References


ShaCban, F: Arabic and the Crisis of Self Identification in the Arab World, al–Lisan al–Arabi, No. 20, 1983.


Conclusions:

1. Sc. & T translation from English into Arabic involves many bewildering problems and difficulties (such as the lack of equivalent terminology in many scientific and technical domains; as well as the translators' inadequate command of the subject matter of many translated works).

2. Despite the valuable contribution made by many Arab academies (that were established to face the problem), and the Arab universities and institutes, as well as the co-ordinating bodies, the problem remains unsolved, and further confusion and inconsistencies are sometimes created by the variety of suggestions made by such multiple bodies.

3. It is often the case also that when the translators of the Sc. & T. texts are specialized in the domain from which translation is made, much use of transference (i.e. of S.L. terms) is made; which is inevitable and quite legitimate in many cases.

4. Translators of Sc. & T texts who are specialized in the Sc.&T domain from which they undertake a translation often show a lack of command of the general linguistic terms and expressions with regard to the S.L. &/or T.L. leading to many shortcomings and inaccuracies. Such translators should have a good command of the general language as well.

5. The way of facing this maze seems to be in the hands of Arab universities and institutes by forming highly specialized teams of translators (i.e. specialized in various Sc & T. fields and domains) and contrastive linguists, in order to unify and standardize the Sc. & T terminology and review them from time to time as necessary.
D/: “However to ask such questions about molecules in collections of inanimate matter is irrelevant and meaningless”.

E/: “They can also carry out other forms of purposeful work such as the mechanical work of locomotion”.

F/: “In fact, inanimate matter usually decays to a more random state when it absorbs external energy such as heat or light”.

G/: “This may imply that the nucleus is the real essential of the cell”.

H/: “This point of view seems to have been widely adopted…”

I/: “and they were perhaps also the first to attach a meaning to the term ‘cell’”.

The inaccuracies and shortcomings of translation in the above examples explicitly fall in the area of general language errors. In the examples A, & F, the cause of error or inaccuracies is failing to select the appropriate equivalent of the S.L. item (s). In ‘A’ The S.L. verb “approach” has been rendered into Arabic as: تتولى whereas the appropriate T.L. equivalent is rather تواصل. In ‘F’, the S.L. verb “decay” has been translated as تتعلق, whereas it is more appropriate and accurate to render it into the T.L. equivalent تتعلق. In ‘H’, the S.L. structure “widely adopted” has been inaccurately rendered as the adverb “widely” has been neglected. This is also applicable to ‘B’, & ‘C’ in which the relative clause “that describe the behaviour of inanimate matter”, and the adverb “comparatively” are omitted or neglected respectively. As for the examples ‘D’, ‘E’, & ‘I’, the inaccuracy of rendering seems to have resulted from missing the general signification of each.

From the above examples, it is explicit that a high percentage of inaccurate translation of Sc. & T. texts is caused by the lack of adequate command of the S.L. general (or standard) language. The translator’s acquaintance with the Sc. & T. Terminology and subject matter is not a sufficient guarantee against the shortcomings and inaccuracies of translation in the domain of Sc. & T. work.
translating(1) from the language of a developed nation into the Language of a developing or under-developed nation).

General Language Errors in the Translation of Sc. & T. Texts:

When one studies the Arabic translations of many Sc. & T. texts, one finds out that translators' errors or inaccurate renderings are also found in the area of general language. Let us consider the following examples:

A/: “Yet living organisms possess extraordinary attributes not shown by collections of inanimate matter. If we examine some of these special properties, we can approach the study of bio-chemistry with a better understanding of the fundamental questions it seeks to answer”.

وعلاوة على ذلك نستمك إلى الأفكارات الخلاقة، صنف من نوعية إسمنتية لا يمكن اظهارها بواسطة مجموعة المواد الجامدة وعندنا بعض هذه الصفات المميزة عندنا نستطيع أن نتوصل إلى دراسة الكيمياء الحيوية مع فهم أحسن للمسائل الأساسية التي تتطلب الإجابة عليها (2).

B/: “These molecules, when isolated and examined individually, conform to all the physical and chemical laws that describe the behaviour of inanimate matter.”

وعلى العموم نستطيع تحديد القواعد الكيميائية والكيميائية عليها عند عزل وفحص هذه الجزيئات.

