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English Element in Serbo-Croatian Technical Vocabulary*

Contemporary technology is represented by a number of specialised fields, each having its own, special terminology. Technical terminology has been throughout the world in a state of constant fluctuation, new terms being introduced with each technological innovation. In our investigation of the status of English loans in SC technical terminology we limited ourselves to four rather interesting areas—shipping, oil industry, high-frequency technology (TV) and nuclear physics, these areas abounding in English loans. The fact that the above mentioned fields had their terminologies developed at different times and in different conditions and environments added to their interest.

The first question demanding an answer is, why so many English words have been introduced into these particular fields. The answer is the historical and economic processes in this country and consequently the impact of technology coming from the English speaking countries upon the development of technological achievements in Yugoslavia.

The loan-words have been analysed on phonological, morphological and semantic levels. Analyses have been performed on a representative corpus of the E loans found in the terminology of shipping, oil industry, nuclear and TV technology. The corpus has been obtained both from written sources and orally, through informants.

I. TECHNICAL AND SCIENTIFIC TERMINOLOGY

The terms "technology" and "science" are not easy to define. For each new generation they mean something different.

* A Long Summary of the M A thesis *Engleski element u hrvatsko-srpskom tehničkom vokabularu*.

In the time of James Watt the results of science were represented by the steam engine, today, they are represented by hydrogen bombs, radars, TV-s, interplanetary flights and thousands of other things the generation of James Watt could never have dreamt about.

It is in the nature of language to follow science; it does not precede it, as people do not give names to the things they know nothing about. Only at the moment when some new results in science or technology are obtained, do the scientists start looking for the words that would stand as symbols for the results of their research. When we speak about the origins of technical terminology, the term "technical" should be replaced by the term "scientific" as "technology" only covers different branches of science applied to practical purposes. Consequently, the origins of technical terminology should be looked for in the early stages of science, which in the Middle Ages had the common name of "Natural Philosophy".

Scientists used to turn to Latin and Greek vocabularies to find new words for their discoveries throughout history. The reason is obvious. In the course of centuries Latin was the language dominant in Europe. All classically educated people knew Latin and even Greek and when a new word from the Latin or Greek vocabulary had been imported, it was easily understood.

The characteristics of scientific language are: 1) the consistency of meaning; 2) emotional neutrality; 3) the lack of euphony.¹

1. The consistency of meaning

Words usually change their meanings as a result of social or other changes in the lives of the people who use them. T. H. Savory² offers the example of the word "Casualty" which until 1913 meant no more than a mischance or accident resulting in injury or death, but between 1914 and 1918 acquired a deep emotional significance for all British peoples. Scientific words, on the contrary, do not change their meaning as a result of social or other changes. This singleness of meaning and constancy in form and function gives to scientific words a character which distinguishes them sharply from other words and relates them to the symbols of mathematics.³

2. Emotional neutrality

Another characteristic of scientific terminology and consequently prose written in this terminology is that it is informative. It exposes and explains facts without any emot-

¹ Savory, *The Language of Science*, A. Deutsch, 1967. p. 112. A.

² *Ibidem*, p. 45.

³ *Ib.*, p. 44.

ionally coloured shades of meaning present in both literary and spoken prose. Due to this fact and because of its singleness of meaning translations of such prose can be much more adequate and nearer to the original than the translations of literary prose.

3. *The lack of euphony*

Scientific terms do not evoke the feeling of beauty as so many literary and poetic expressions do. Very often they are constructed in the heat of the moment when the need arises. Frequently they are hybrid compounds invented with the single aim of expressing as adequately as possible characteristics of a new technical achievement, process or requisite, taking no account of the esthetic effect.

II. SCIENTIFIC TERMINOLOGY IN ENGLISH

In England the languages of science have been developed over the last 5 hundred years, at the beginning gradually, but as time advanced more and more intensively. The sciences are connected, they overlap and mutually contribute to each other's advancement. They deal with different subjects and different problems. The natural consequence is that each science has developed its own terminology specific for its particular problems. There is a language of chemistry, physics, medicine, biology, technology, etc.

Already in the seventeenth century scholars were beginning to take notice of the invasion of the mother tongue by the strange vocabulary of the scientists. This inspired John Wilkins, one of the founders of the Royal Society to suggest the universal language⁴ which all learned men should use in their writings. In this way English would be protected against foreign words and the scientists would have a jargon that would fit all their scientific needs. This idea was never put into practice for obvious reasons. The language of science should develop parallel to science and to the mother tongue of the people who use it.

E. Andrews⁵ states that technical terminology starts with Chaucer. In 1391 he produced for his son Lewis the booklet "A Treatise on the Astrolabe". The young Lewis obviously showed certain interest in astronomy, so his father, to encourage it, wrote this book in "naked wordes in English; for Latin ne canstow yit but smal, my lyte sone".

G. Chaucer borrowed the words from other languages and explained them in E. Thus the words "latitude", "longitude", "meridian", "declination", "ecliptic", "zodiac", "azimuth", "zenith", first came to be included in the English language.

⁴ *Ib.*, p. 44.

Another characteristic of scientific terminology is its narrow specialisation. The consequence of this is that the terminology of each particular field of science or technology becomes difficult to understand not only to the laymen but to scientists from other specialized fields of science and technology. In the British coal industry, for example, there are about 6000 specialized terms in use, many of which are understood only by the specialists in this industry. Some kind of control would be only too desirable because everyday practice in which the same word is used in different disciplines in a number of different meanings becomes more and more chaotic. An example of inconsistent usage are the English words "tube" and "pipe". In some industries they are complete synonyms whereas in others they differ according to all sorts of standards.

It consequently follows, that what used to be one of the qualities of scientific terminology consistency of meaning, cannot be applied for sure to the present state of affairs because of the tremendous activity going on in all fields of science and technology.

