origin equivalents instead of direct borrowings[12][13]. The influence of these academies has been significant in shaping modern Standard Arabic vocabulary, though not without challenges. A lack of coordination among different national academies and other term-coining bodies has often led to duplication of effort and multiple competing terms for the same concept[14][15]. For instance, the term “mobile phone” has been rendered by various sources as *mubāyl* (موبايل), *silulīr* (سيولير), *jawwāl* (جوال), *mahmūl* (محمول), *naqqāl* (نقل), *khilyawī* (خليوي), and *burtābl* (بورتابل) – at least seven different terms in use, influenced by whether English or French terminology is locally dominant[15]. This diversity illustrates the difficulty of achieving terminological unity despite academy recommendations. Nonetheless, the academies’ efforts underscore the *linguistic motivations* guiding Arabic neologism formation: a desire to preserve the language’s Arab identity, ensure terms are structurally compatible with Arabic, and facilitate communication and education in the modern age[2][16].

Modern needs driving neologisms: The accelerating pace of scientific and technological advancement in the 20th and 21st centuries has been a key driver of neologism development in Arabic. Every new invention or concept – from *radio* and *telephone* in the early 1900s to *internet* and *smartphone* in recent decades – has forced Arabic speakers to either borrow the foreign word or create a new one. Arabic has seen extensive term creation in fields like information technology, where innovations have “forced non-Anglophone countries to find new terms to express a new world”[17]. Often, global use of English technical terms puts pressure on Arabic to adopt those terms (e.g. “*internet*” becomes *intarnīt* إنترنت in common use). However, Arab linguists and academies frequently respond by crafting Arabic alternatives (*shabakat al-ma‘lūmat* شبكة المعلومات for “internet” was suggested by some, or *al-ṣābikah* الشابكة by the Damascus Academy[18], meaning “the net/web”). Modern needs have thus catalyzed both *planned* neologisms (through official efforts) and *spontaneous* ones (through journalists, translators, and everyday speakers coining or importing words). The magnitude of terminology growth is evident in domains like computing: even decades after computers became common, one finds both Arabic-origin terms like *hāsūb* (حاسوب) and direct borrowings like *kūmbyūtēr* (كمبيوتر) for “computer”[13]. The **motivation** to coin new terms is not only linguistic pride, but also practicality – an Arabic term, if well-chosen, can be easily integrated into the grammar (allowing

native plural and verb forms, etc.), whereas a foreign word might remain awkward or limited in usage[19][20]. For example, when the word “*telephone*” first entered Arabic, some proposed the pure Arabic word *hātif* (هاتف, literally “caller”) based on a classical term for an unseen voice, whereas others simply adopted *talifūn* [تلفون]. The former aligned with Arabic’s internal semantics but the latter, a straightforward borrowing, ultimately became more widespread in everyday use. Such cases highlight how **usage and convenience** can override purist intentions: a term must not only be linguistically correct but also accepted by the speech community[22][23].

In summary, Arabic’s approach to neologism formation is grounded in a deep respect for its linguistic heritage coupled with a pragmatic recognition of changing realities. In the following sections, we review relevant literature on this topic, outline our methodology for analyzing Arabic neologism formation, and then discuss in detail the major word-formation methods – derivation, arabization, compounding, metaphorical extension, and loan translation. Throughout, we highlight examples from both classical usage and modern terminology development, and we examine the role of language academies in promoting or regulating these processes.

Literature Review

Research on Arabic neologism formation spans both historical analyses and contemporary linguistic studies. Classical Arabic scholarship itself had identified mechanisms of word formation and lexical expansion long ago, underscoring that Arabic has always possessed tools for generating new vocabulary. Modern scholars, both Arab and Western, have built on this foundation to document and critique how new terms are created in practice. This literature review summarizes key insights from previous work, focusing on the historical evolution of Arabic terminology, the influence of language academies, and the classification of word-formation methods.

Historical development of Arabic terminology: Early Arabic philologists and lexicographers were aware of the need to accommodate new concepts. The period of the Abbasid translation movement (8th–10th centuries) is often cited as the first major instance of organized term creation in Arabic[3][4]. Arab translators confronted with Greek scientific terms chose various strategies: some derived equivalent words from Arabic roots, others borrowed foreign words and adapted them, and yet others extended existing words’ meanings to cover new concepts[24]. Notably, many Greek terms were assimilated into Arabic at that time (e.g. *falsafa* فلسفة for “philosophy” from Greek *philosophia*, *kīmyā* كيمياء for “alchemy/chemistry”, etc.), and Arabic grammar books from the medieval era discuss such loans as *mu’arrab* (arabicized words) or *dakhīl* (foreign infiltrations) in the language. By the 19th century, as highlighted by Ferguson (1990) and Emery (1982), Arabic’s classical lexicon had become ill-suited to the rapidly modernizing world[25][26]. Ferguson described Arabic in the 19th century as suffering from **diglossia** and lacking standardized modern terms, while Emery bluntly stated that “Classical Arabic was manifestly unable to cope with the demands of the new age – dictionaries were full of obsolete words, a multiplicity of synonyms, and imprecise scientific terms”[25][26]. This critique from Emery underscores why the Nahḍa intellectuals felt compelled to enrich and update Arabic vocabulary. By the late 19th and early 20th centuries, scholars such as Ahmad Fāris al-Shidyaq and Butrus al-Bustānī were compiling modern dictionaries and coining hundreds of new terms (often via direct translation of European terms or revival of old Arabic words). Their work laid groundwork that the newly formed academies would later continue.

Language academies and terminology planning: The establishment of Arabic language academies in the 20th century brought a more *institutionalized approach* to neologism formation. These academies systematically reviewed foreign terminology and issued recommended Arabic terms. According to Al-Hassan (as cited in translation studies), the creation of the first academy in Damascus in 1919 was directly motivated by the “influence of Western languages upon the vocabulary” and the need for lexical reform in Arabic[6]. Emery (1982) notes that the Damascus academy’s title as a “Scientific” academy signaled its focus on scientific and technical lexicon[9]. In subsequent decades, additional academies in Cairo (1932), Baghdad (1947), and Amman (1976), among others, took up the task. The literature on these academies often highlights both their achievements and limitations. On one hand, researchers like Stetkevych (1970) and Ali (1987) point out that the academies’ conscious efforts at arabicization – i.e. integrating foreign terms into Arabic by naturalization – were

crucial for the rapid modernization of Arabic vocabulary[27][2]. Indeed, Stetkevych observes that assimilating foreign scientific vocabulary (whether by coining or borrowing) was one of the most important factors enabling Modern Standard Arabic (MSA) to handle new concepts[27]. On the other hand, scholars have noted issues arising from the lack of coordination among academies. As different bodies (academies, universities, standardization organizations) coined terms independently, terminological duplication became common[14][15]. Sieny (1988) identified three main causes for the multiplicity of Arabic terms for the same concept: (1) the inherent richness and polysemy of Arabic (many ways to express a concept); (2) inconsistent *arabicization procedures* among terminologists (since terminology science was new, experts disagreed on methods); and (3) the Arab world's split influence from English vs. French, which led to different translational choices for terms[28][29]. For example, a scientific term might be rendered one way in French-influenced North Africa and another in English-influenced Middle East, both versions entering Arabic circulation[30]. The literature thus stresses that *standardization* was an elusive goal. Despite efforts like the Unified Arab Scientific Dictionaries (e.g., a Unified Dictionary of Computer Terms published in 1982)[31] and the establishment of the Coordination Bureau of Arabization in Rabat in 1961[31], full consensus on technical terms was rarely achieved in practice[32].