C/: “In contrast, the inanimate matter in our environment, as represented by soil, water, and rocks, usually consists of random mixtures of simple chemical compounds, with comparatively little structural organization.

وعلى العموم نستطيع تحديد القواعد الكيميائية والكيميائية عليها عند عزل وفحص هذه الجزيئات.

(1) It is worth mentioning perhaps that Arab technicians who deal with technical items in colloquial Arabic make much use of transferred items in their daily speech as in the case of motor mechanics:

coil: كويل; fuse: فاز; battery: باتري; piston: بستن; carburetor: كابريت; dynamo: دينامو; tyre: دير; exhaust: إكروز; clutch: كلاج; gear: كهر; brake: بريك; switch: سويج; gasket: كاكرتي; wire: وير.

(2) Examples “A–F” are quoted from: A.J. Lehninger, Short Course in Biochemistry, Worth Publishers Inc., 1976; which has been translated into Arabic by Q. al-Chalaby et al., Univ. of Mosul, 1982.
Examples “G–I” are quoted from: G.B. Wilson, Cytologia, Reinhold Publishing corporation, New York, 1976; This book has been translated into Arabic by I. Barsoom et-al, Univ. of Mosul, 1978.
The Arabic versions of Sc. & T. texts abide in transferred terms (the original form of which is sometimes written to the side of the Arabic transliterations). Let us consider the following examples:

1. “though amino acids and even low molecular weight proteins with a tendency to make microspheres superficially similar to micrococci”

علمًا بأن الخواص الأمينية وحتى البروتينات الواعظة الوزن الجزيئي كميل إلى تكوين كريوبات micrococci تبدو ماثلة للميكروكوسي microspheres دقيقة

The terms “amino”, “proteins”, and “micrococci” have been transferred and transliterated into Arabic in the above rendering. The original English terms “microspheres”, and “micrococci” are found to the side of the Arabic forms (transliteration. in the case of “micrococci”, and translation equivalent in the case of “microspheres”).

2. “Living organisms are made of protoplasm”.

تتكون الكائنات الحية من البروتوبلازم

The term “protoplasm” is transferred and transliterated in the above rendering (into Arabic).

3. “although in the case of viruses we may be approaching the situation where a nucleus or part thereof exists in the presence of a minimum or none of its own cytoplasm, for example, the bacteriophage”.

والشيء الذي لا يشك فيه حالة الرؤوس الذي تقترب إلى حالات توجد فيها نواة أو جزء منها يوجد قليل من الساينتوبلازم أو عدم وجوده كما في مثلثات البكتيريا

The term “cytoplasm” is transferred and transliterated into Arabic in the above example.

4. “Enucleate protoplasts either fail to carry on life processes at all”...

والبروتوبلازمات المحجرة النوى أما ان تفشل في مواصلة أفعالها الحيوية كليًا...

The term “protoplasts” is also transferred and transliterated into Arabic in the above rendering.

From the above examples, one finds out that the process of transliteration (and transference) is often employed when the translator is short of T.L. Sc. & T. equivalents (which is often the case when
This process is called ‘Al-Naht’:
e.g. asymmetry: كهرومائي
Space-time: الزمان
photiclasticity: الصويرة
Hypodermic: تعبدى
hydroelectric: كهرومائي
electromagnetic: كهرومائي
Acrobia: الارتياح
subsoil: تعربه

Al-Naht, however, is not encouraged by the Arab academies.

D. Transference:
Transference is encouraged by innovators when no equivalent
T.L. item is found; but detested by purists, who accept it as
a temporary measure till new Arabic Sc & T. terms are coined
later. The Arab academies have succeeded in replacing some
transferred terms by Arabic equivalent ones as in the case of:
“telephone”: هاتف
“microscope”: برازيم
“thermometer”: مقياس حرارة
“microwave”: موجة دقيقة
“tractor”: جرار
“barometer”: منوأ

In some other cases, the suggested Arabic terms do not seem
to be successful (such as: oxygen: مذاب، أوكسيجين), because
some transferred terms have been in use for a long time, and
have thus acquired formal and contextual Arabic meanings,
and have also been naturalized according to Arabic grammar
(i.e. have acquired new derivative forms in accordance with
the Arabic rules) as in the case of:

"مذاب، مذاب، مذاب، مذاب"
"منوأ، منوأ، منوأ، منوأ"
"بروتوبلازمية، بروتوبلازمية، بروتوبلازمية"

Such words should rather be treated as Arabic terms since they have
acquired Arabic syntagmatic and paradigmatic relations.