Classification of word-formation methods: Perhaps the most detailed discussions in the literature revolve around *how* new Arabic terms are formed linguistically. Early Arab grammarians had already conceptualized derivation (*al-ishtiqāq*) as a core mechanism of word formation. They distinguished between *ishtiqāq ṣaghīr* (simple derivation from a root without rearranging root letters), *ishtiqāq kabīr* (a broader derivation that might involve letter transposition, i.e. root metathesis), and even forms of *ishtiqāq ma 'nawī* or “derivation by meaning” (which foreshadows loan translation)[33]. Modern analyses build on those concepts. Al-Marāghī and Ibn Fāris (as cited by Stetkevych 1970) emphasized derivation as an “inventive process for creating new terms in Arabic”, to the point that Arabic is often called “*lughat al-ishtiqāq*” (“the language of derivation”)[34]. More recent scholars like Al-Shihābī (1995) and Al-Khūrī (1988) catalogued the methods of term generation (*tawlīd*) used historically and in modern times. Al-Shihābī lists: semantic extension of existing words (using old words in new meanings), derivation from Arabic roots (or from assimilated foreign roots), and arabicization of foreign words as primary methods[24]. Al-Khūrī adds compounding/blending (*al-naḥt*) as another method alongside derivation[35]. Additionally, Al-Shihābī explicitly notes loan translation (translating foreign terms literally by their meaning) as an important method of coining new terms[36]. These classifications align closely with what modern linguists observe in practice. Thawabteh & Hreish (2014), for instance, demonstrate examples of terms created via derivation from Arabic roots (e.g. *al-shafāfiyyah* الشفافية “transparency”, derived from the Arabic root *sh-f-f* meaning “to be transparent”) as well as via arabicization of foreign words (e.g. *dīmuqrātiyyah* ديمقراطية for “democracy”, adapted from the European term)[37][38]. Contemporary empirical studies on translation confirm that multiple strategies are actively used. A 2021 study by Wan Mohammad *et al.* on English-to-Arabic IT term translation found that translators employed compounding (creating Arabic compound phrases or blended terms) for about 44% of new terms, descriptive translation (a form of loan translation or paraphrase) for about 25%, and phonetic borrowing (arabization) for about 13% of terms, with the remainder involving modifications of source structure[39][40]. Such findings reflect the continuing relevance of the classic categories identified by Arab scholars, while also highlighting translators’ inclination to preserve source terminology structure unless a well-formed Arabic term exists.

In summary, previous scholarship illustrates that Arabic has a set of well-defined word-formation processes for neologisms, deeply rooted in its linguistic system and history. The influence of language academies and scholarly thought has been to preferentially utilize *native* mechanisms (derivation, semantic extension, calquing) and carefully regulate *borrowing*, in the service of both linguistic purity and functional expansion of the lexicon[1][2]. However, practical usage and the realities of global communication mean that all these methods coexist, sometimes leading to multiple synonyms and debates over the “correct” term. Building on this body of literature, the present article will analyze each major word-formation method in detail and consider examples from both the classical tradition and modern terminological development.

Methodology

This study adopts a descriptive and analytical methodology to examine the formation of neologisms in Arabic terminology. Rather than conducting field experiments or surveys, the research is based on qualitative analysis of textual and lexical sources across different periods. The following steps and data sources were utilized:

- **Literature survey:** We reviewed scholarly literature (in both Arabic and English) on Arabic word-formation and terminology development, including historical accounts of the Abbasid translation movement, records and publications of Arabic language academies, and modern linguistic studies on neologisms (as summarized in the literature review). Key theoretical frameworks – such as Al-Shihābī’s classification of term generation methods[24][41] – provide the basis for our analysis categories.
- **Classification of word-formation methods:** Guided by the literature, we categorized Arabic neologism formation into five primary methods: derivation, arabization, compounding (blending), metaphorical extension, and loan translation. These categories mirror terminology used by Arab linguists (e.g., *ishtiqāq*, *ta’rīb*, *naht*, *majāz*, *tarjamah*) and are defined in our discussion. Each category forms a subsection of the analysis. We also note interactions among methods (for instance, some coined terms may result from multiple processes).
- **Data and examples:** We collected representative examples of neologisms for each category from various sources: historical texts, dictionaries, and modern technical glossaries. For classical examples, we consulted classical Arabic dictionaries (such as *Lisān al-‘Arab* and *Tāj al-‘Arūs* for instances of early loanwords and extended meanings) and academic analyses that document when certain terms entered Arabic. For modern examples, we drew on publications of Arabic language academies and pan-Arab terminology databases, as well as research case studies (for example, IT terminology comparisons across countries[15][30]). The examples are used to illustrate how each word-formation mechanism operates and how successful it has been in gaining acceptance.
- **Analysis approach:** The analysis is primarily qualitative, examining linguistic structure (e.g., how a blended term is formed from its components, or how an Arabic root is utilized to derive a new term) and sociolinguistic context (e.g., why a particular method was favored at a given time, and how the speech community or institutions reacted). We pay particular attention to the role of Arabic language academies: when discussing each word-formation method, we note whether it is encouraged or discouraged by the academies and provide insight into any official guidelines that exist (for instance, the Cairo Academy’s guidelines on blending[42]).
- **Scope and limitations:** This study focuses on Modern Standard Arabic (MSA) for modern examples, while drawing on Classical Arabic for historical context. We largely exclude dialectal Arabic neologisms, except in passing mention (even though dialects often borrow freely, this falls outside our scope of examining standardized terminology). The analysis does not include a statistical survey of current usage frequencies (aside from citing existing studies), as the emphasis is on foundational linguistic processes and illustrative cases rather than corpus frequency. However, we do reference contemporary usage trends (e.g., prevalence of certain terms or preferences in media and education) as noted in secondary sources.

Through this methodology, the paper synthesizes information from authoritative sources and applies linguistic reasoning to demonstrate how Arabic generates new terms. By comparing across time periods and methods, we aim to reveal a comprehensive picture of the strategies at play and their effectiveness. In the next section (Discussion), each major word-formation method is analyzed in turn, with examples and citations to support the discussion.