In certain cases, the new transferred term is given a brief paraphrase
to make it more comprehensible, as in the case of:

"ohm": وحدة المقاومة الكهربائية
"amu": وحدة قياس الكثافة الذرية
"phon": وحدة قياس الصوت
"diopter": وحدة قياس البعد
"dyne": وحدة قياس القوة
"gauss": وحدة قياس المجال
"vector": وحدة استقطاب
"farrad": وحدة السمة الكهربائية
"magneton": وحدة العزم المغناطيسي
Transference (into Arabic) is not free from problems, because the some terms are transferred from English into the Arabic of the Middle East Arab countries, whereas other terms come from French (into the Arabic of North African Arab countries) since English is the second language learnt in the Middle Eastern countries and French is the second language in the North African countries.

The solutions suggested by the Arab Academies concerning the problem of scientific terminology in English – Arabic translation (or French–Arabic translation) are:

1. The translators are advised to use the classical scientific Arabic terminology wherever applicable whether those terms that have been transferred into many European languages (such as: alcohol, alkali, alembic, alchemy, alquimia, mercurial, arsenic, corona, borax, etc) or such terms that may be considered the equivalent of foreign Sc. terminology (such as:

   *الشب* for ‘alum’،
   *الامونيا* for ‘amonia’،
   *الكالسيوم* for ‘calcium hydroxide’،
   *الاسفرار* for ‘calcium sulfate’،
   *الجلد* for ‘Calcite’，
   *النحاس* for ‘copper sulfate’،
   *الكربونات* for ‘carbonate’،
   *الكالسيوم* for ‘calcium oxide’،
   *ألبرتيك* for ‘optic nerve’،
   *الأشعة* for ‘rays’،
   *شبكية العين* for ‘retina of the eye’،
   *التوربين* for ‘filteration’،
   *التيتانِر* for ‘crystallization’)

2. When no such equivalent classical Arabic scientific term is found, the translator is advised to follow one of the following procedures:

   A. The process of what is usually referred to as “Majaz” in which a new denotation is assigned to a classical Arabic term (as in the case of *ظلال* for train, which originally denoted a caravan of camels; *سیرة* for car, which originally denoted all moving things; *دبابة* for military tank, which originally signified crawling animals or creatures that live on earth).

   B. To make use of the derivational potential of Arabic which has a variety of derivational forms:

   *مافلَالَّ* : مأوى و موطن و مصدر و مفعول
   *ميفالَّ* : مرفوع و مثير و مخبر
   *ميفَال* : منثوب و منشار و مصار
   *فاَتْلا* : رافعة و شاحنة و طائرة و جائحة و كامحة
   *فاَقْتَال* : كسارة و دراجة و نفاثة و غواصة
   *فاَقْتَالْ* : طراد و غواصة و نفاث و جواز

   C. Making compound terms by combining the roots of more than one word.
It has often been the case that a Sc. or T. term has been given different renderings by different bodies or authorities, and thus creating further confusion and inconsistency in the translation of Sc. & T. language. Let us consider the following examples:

<table>
<thead>
<tr>
<th>The SL Term:</th>
<th>Arabic Equivalent (as suggested by the Journal of the Iraqi Academy, vol. 23 1973)</th>
<th>Arabic Equivalent (as suggested by the Moroccan Journal al-Lisan al-Arabi vol. 8, No. 3, 1971)</th>
</tr>
</thead>
<tbody>
<tr>
<td>volatility</td>
<td>تقلاب</td>
<td>مصعّد</td>
</tr>
<tr>
<td>alkaline earth</td>
<td>أثربة قلوية</td>
<td>أقالة ارضية</td>
</tr>
<tr>
<td>flow</td>
<td>جريان</td>
<td>سيلان</td>
</tr>
<tr>
<td>gravity</td>
<td>جاذبية</td>
<td>ثقل</td>
</tr>
<tr>
<td>power</td>
<td>قدرة</td>
<td>قوة</td>
</tr>
<tr>
<td>radial</td>
<td>شعاعي</td>
<td>نصف قطري</td>
</tr>
<tr>
<td>angular momentum</td>
<td>الزخم الزاوي</td>
<td>الزخم الزاوي</td>
</tr>
<tr>
<td>carburator</td>
<td>ميجرر</td>
<td>مقطع</td>
</tr>
<tr>
<td>clutch</td>
<td>جهاز تشقيق</td>
<td>وصل</td>
</tr>
<tr>
<td>coil</td>
<td>وشيعة الأشتعال</td>
<td>ملف</td>
</tr>
<tr>
<td>hub cap</td>
<td>غطاء المحور</td>
<td>غطاء البطيخة</td>
</tr>
<tr>
<td>rack</td>
<td>تروس</td>
<td>شبكة</td>
</tr>
</tbody>
</table>