Discussion

In this section, we delve into the major word-formation methods for Arabic neologisms, providing definitions, historical background, and examples for each. The five primary methods under consideration are: derivation (*al-ishtiqāq*), arabization (*at-ta’rīb*), compounding/blending (*an-naht*), metaphorical extension (*al-majāz*), and loan translation (*calque*). For each method, we discuss the

linguistic foundation of how it creates new words, illustrate how it has been used both in classical and modern contexts, and note any relevant perspectives or interventions from Arabic language academies. The interplay of these methods often determines whether a coined term gains widespread acceptance or faces competition from alternatives.

Derivation (*al-ishtiqāq*)

Derivation is the process of forming new words from existing roots or stems within a language's morphological system. In Arabic, derivation (*al-ishtiqāq*) lies at the heart of vocabulary expansion, leveraging the root-and-pattern morphology characteristic of Semitic languages. Arabic words are built from lexical roots (usually consisting of 3 consonants) fitted into templates (patterns) that convey different grammatical or semantic notions (such as noun of place, tool, profession, etc.). By applying established patterns to roots, Arabic can generate a multitude of related words. For instance, from the root *k-t-b* (which carries the general idea of writing), one derives *kātib* كاتب “writer”, *kitāb* كتاب “book”, *maktab* مكتب “office (place of writing)”, *maktūb* مكتوب “written (letter)”, and so on. This productive system has historically been the most natural and preferred strategy for coining new terms in Arabic[43][34].

Arabic linguistic tradition regards derivation as a “treasure” of the language, an internal mechanism by which Arabic “gives birth” to new words (hence the term *tawlīd*, “generation”)[34][24]. Classic Arab grammarians debated aspects of derivation – for example, whether the verb or the noun is the original source form – but agreed on the fundamental concept that one word can be derived from another or directly from a root[44]. They delineated several types of derivation, of which two are particularly relevant to neologism formation:

- Simple derivation (*al-ishtiqāq al-saghīr*): This involves creating a new word by applying a known pattern to a root without altering the root's consonantal order[33][45]. It was widely used during the Abbasid period to create vocabulary for science and philosophy[45]. For example, Arab translators took the root *h-s-b* (related to counting) to coin *hāsib* حاسب (“calculator”) and later *hāsūb* حاسوب (“computer”) by analogy, long before computers existed as machines[13]. Likewise, the root *d-r-b* (to strike) can yield *midrab* مضراب (bat, an instrument for striking) or *darb* ضرب (a strike or type), demonstrating how a root can spawn technical meanings by pattern extension[46]. Many modern technical terms have been formed through simple derivation: e.g., *mu'ālaj* معالج (“processor” in computing, from root 'l-j meaning to treat/deal with), *mutasarrif* متصرف (administrator, from root ḥ-r-f meaning to manage or spend), etc. Derivation ensures new terms feel “native” and can easily take Arabic grammatical inflections.
- Paraphrastic or semantic derivation (*al-ishtiqāq al-ma'awī* or *al-ishtiqāq bi-l-tarjama*): This subtype, highlighted by modern scholars, refers to creating a term by translating the meaning of a foreign term into an Arabic construction[33]. It is essentially a form of loan translation but is sometimes classified under derivation because it often uses existing Arabic roots to mirror the foreign concept. An example from early Abbasid times is the term *bayṭar* بيطر (“veterinarian”), derived from Greek *hippiatros* (horse-doctor) not by sound, but by finding a Semitic root *b-y-ṭ-r* and pattern to fit the concept (some suggest it's from a Persian source). In modern usage, an example is *khuṭūf l-ziyī* خطف الزي (literally “snatching of dress”) calqued for “kidnapping” (instead of borrowing “kidnapping”), or *muḥarrik baḥth* محرّك بحث (“search engine”), which literally translates the components of the English term into Arabic words (engine = muḥarrik “motor”, search = baḥth)[47][22]. Such coinages are often the result of deliberate planning to avoid foreign words by using Arabic elements in a novel combination. (This overlaps with what we discuss below as loan translation, but shows how derivational thinking is applied to semantics.)

In all its forms, derivation is strongly favored by purists and language academies because it relies solely on native linguistic resources. The Cairo Academy and others have actively coined hundreds of terms via derivation. For example, they proposed *madrasat* المدرسة الإلكترونية (madrasah elektroniyyah) for “electronic school” by analogy to *madrasah* school, or *muṣādafa* مصادفة (from root ḥ-d-f “to coincide”) to mean “coincidence” in the scientific sense of events coinciding. The Jordanian linguist

‘Abd al-Majīd Nāṣir noted that creating terms through derivation had slowed in creativity in recent times, despite academies promoting new patterns, perhaps because many felt the limits of existing roots were being reached in some domains[48]. Nonetheless, derivation remains foundational. Arabic is often lauded as “*Luğat al-İstiqaq*” (“the language of derivation”)[34] – a phrase reflecting how central this process is to Arabic’s growth. Even so, one challenge with derivation is that multiple derivations might be coined for the same foreign concept by different people. Without coordination, this leads to synonymy. For instance, the concept of “electron” was at various times rendered as *kahrabā’ī* (from *kahrabā’* “electricity” with an adjective form), *iluktrūn* (simply an adapted pronunciation), and *dharri* (from *dharrah* “atom, particle”), until *iliktrūn* (إلكترون) became standard by usage. Such cases underscore that while derivation offers a wealth of options, it also necessitates consensus to avoid terminological fragmentation[49][50].

Arabicization (*at-ta’rīb* or Borrowing)

Arabicization (*ta’rīb*) refers to the process of adopting foreign words into Arabic and making them conform as much as possible to Arabic phonological and morphological rules. In essence, it is borrowing – but with a conscious effort to “naturalize” the foreign term so that it behaves like a native word. Arabicization has been an integral part of Arabic’s lexical development since ancient times, though attitudes toward it have varied. Classical Arabic literature contains numerous words of Persian, Greek, or other origin that were assimilated long ago (for example, *qītr* قطر for “copper sulfate” from Greek *chalcanthum*, or *istabraq* إستبرق for “brocade” from Persian). Medieval lexicographers like al-Jawāliqī even compiled lists of these *mu’arrabāt* (arabicized words). The Umayyad and Abbasid periods saw waves of arabicized technical terms entering fields like administration (e.g., *dīwān* ديوان “bureau” from Persian) and science (e.g., *bīmāristān* بيمارستان “hospital” from Persian). Thus, Arabicization is by no means a modern phenomenon; however, it took on renewed importance in the 19th–20th centuries with the influx of European terminology.

Linguists differentiate between two modes of arabicization[51]:

- Phonological adaptation (*ta’rīb ṣawtī*):* *The foreign word is adapted to Arabic phonotactics with minimal change in structure. For example, “television” can become tilifizyūn, a direct phonetic rendering of the French/English word.*
- Morphological adaptation (*ta’rīb ṣiyāghī*):* *The foreign word is reshaped to fit Arabic morphological patterns, often by identifying or creating a root and applying an Arabic template[51].*

Arabicization as a method became somewhat controversial in the modern era. Proponents argue that arabicization is a quick and effective way to expand vocabulary, especially for scientific terms that are international by nature[27][2]. They point out that wholesale translation or derivation isn’t always practical for technical terms (e.g., chemical elements, where Latin/Greek names are standard worldwide). Stetkevych (1970) noted that borrowing and assimilating foreign terms significantly contributed to the *rapid modernization* of Arabic[27]. Likewise, Ghazala (2005) lists objectives of arabicization such as standardizing technical terminology and even “reviving the Arabic-Islamic heritage” by showing Arabic can handle modern concepts[2]. On the other hand, opponents of excessive arabicization fear that it could “pollute” Arabic or erode its character[56]. Some critics dismiss certain arabicized terms as mere transliterations rather than true integration[56]. The academies historically were split: early 20th-century academicians often showed a reluctance to accept many borrowings, coining pure Arabic alternatives whenever possible. For example, instead of accepting *radio* راديو, the Cairo Academy suggested *midyā* (from root *d-y-* “to broadcast”) for “radio receiver”; for “bus”, they proposed *ḥāfila* حافلة (“that which carries”) instead of *būs*. Some of these suggestions took hold (*midhyā* is somewhat used for radio), while others did not (few say *ḥāfila*; *bāṣ* باص is common from English “bus”).

Over time, however, there has been an acknowledgment of the inevitability of borrowing in certain domains. By the late 20th century, the Arab academies collectively agreed on guidelines for adapting foreign terms – essentially formalizing arabicization rather than rejecting it[16]. These guidelines emphasize naturalization: ensuring the loan conforms to Arabic sound patterns (e.g., adding vowels

between difficult consonant clusters, avoiding phonemes not in Arabic like *p* or *v* by substituting *b* and *f* respectively)[57][53]. They also stress that if a foreign term can be translated meaningfully, that is preferable; if not, then an adapted loan is acceptable. An interesting criterion noted by Nusayr (1982) is that an arabicized term should ideally be based on a root that can take Arabic patterns and should be easy for Arabs to pronounce[58]. For instance, *birsim* برسيم (clover, from Coptic) was considered foreign because it doesn't fit a known Arabic root pattern[58]. In contrast, a word like *oksid* أوكسيد ("oxide") was easily accepted and even made into a root from which *āksada* أكسدة ("to oxidize") was derived[20]. This demonstrates that when a borrowed term can generate a family of words in Arabic, it's effectively naturalized.

Today, arabicization is highly productive in fields like technology. Terms such as *kōmbyūtar* كومبيوتر ("computer"), *internet* إنترنت (often spelled *intarnēt*), *rādār* رادار ("radar"), *laser* ليزر, etc., are all arabicized loans[59]. They obey Arabic phonology (no strange clusters or tones) and are widely used. Speakers often find this strategy convenient, especially in everyday and technical parlance, because it preserves the direct recognizability of international terms[54][60]. However, one trade-off is that such terms sometimes resist further derivation (e.g., one wouldn't derive an Arabic verb from "internet" easily). Despite that, some arabicized roots do become productive as shown earlier (e.g., *fax* = *fāks* might not derive, but *telefon* gave *talfan*).

In sum, arabicization as a method shows Arabic's openness to external contributions while still filtering them through its phonetic and morphological system. It has been crucial for gaps where no native equivalent existed. The academies, once wary, have largely made peace with this method, seeing it as a controlled way to enrich the lexicon without fundamentally altering Arabic's grammatical spirit[61][2]. They do caution that arabicized terms should follow certain linguistic criteria, and wherever possible, a purely Arabic term is still preferred for reasons of cultural identity and clarity. But the dynamic of modern science and globalization means arabicization will likely continue as a significant channel for Arabic neologisms, used judiciously alongside other methods.

Compounding and Blending (*an-naht*)

Compounding – the combination of two or more existing words (or parts of words) to form a new term – is a common word-formation process in many languages. In Arabic, the rough equivalent process is often termed *an-naht* (literally "carving" or "cutting")[62]. However, *naht* in Arabic is somewhat different from typical English compounding because Classical Arabic did not traditionally form compound words in the way English or German do. Instead, Arabic expressed complex ideas through phrases (e.g., *kursī al-maktab* "chair of the office" for "office chair") rather than single orthographic words. That said, Arabic *does* have a history of fusing words in specific contexts, effectively creating blends or acronyms. Blending (*naht*) in Arabic involves merging two (occasionally more) words into one, sometimes contracting some letters at the point of fusion[62][63]. For example, the classical term *basmalah* بسملة meaning "to say *bismi-llāh* (in the name of God)" is a blend of the words *ism* (name) and *Allāh*, plus other letters from that phrase[64]. Similarly, *ḥawqala* حوقلة means "to say *lā ḥawla wa lā quwwata illā bi-llāh*" (there is no power or strength except by God), blending parts of *ḥawla* and *quwwa*[64]. These are essentially acronyms or formulaic blends used in religious context.

Al-naht can thus be seen as creating a concise lexical item from a longer expression. Historically, it was used sparingly, often reserved for well-known phrases or proper nouns. Arab grammarians like Ibn Fāris even considered some *naht* forms to be a subset of derivation, though others contested that since more than one source word is involved, it's a distinct process[65]. Al-Maghribī (as cited in Al-Husarī 1985) gave special attention to *naht* and classified it into categories[65]:

1. Verbal blending (*naht fi lī*): *forming a verb from a whole phrase or from two verbs. The Quranic example cited is the verb *ba'thara* بعثر ("to scatter or resurrect"), which some classical scholars analyzed as a blend of *ba'atha* بعث and *'athara* أثث (meaning roughly "raise" and "agitate")[66]. Whether this etymology is folk or real, it illustrates the idea of fusing meanings. More clearly, verbs like *basmala* (to say *bismillah*) and *ḥawqala** (to say *la ḥawla...*) are blends of entire phrases into a

single verb[64]. Another example from common parlance: *dal'am* دلعم is a less common blend of *dala* (he went astray) and 'amā (to go blind) meaning “to stray blindly.” These are rare and often literary.

2. Adjectival blending (*naḥt wasfi*): *merging two words to form an adjective that carries a combined meaning[67]. Classical examples: şıldam صلدم (“hard-hoofed”), said to blend şald (hard) and şadam* صدم (striking)[67]. Also *dhabtara* شتر (“stout, burly”), blending *dhabata* (to master, to be hardy) and *dabara* (to be huge, strong)[67]. These compounds were descriptive epithets, not commonly used outside certain texts, but they show the pattern of forming a single descriptive word from two qualities.