In an attempt to overcome the problem of multiple Arabic renderings for the same Sc. & T. term, two co-ordinating organizations were established: The Bureau for co-ordination of Arabization in the Arab World in Rabat (Morrocco); and The Association of Arab Academies in Cairo to co-ordinate the efforts of Arab Academies (Siene, 1985).

Since translators rarely restrict themselves to dictionaries or glossaries produced by official bodies or Arab academies, and often coin their own terms or equivalents, the co-ordinating efforts exerted by official or non-official bodies and authorities become a two-edged weapon; for in their endeavour to unify scientific terminology, they have themselves produced and disseminated different terminology. The situation thus becomes a vicious circle. This is not only applicable to the national level, but also true of the situation of Sc. translation within the same country owing to the lack of serious and practical co-ordinating measures. A translator would resort to transference when no T.L.equivalent is found for a certain S.L. item.
What adds oil to the flames is that Sc. terms increase nowadays by leaps and bounds. In the previous decade, the number of newly coined Sc. terms per day was estimated about 100 terms (Khan, 1979).

English–Arabic Sc. translation is almost always uni-directional (i.e. from English into Arabic), and problematic, because English is the linguistic medium of a scientifically developed nation; whereas Arabic is the linguistic medium of a scientifically developing nation. To find correct and consistent Arabic equivalent Sc. terms for the English Sc. terms is in fact a major problem in English–Arabic translation and this is responsible for a high percentage of errors and inaccurate renderings of such texts.

In an attempt to cope with such problems of translation (and Arabization), some Arab Academies were established (The Arabic Language Academy in Damascus, 1919; The Arabic Language Academy in Cairo 1932; The Iraqi Scientific Academy in Baghdad, 1947; The Arabic Language Academy of Jordon in Amman, 1976; and The Academy of Hatt al-Hikma in Tunis in 1953), all of which have been engaged with terminological issues and problems. In other Arab countries, research institutes were established, which became involved in the production of Sc. & T. terminology (The Institute for Studies and Research for Arabization in Morocco; The Kuwait Research Institute, The Arab Development Institute, etc). Many ministries of Culture (and/or Information in the Arab world (such as Iraq, Syria) have undertaken the promotion of translation into Arabic as well as the compilation and production of many specialized dictionaries and glossaries. Many Arab Universities (such as the Technological University in Baghdad, the University of Mosul (Iraq), King Abdullah University and King Faisal University in Saudi Arabia)); as well as many publishing houses (such as al-Ahram Establishment in Cairo, Librairia du Liban in Beirut, and Dar al-Mamnoon in Baghdad), have followed pace in producing Sc. dictionaries and glossaries in various fields. Some foreign oil companies too, have produced and compiled their own dictionaries and glossaries in the fields of oil industry, finance, and administration (as did ARAMCO in Dhahran, Saudi Arabia). Mass Media, as well as individual efforts on the part of translators, have produced and introduced their own ad hoc Sc. T. terms too, and influenced other individual translators.
Comparing the above S.L. text and its equivalent T. L. version shows the main features and characteristics of Sc. texts (simplicity and neutrality of style, the prevalence of subject matter, and Sc. terms, the lucidity of expression and verbal accuracy, etc.). The translator has managed to reproduce the S.L. information in his rendering (despite the fact that the two Languages are formally different which is explicit from the longer sentences and different structures used by the translator).

What Is Sc. & T. Translation & What are the problems of English-Arabic Sc. & T. Translation?:

Sc & T. translation is a process in which S.L. Sc. & T. text is replaced by T.L. Sc. & T. text that is found to be its equivalent.

According to Catford's classification of types of translation (1965) it may be classified as "Total" according to the notion of "Level"; and perhaps "Literal" in accordance with the notion of "Rank"; and "Full (when no transference is involved) according to the notion of "Extent". It also matches what Nida calls "Formal Equivalence", and what Newmark calls "Semantic Translation", since the main emphasis in Sc. & T translation is on the message or signification rather than on the general stylistic niceties of the medium.