3. Nominal blending (*naḥt ismī*): *creating a noun from parts of two words[68]. For example, *julmūd* جمود (“boulder”) is analyzed as coming from *jaluda* جلد (to harden) and *jamuda** جمدة (to freeze, solidify)[68]. The result is a word meaning “very solid (thing)”. Another is *shaqhaṭab* شقطب (given in sources as “a ram with long horns”), allegedly blending *shaqqa* شق (to split) and *haṭab* حطب (wood)[69] – though this etymology is obscure. The pattern here is combining two conceptually related words to name something that has both qualities.

4. Relational (nisba) blending (*naḥt nasabī*): *combining words (often names) to form a nisba adjective that denotes association with two things[70]. For instance, the adjective *Shāfi-anhanīfi* (not actually in that form, but as described) would indicate someone who ascribes to both the *Shāfi* شافعي and *Hanafi* حنفي schools of law. In the text, they mention *al-Shafī-antī* الشفعتي and *ḥanfītī* حنفتي** as blends referring to someone associated with both *al-Shāfi* شافعي and *Abū Hanīfa* أبو حنفية schools[70]. Historically, such double-affiliation terms were rare, but the example underscores *naḥt*’s use in compressing multiple references into one word.

The classical stance on *naḥt* was cautious. Scholars like Fārīḥah (1973) argued against blending as a productive process, reasoning that removing any letters from original words could “violate” their meaning[71]. He conceded that a few useful blends existed (he cites *barma'* برمائي “amphibious”, from *barr* بَرْ “land” + *mā'* مائي “aquatic”) but doubted its broader applicability[72]. Indeed, *barma'* is a successful modern(ish) coinage for an animal that lives on land and water, directly analogous to the constructed Latin “amphibious” (amphi- = both, bio = life). This shows that *naḥt* can be used in scientific contexts.

In modern terminology, compounding/*naḥt* has been explored as a way to create concise terms, sometimes to mirror English compounds. A notable category is using affixes. Arabic doesn’t have prefixes in the same productive way as English, but modern terminologists have improvised. For example, the negative prefix “non-/un-/ir-” can be translated with *lā-* لا in Arabic attached to words. Some have coined forms like:

- *lā-dīnī* لا ديني (“irreligious/secular”)[73].
- *lā-markaziyyah* لا مركزية (“decentralization”, literally “no-centralization”)[74].
- *lā-silkiyy* لا سلكي (“wireless”, lit. “no-wire”) – this one is actually widely used for “wireless/radio” technology in Modern Standard Arabic[75].
- *lā-'insānī* لا إنساني (“inhumane” or “non-human”)[76].

These are not written as one word in Arabic orthography (they are hyphenated here for clarity, but in Arabic script *lā* is a separate word). Yet conceptually, they function like compounds. Another example: using *ba'd-* بعد (after) as a prefix to calque “post-” terms. The source suggests *'ibmadrasī* عبمدرسی (or *ba'd madrasī*) for “post-school” (meaning after school, as in “post-secondary”)[77]. Similarly *'ijtilādī* عجتلادي (“post-operative” maybe, from *ba'd jilādī*? example in text is unclear). These are experimental and not all have caught on, but such methods show creative attempts to mimic Indo-European compounding via Arabic elements.

The Arabic Language Academy in Cairo has acknowledged *naḥt* as a possible process but with strict conditions. They stated that blending should be used only out of “scientific necessity” (*li'l-darūrah al-'ilmīyyah*) and in a way that aligns with “Arab taste” (*dhawq al-'Arabī*)[42]. This essentially means: don’t coin a blend unless you really must (i.e. no simple derivation or phrase will do), and

make sure the coined term sounds elegant and authentic to Arabic ears[42]. As a result, *naḥt* remains less productive than derivation or arabicization[78]. There is also no comprehensive “rulebook” for *naḥt* akin to the grammar rules for derivation; each case tends to be ad hoc. Nevertheless, a few modern blends have gained acceptance, especially where they fill a gap efficiently. For instance, *ra’smāl* (from *ra’s al-māl*, “head of wealth”) is used for “capital (finance)”[62]. It compresses a two-word phrase into one. Another is *kahrabā’* (electricity”) which classical sources trace to *kahr* (Persian for attraction) + *rubā’* perhaps, though others think it’s pure Arabic; in any case it behaves as one word meaning something originally described by a phrase “amber effect” historically. A more clear modern *naḥt*: *madrak* مدرك for “brain (computer) memory unit” from *mudhakkirah raqmiyyah* maybe, but that one is not common. On the whole, outside of certain domains like military acronyms or traditional religious phrases, speakers seldom coin entirely new blends spontaneously. When the internet was new, some tried *šabakīn* شبکین as a blend from *šabakah* ‘ālamiyah (world-wide web) by fusing parts of the words, but almost no one uses that; people say *internet* or *shabakat al-internet*[79].

In summary, compounding/blending (*naḥt*) in Arabic is a fascinating but limited method of neologism formation. It shows the language’s ability to compress meaning, yet it remains constrained by the fact that Arabic’s structure prefers discrete root-pattern words or *idaafa* (of-phrases) over glued compounds. The contributions of *naḥt* are mostly in niche areas or to create shorthand terms. With modern constraints, its role is “effective in handling foreign affixation and abbreviating long-winded Arabic terms”[42] – meaning it’s useful to shorten things – but it is *not* viewed as a primary engine for vocabulary growth. Traditional grammarians did not treat it as a normal productive process, and so far, no revolution in that perspective has occurred, although some linguists advocate for more use of *naḥt* to keep Arabic concise in the face of very long translated terms. Ultimately, any new blend must pass the test of intelligibility and acceptance by users, which tends to favor those blends that are intuitively clear or euphonious, and reject those that sound contrived. As one Arabic adage in language planning goes, “*Al-isti ‘māl huwa al-hakam*” – “Usage is the judge.” If a *naḥt* coinage catches on, it survives; if not, it remains a curiosity in academy records.

Metaphorical Extension (*al-majāz*).

Another cornerstone of neologism formation in Arabic is metaphorical or figurative extension, known in Arabic as *al-majāz* (literally “figurative speech” or transfer) in the context of term creation. This involves taking an existing Arabic word and extending its meaning to cover a new concept, usually based on some analogy or resemblance between the original meaning and the new one[80][81]. This method leverages the richness of Arabic’s vocabulary, especially its reservoir of old or unused words (archaisms), repurposing them for modern needs. It’s sometimes also called *istinbāt* or *naql al-ma ‘ná* (meaning transference) in term development contexts[82][83].

Historically, semantic extension was a very productive way to coin terms during the early modernization of Arabic in the late 19th and early 20th centuries. Arab intellectuals combed classical literature and dictionaries for words that could be revived with new meanings. The logic was that if a concept can be described by analogy to something already known in Arabic, using that Arabic word would be more authentic than borrowing a foreign term. For example:

- The word *qāṭirah* قاطرة originally meant “a she-camel that leads a caravan.” By the late 19th century, Arab translators applied it to mean “locomotive (train engine)”, since a locomotive leads a train of cars like a lead camel leads a caravan[84]. The image of a powerful lead pulling others made this metaphor apt. *Qāṭirah* is still the standard term for a train engine in Arabic today.
- The classical word *jarīdah* جريدة meant “a stripped palm branch” which was used for writing (a sort of rustic notepad). By metaphor, Arab writers in the 1800s began using *jarīdah* to mean “newspaper”, an innovation of that era, drawing on the idea of a written record[85]. This term gained wide acceptance; *jarīdah* is now the common word for “newspaper” across Arabic.
- *Sayyārah* سيارة in Classical Arabic meant “a group on a journey” (from *sayar* – to travel). In the 20th century, it was employed to mean “automobile” (car), capturing the sense of a traveling

vehicle. This metaphor stuck to the extent that many speakers are unaware of the word's older meaning; *sayyārah* simply means "car" now.

- *Hātif* هاتف originally referred to an "unseen caller or a mysterious voice" (often in poetic or mythological contexts, like a spirit calling out). Early telephone adopters in the Arab world, struck by the disembodied voice coming from a device, used *hātif* to mean "telephone", effectively personifying the phone as the unseen caller[86]. For a time, *hātif* was commonly used, but eventually the transliterated *tilifūn* تلفون became more widespread for telephone, although *hātif* remains in formal use (and today often means "mobile phone" in Modern Standard Arabic usage).
- *Tayyārah* طيارة, meaning "flyer" (feminine) or a fast-moving object, was applied to "airplane" (literally something that flies)[87]. It's still the colloquial term for airplane (though formally *tā'irah* طائرة is used in MSA, from the same root). The metaphor is straightforward.
- In the medical field, the term *irq* عرق meaning "vein" in the body actually originally meant "root of a plant" – the extension to a blood vein likely occurred in medieval times by analogy of form and function (roots spread through soil as veins through a body)[88].

This process of *majāz* is deeply rooted in Arabic rhetorical tradition – Arabic poetry and writing often assign new meanings to words in metaphorical fashion. But in a terminological sense, it's about systematic reassignment of meanings for practical ends. Arab language academies have often preferred the *majāz* approach for coining new terms because it keeps the lexical stock purely Arabic[89][90]. It also has the advantage of brevity (one existing word gains a new sense, usually shorter than a descriptive phrase or a borrowed term).

However, there are challenges and limits to metaphorical neologisms. One issue is clarity and acceptance. The metaphor has to resonate with the user for the new meaning to stick. Some proposals by academies failed because the connection was too obscure or the chosen word too archaic. Infamous examples include:

- *Irzīz* ارزیز was proposed to mean "telephone", based on *irzīz* meaning "the whirring sound of winds or thunder" – presumably connecting to the crackling early phone sound[91][92]. This was far-fetched for most people and did not catch on at all.
- For "skyscraper", rather than borrowing *nātiḥat al-sahāb* ناطحة السحاب (literally "cloud-nudger") which is itself a calque of English, one academy member suggested *tirbāl* طربال, an obscure word meaning "a tall building" used in some dialects or older texts[91]. This also never gained currency – today Arabs just use *nātiḥat suhub* or simply *burj* (tower).
- A notoriously mocked attempt was the suggestion to use a long Arabic phrase for "sandwich": *shāṭir wa mašṭūr baynahumā tāzaj* شاطر ومشطور وبينهما طازج, meaning literally "one cut (in half) and another cut, with something fresh between them"[93]. This was supposed to describe a sandwich, but it was obviously impractical due to its length and oddity – unsurprisingly, Arabs kept saying *sandwīch* (ساندويتش). The episode has become a cautionary tale about overdoing purism.

These examples show that while the *majāz* method can be creative and culturally resonant, it is "often limited to concrete material meaning" and not always productive for highly technical concepts[89][90]. Metaphorical extension works best when the metaphor is intuitive. It has indeed gifted Arabic some of its most elegant modern terms (like *qāṭirah* for locomotive, *jarīdah* for newspaper). But when forced, it can result in cumbersome or obscure terms that fail to gain traction. The academies recognize this: Al-Mas'adī (1994) considered the use of *majāz* a "healthy sign" of creativity for enriching scientific vocabulary[89], yet many academy-proposed *majāz* terms did not become popular[89].

In practice, *majāz* often complements other methods. For new inventions, sometimes a metaphorical term will be introduced and used alongside a foreign borrowing until one wins out. For example, *hāsūb* (from the root h-s-b, "to calculate") was an internal derivation for "computer" (basically meaning "calculator") and coexisted with *kumbiyūtar*; today *hāsūb* is understood and used in formal

contexts, but *kumbiyūtar* (كمبيوتر) is very common informally. Similarly, *murakkib al-ṣawt* مركب الصوت (“sound synthesizer”, literally “sound composer”) might be a coined term, but many just say *sinthisāyzar* سينثسيزاز. The success often depends on whether the coined term is sufficiently concise, precise, and phonetically appealing. If the coined word is too long or vague, specialists may ignore it in favor of an easier loanword.

In conclusion, metaphorical extension (*al-majāz*) is a potent method of Arabic neologism formation that taps into the language’s existing semantic wealth. It exemplifies how Arabs have historically “borrowed terms from the same language to be used in different disciplines”[81] – effectively reassigning intra-lingual meaning rather than borrowing from outside. This method reinforces cultural continuity (as new phenomena get Arabic names with Arabic flavor) and can be very effective when done well (the terms become standard with time). Yet it requires a good sense of linguistic creativity and a bit of luck in user adoption. Modern academies continue to use *majāz* where suitable – for instance, coining *mu‘allim* معلم (“teacher”) to also mean “marker pen” because it “teaches” on the board, or reviving *dhakī* ذكي (“smart/intelligent”) to describe “smart” devices (phone = *hātif dhakī* هاتف ذكي). These illustrate ongoing metaphorical thinking. As long as Arabic develops, the *majāz* approach will remain an important and *elegant tool* in the linguist’s toolkit for term creation.

Loan Translation (Calquing)

Loan translation, also known as calque, involves creating a new Arabic term or phrase by directly translating parts of a foreign term. Unlike arabicization (which borrows sound) or derivation (which uses existing roots creatively), a calque imitates the *structure and metaphor* of the foreign expression using native Arabic words. We touched on this under semantic derivation, but here we treat it as a distinct strategy given its prominence in modern terminology development.

Loan translation in Arabic often goes by terms like *tarjama harfiyyah* (literal translation) or *ishtiqāq bi-l-tarjamah* (derivation by translation)[94]. It effectively produces an Arabic phrase that corresponds to a foreign one, component by component. This method became extremely common in the 19th–20th centuries when translating scientific and technical vocabulary from European languages. Arab translators and academics would analyze a European term that is often itself a compound or metaphor, then render those elements in Arabic.