The classification of this variety of translation as "Sc. & T." translation is in fact by virtue of dealing with the domain of science or scientific register (in contrast to "Literary Translation" which is related to the domain of literature or literary register; "Legal Translation" which is related to the domain of law or legal register, etc).

Since scientific translation is a process performed on Sc. & T. texts, the convergence of Sc. standards and progress between the S.L. & the T.L. plays an essential role in facilitating (or otherwise) complicating Sc. translation between any pair of languages.

Scientific terminology is specialized, and is not intelligible but to scientists and students of science. This is tantamount to saying that a translator would face many difficulties unless he has a general knowledge of the subject matter, and the T.L. has a developed equivalent Sc. register (and/or sub-registers). In developed countries, Sc. register is sometimes further divided into specialized sub-registers (e.g. civil engineering, mechanical engineering, electrical engineering, etc.). This does not seem to be the case in developing (or under-developed) countries.
derations of the linguistic medium, because Sc. & T. texts are not read for any sensuous pleasure or artistic grandeur and mastery (as in the case of literary texts), but for the information they contain (which is usually expressed in a language characterized with lucidity of expression and verbal accuracy, as well as simple or neutral style). The original author’s main concern in his use of language is to facilitate the comprehension of his text for the reader.

It is common knowledge that the translator of SC. & T. texts requires in the first place a general knowledge of the scientific discipline he translates from (with regard to the subject matter and specialized terminology of the relevant domain).

Let us consider the following English passage (from the domain of Biology), and its Arabic version:

Cytology May Be defined as that branch of Science which deals with the morphology and physiology of the cell. This definition raises the question, “What is a cell?” The answer normally given is purely descriptive and a cell constructed according to this definition would be difficult if not impossible to find in nature; indeed it is doubtful that such a cell could even exist. A cell defined by a cataloguing of its contents, valuable as such a definition may be from the point of view of classification, scarcely provides a fundamental concept. Further, such a definition, accepted uncritically may stimulate a degree of knowledge not consistent with the facts. A cell, whatever its morphological peculiarities may be, is an integrated and continuously changing system.

يمكن تعريف علم الخلية بأنه ذلك الفرع من العلوم الذي يتناول دراسة شكل وفعلية الخلية. ويثير لنا هذا التعريف التساؤل عن ماهية الخلية. ويمكن الجواب عادة وصفيًا تماماً وتكون الخلية المبينة حسب هذا الوصف صعبة الوجود لأن تكون مستحيلة في الطبيعة وفي الحقيقة هناك شك كبير بإمكان وجود مثل هذه الخلية. أن الخلاة المفهومة اعتدالاً من الطبيعة وفي الحقيقة تكون ذات قيمة من وجهة نظر التصنيف نادراً ما تغير غصن المفهوم الأساسي للخلية. والأكثر من ذلك فإن قبول هذا التعريف على علبه سوف لا يتفق له ما مع الحقائق الثابتة. ومهمة تناول الخلاة من حيث الشكل فهي جهاز متكامل ومثير يُستدبر.
Different scholars have divided texts into certain varieties according to their subject matter, such as scientific, legal, literary, etc. As to the functions of language, they have been classified into such varieties as the informative function (or referential, denotative, cognitive, descriptive), the vocative function (or social, rhetorical, affective), and the expressive function (or subjective). Among the minor functions of language, the phatic, metalingual, and aesthetic are mentioned (Newmark, P. 1982). Cripner and Widdowson (1975) mention seven types of such functions: the referential, the expressive, the emotive, the phatic, the cognitive, the contextual, the metalinguistic, and the poetic.

In the case of scientific (and technical) texts, the main function of language is informative (or referential, cognitive, denotative); and the usual style in which information is expressed is neutral and objective. The translator of such texts should therefore pay adequate attention to this aspect when reproducing the original information in the Target Language (Henceforth: T.L.).

Scientific and Technical (Henceforth Sc.& T.) texts are in the first place concerned with expressing facts, hypotheses, experiments, techniques, and/or theories. Sc. & T. terms differ from plain terminology since they do not accumulate emotional associations and implications. This is why the translation of Sc. & T. texts is supposed to be more direct, with fewer alternatives, and freer from aesthetic obligations or requisites. In other words, subject matter takes priority over stylistic consi