Examples abound in modern Arabic:

- “Telephone” was calqued as *ṣawtiyat bā‘ida* صوتية بعيدة (lit. “distant audio [device]”) by some early translators, though *hātif* and *tilifūn* became more usual. More enduring is “telegraph” which was translated as *mursal* مرسّل (later simplified to *barqiyyah* برقية for “telegram”) from the idea of “writing at a distance” (tele-graph). *Barqiyyah* comes from *barq* برق “lightning,” reflecting “fast as lightning” communication.
- “Phonograph” was translated to *dhawwāt* ذوات or *mukabbir al-ṣawt* مكّبّر الصوت (“sound amplifier”) – the latter is actually the calque used for “microphone”, as given in one source: *mukabbir al-ṣawt* = microphone[95]. It translates the Greek roots micro-phone (“small sound” doesn’t quite match, they took the function instead: amplify sound).
- “Carburetor” (in an engine) was translated in some dictionaries as *muzaij al-waqūd* مزيج الوقود (“mixer of fuel”).
- “Computer” in some pan-Arab proposals was *hāsib ălī* حاسب آلي (“automatic calculator”), where *ălī* means automated. This descriptive term was used in some countries’ textbooks.
- “Hotline” (direct emergency line) has been translated to *khaṭṭ sākhin* خط ساخن (literally “hot line”), a direct calque of the metaphor.
- A particularly illustrative set from the IT domain, reported by Cristina Solimando (2017), includes terms like:
- *al-hāsūb al-daftariyy* الحاسوب الدفتري (“notebook computer”) for laptop – literally “notebook computer” matches English, except Arabic syntax puts notebook after computer[47].

- *muḥarrik al-baḥth* (محرك البحث) (“search engine”) – literally “engine (of) search”, a direct structural translation[47].
- *dākirat al-wuṣūl al-‘ashwā’ī* (ذكرة الوصول العشوائي) (“Random Access Memory”) – an exact translation of each component (memory – access – random)[96].

These calques are formally correct Arabic and often favored by academies because they avoid foreign sounds. The examples *rusūm mutaḥarrika* (رسوم متحركة) (“moving drawings”) for “cartoons”, *kāsat al-nihās* (كأسة النحاس) (“copper cup”) for “casserole” (not common today), or *mukabbir al-ṣawt* for microphone demonstrate how loan translations describe the function or nature of the item in Arabic terms[94].

One advantage of calquing is that it can produce transparent terms that educate the user about the concept. For instance, *ātir nafth* (أطير نفث) (not a real term, hypothetical “jet plane” by translating “jet” as “spurt” – actually the used term is *tā’irah nafḍhiyyah* طائرة نفاثة, meaning “jet-propelled plane”). When done well, calques fit smoothly into Arabic syntax and are easily understandable.

However, there are pitfalls. Some calques can be too literal or awkward, especially if the foreign metaphor doesn’t resonate culturally. For example, “skyscraper” was often translated as *nāṭihat al-sahāb* (ناطحة السحاب) (cloud-scraper)[97]. This is understandable, but it’s a long phrase and not something Arabs would coin from scratch (it’s clearly copying English). Indeed, *nāṭihat al-sahāb* is used in journalism but many just say *burj ‘ālī* (tall tower) or *ṣahābāt* in plural for skyscrapers.

Also, calques sometimes yield very long terms. Scientific nomenclature especially can become unwieldy. Arabic can end up with strings of genitive phrases. For example, the chemical term “sodium bicarbonate” is *bīkarbūnāt al-ṣūdiyūm*, which is short because they actually partially borrowed (sodium is *ṣūdiyūm*, borrowed; bicarbonate is a hybrid – part borrowed “bi-” and carbon = *karbūn*, plus Arabic -āt for plural of category). But if fully translated it might have been *kārūbūnāt al-ṣūdiyūm al-hāmidiyā al-mūzā ‘afa* (not an actual term, just illustrating complexity). Real example: “Central processing unit (CPU)” is officially *wahdat al-mu‘ālaja al-markaziyya* (وحدة المعالجة المركزية) – four words, which is a lot to say, so people often just say *sīpīyū* or *mu‘ālija markaziyya* dropping “unit”.

The effectiveness of loan translations thus depends on brevity and clarity. The academies tend to endorse calques when they result in acceptable phrases. In fact, *al-iṣtiqāq al-ma‘nawī* (meaning-based derivation) was explicitly approved by the academies as a strategy[94]. Examples given earlier like *mukabbir al-ṣawt* and *rusūm mutaḥarrika* were officially recommended[94]. Another is “brake” which was translated as *makābih al-haraka* (مكابح الحركة) (literally “motion stopper/brake”)[95]. While many of these have a formal ring, they often coexist with borrowed terms (*frāmil* فرامل from “fr brakes” for brakes is also used, ironically *frāmil* itself from Italian *freno* probably).

In translation practice, professional translators often choose loan translation as a first resort to preserve meaning when an established Arabic term is missing. The study by Wan Mohammad et al. (2021) found a significant percentage of IT terms were handled by literal translation or descriptive equivalence, as mentioned earlier[98][40]. This underscores that calquing is not just theoretical but a common solution.

One interesting facet is that sometimes the entire foreign phrase is translated, and other times parts are borrowed and parts translated. This can produce hybrid terms – like *bank* is borrowed as *bank* بنك, but “blood bank” becomes *bank al-dam* (half borrowed, half Arabic). Or “mobile phone” often *al-hātif al-maḥmūl* (phone = Arabic, mobile = Arabic, even though many just say *mūbayl* or *jawwāl* regionally). So loan translation exists on a spectrum with arabicization.

Reception and outcome: Many calqued terms have succeeded and become standard Arabic, particularly for governmental and scientific terminology. Users, however, sometimes revert to shorter borrowed forms in casual settings. For example, the United Nations is *al-Umam al-Muttaḥidah* (الأمم المتحدة) (a calque of “united nations”), universally used; no one says “Yū.Nē.” for UN. But internet as *shabakat al-ma‘lūmat* (شبكة المعلومات) (“network of information”) never replaced *internet* in common usage, though one academy coined *al-Šābikah* (الشابة) (“the net”)[18], which is known but not

widespread. It illustrates that if the calque is too formal or if the foreign term is already entrenched, the calque might remain limited to official contexts.

In conclusion, loan translation (calquing) is a highly significant method in Arabic neologism formation, especially for scientific and technical terms where international concepts need local expression. It directly addresses the “modern needs” driver: rather than importing foreign terminology wholesale, calques attempt to integrate concepts by translation, making the terms immediately meaningful to Arabic speakers[94]. The method aligns well with the Arabization ideology of enriching Arabic from within and demonstrates linguistic ingenuity. Nonetheless, its success is mixed and often determined by how user-friendly the resulting term is. Arabic language planning agencies will likely continue to produce calques for new concepts (e.g., some have recently calqued “social distancing” as *al-tabh ‘ūd al-ijtimā’i* التباعد الاجتماعي and “cloud computing” as *al-hisābāt al-sahābiyya* الحسابات السحابية, etc.). Over time, some of these will stick and become part of the lexicon, contributing to Arabic’s ongoing evolution as it absorbs the phenomena of the modern world in its own words.

Conclusion

The formation of neologisms in Arabic terminology is a multi-faceted process grounded in the language’s rich linguistic heritage and driven by the practical demands of each era. This comprehensive review has examined the major linguistic mechanisms – derivation, arabization, compounding, metaphorical extension, and loan translation – that Arabic employs to create new terms. It has also contextualized these methods historically and considered the crucial role of language academies and modern needs in shaping outcomes. Several overarching conclusions emerge:

1. Historical continuity and innovation: Arabic’s strategies for coining new words today are deeply rooted in classical concepts. The preference for derivation (*al-ishtiqāq*) as the “most natural” way to grow the lexicon echoes from medieval philologists through to modern academicians[43][34]. Techniques like metaphorical extension (*majāz*) were used intuitively by pre-modern scholars (e.g., calling a planet *najm* (star) and later shifting *najm* to mean any celebrity in modern Arabic – another metaphor). Yet, each historical period innovated within these frameworks: Abbasid translators expanded derivation and borrowing for Greek science; Nahda-era scholars revived old words and aggressively calqued European terms; contemporary technologists blend and abbreviate to keep up with rapid innovations. This shows a dynamic continuity – the tools remain largely the same, but their application adapts to new challenges.
2. Influence of language academies: The establishment of Arabic language academies introduced a more systematic and prescriptive element to neologism formation. The academies have served as guardians of the language, often advocating for using Arabic’s internal resources first and foremost. They have undoubtedly enriched Arabic with many well-crafted terms and helped standardize terminology in education and media. For example, thanks to academy work, terms like *musalsal* مسلسل (“television series”, literally “chained (episodes)”) or *jayb* جيب (“pocket”, later used for “pocket (mobile) phone” in some regions) gained unified meanings. However, as our discussion illustrates, academies have had mixed success imposing their preferred terms. Lack of pan-Arab coordination historically led to multiple synonyms, while the fast pace of scientific advancement sometimes left academies playing catch-up. It is telling that a large proportion of neologisms entered Arabic through spontaneous usage by journalists, translators, and professionals rather than top-down coinage[14][99]. The academies themselves have recognized the inevitability of borrowing and have moved toward more flexible guidelines rather than rigid opposition to foreign words[16][61]. Nonetheless, their influence remains significant in coining base terminology (especially in fields like chemistry, where they set Arabic names for elements and compounds) and in legitimizing certain forms (e.g., approving a blend or an arabicized form which then makes its way into textbooks).
3. Modern needs and the balance of methods: The pressure of modern scientific and technological vocabulary has compelled Arabic to use *all available methods* to expand its lexicon. Our analysis shows that each method has strengths and limitations:
 - Derivation leverages familiar patterns and often produces the most succinct, “Arabic-sounding” terms, but it can be limited by the availability of roots and the risk of multiple terms for one

concept[49].

- Arabization (borrowing) is quick and often universally understood (since it echoes the international term), proving especially effective for very novel or globally standardized terms (e.g., “internet” or “COVID-19”), yet it raises concerns about diluting Arabic’s character and can encounter resistance from purists[100][56]. Still, it has been described as “more effective in handling new technical and scientific terms” in some cases, due to flexibility beyond Arabic’s morphological constraints[61].
- Compounding/blending provides clever solutions for abbreviating long phrases and incorporating concepts like prefixes/suffixes, but it remains a marginal method, carefully regulated by academies and not deeply ingrained in Arabic usage habits[101].
- Metaphorical extension (majāz) yields some of the most culturally resonant terms (often short and rich in meaning), contributing to Arabic’s distinctive terminological landscape. However, it works best for concrete analogies and has a higher failure rate for highly scientific or arbitrary concepts (one cannot easily metaphorize “quantum” or “algorithm” without losing precision). The academies favor majāz in theory, but they also note its limits and the reality that many figurative proposals failed to catch on[89][90].
- Loan translation (calque) has been a workhorse of modern term creation, aligning Arabic with global terminology while keeping it native in words. It’s extremely productive in official translations and technical writing. Its main drawback is the potential unwieldiness of some calques and the fact that they sometimes compete with shorter borrowed terms. Nonetheless, many calques have succeeded and enriched Arabic idiomatically (e.g., *harb bāridah* حرب باردة for “Cold War”, *qasf al-‘amq* قصف العمق for “deep bombardment/strategic bombing”).

Overall, modern needs have *forced a pragmatic balance*. Arabic in the 21st century uses a mix of Arabized and Arabic-origin terms. For instance, in computing, one might find a single sentence using *mu‘älaj* (processor, Arabic derivation), *kārt* (card, borrowed), *dhākira* ذاكرة (memory, calque metaphor of memory), and *rām* (RAM, abbreviation of a foreign term). This blend is the real picture of usage – a language ecosystem where multiple formation processes coexist. Far from signifying chaos, this reflects Arabic speakers’ adaptive strategies to communicate efficiently while respecting linguistic heritage.

4. The importance of usage and consensus: A recurring theme is that usage ultimately determines which neologisms survive. Many ambitious coinages by academies or individuals, whether derived or metaphorical, did not survive because they were not adopted by the community of speakers or specialists[102][23]. Conversely, some initially frowned-upon borrowings became standard simply by prevalence. Moving forward, any effort at neologism formation in Arabic must consider the social dimension: *ease of pronunciation, transparency of meaning, and brevity* are key factors for acceptance[103]. The academies have learned to take these into account – for example, avoiding very long compound terms if a shorter term (even a loanword) would be more practical[103]. In recent years, with instant global communication, we see that when a new concept appears (e.g., “tweet” on Twitter), colloquial usage may decide a term (many say *ghuraydah* for tweet, from *ghurāb* tweet of bird, or just *twīt*), and only later do academies weigh in.

In conclusion, Arabic’s experience with neologism formation demonstrates a language actively negotiating modernization. Far from being static or inflexible, Arabic has shown a remarkable ability to generate new terminology through its inherent system and calculated borrowing, ensuring that it can discuss everything from medieval theology to modern rocket science. The linguistic foundations laid centuries ago – derivation and metaphor – continue to serve, while newer techniques – calquing and controlled borrowing – complement them. The Arabic language academies, as stewards of this process, will likely continue to refine their approaches, ideally collaborating to reduce duplication and listening to usage trends to gauge what works best. As scientific and technological advancement shows no sign of slowing, Arabic will keep evolving its terminological repertoire. By combining its time-tested methods with creative innovation, Arabic can maintain both its authenticity and its ability to engage with the cutting-edge of human knowledge.

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