Savory divided the words used in the terminology of science and technology in the English speaking world into three main groups:⁶

1. borrowed words
2. imported words
3. invented words

1. *Borrowed words* are those taken by scientists from ordinary speech and given a specific meaning (salt, work, power, force etc). The quantitative sense of the word "force" which makes it the product of mass and acceleration is quite different from anything that the word "force" implies in everyday use. The expressions fatigue (of metals) and cracking (of oils) belong to the same group.

Many old words applied to new concepts change or modify their meaning. The original meaning of "machine" was a scheme or an intrigue. In the 17th century it began to be applied to a device for changing the magnitude or direction of forces or forms of energy. "Mechanic" which originally described the manual labour became the related adjective.

2. *Imported words* are taken from other languages, mostly Latin and Greek. Some of the words introduced into English by Chaucer came from Persian and Arabic. Though there were contributions from other languages, Latin and Greek dictionaries remained for centuries open to scientists not only

⁶ E. Andrews, *A History of Scientific English*, R. R. Smith, New York, 1947, p. 241.

from England, but from the other European countries. Henry Bradley made the following statement on the state of the English language at the time of the Renaissance: "The whole Latin vocabulary became potentially English". T. H. Savory thinks that this statement is hardly less true today than it was four centuries ago.

In history, the use of imported Latin words had a great advantage, as most readers were able to trace their etymology. In the present century the situation has greatly changed as Latin ceased to be the central medium of all higher education and Latin terms "are probably as helpful to the student as would be the comparable derivation of a scientific word from Ibo or Urdu".⁷

But in spite of this changed situation Latin and Greek remained the sources of new scientific terminology in a similar way to that in the time of Michael Faraday, who, having finished his basic research on the phenomena of electrolysis, appealed to a Cambridge professor of philosophy for suitable words. So in 1833 the terms anode, cathode, anion and cation came into existence.

3. *Invented words.* Words included in the first two categories make up the smaller half of E. scientific terminology. The demands of science and technology on existing linguistic sources of languages new and old were so numerous that they could not answer them. So the scientists had to invent names for the new concepts. The new words are made in different ways. As a rule the word reveals certain qualities of the concept it stands for. Prefixes are used in large numbers. "The Shorter Oxford English Dictionary"⁸ quotes 57 words beginning with the prefix tele- (telephone, telescope), 12 words beginning with phono-, 35 compounds with pyro-, 44 with thermo-, and 54 with photo-. Negative prefixes in-, a-, non-, un-, are used in scientific jargon as well as in everyday speech.

Prefixes connected with measurement and counting are used very extensively in the vocabulary of science and technology (univalve, bivalve, monoxide, etc).

The technique used frequently in the formation of new scientific words is to make a new lexeme out of the initial letters of a group of words that define a new development. The words belonging to this category are widespread and accepted by different languages (LASER-light amplification by stimulated emission of radiation, MASER-microwave amplification by stimulated emission of radiation, DEW-distant

⁶ T. H. Savory, o. c. in note 1, p. 32, 33.

⁷ *Ib.*, p. 40.

early warning, MOUSE-minimal orbital unmanned satellite earth, RADAR-radio detection and ranging, etc).

To sum up: Since the Middle Ages scientific terminology in the English speaking world as well as in the non-English civilized communities of Europe was developed in approximately the following way: the scientist in his research comes to a new idea or a new concept; to name the innovation he either borrows words from his mother tongue, or explores Latin and Greek dictionaries, where he finds lexemes he uses in either original or modified form. If the scientist borrowed the word from his mother tongue, be it either English, German, French or any other language, the scientists from communities, speaking other languages accepting his scientific postulates, translate the word into their mother tongue. If the word originates from the Greek or Latin vocabulary, European science accepts it with minimal modifications varying from language to language. When Newton proclaimed his laws of motion, the words "motion" (gibanje) and "force" (sila) were translated into different languages. On the other hand, when Faraday used the words anode, cathode from the Greek vocabulary they entered European languages only minimally adapted (SC = anoda, katoda).

This neat and simple generalization that might be good enough for centuries of slow, steady, growth of scientific and technological development is not in the least satisfactory in the rapid present day development of different branches of science and technology. The only thing that can be stated for sure is that the linguistic situation, as a mirror of the state of affairs on the battlefield of science and technology, is extremely complex and constantly changing. New words are being invented, the old ones are being given new meanings. As there is little time for linguistic strategy by the experts in science and technology, linguistic symbols are accepted as an integral part of the new procedures, techniques or products without being given much thought, especially in their initial application.

Consequently, if a certain community has a leading role in a certain branch of science or technology, it will exert a very strong linguistic influence in this particular field of science or technology.

Experts in the oil industry in many countries of Europe use a great number of English technical terms most of which went through different phonological and morphological modifications. These terms have not been translated into the native languages, they are being used both in literature and orally. In this particular field of technology English has become what Latin and Greek used to be earlier though the reasons for

this supremacy are obviously different. There is another generalisation that one could venture upon: there is a similarity between certain cases of word formation of scientific words in history and at present: in the time of Faraday the opinions of one expert were decisive in the formation of a new scientific word. Nowadays, the complexity of technological and scientific processes demands team work. But, in spite of this, a number of new scientific expressions are attributed to individual scientists. So it is well known for example, that the terms LASER and MASER were introduced by C.H. Townes of Columbia University.

III. ENGLISH LOANS IN THE SC-SPEAKING AREA

Shipping

In the jargon of shipping E loans are represented in large numbers. In many cases they have been completely assimilated into our language. The reasons are the following: since the beginning of the 19th century there has been a constant link between English and Croatian shipping, this link being retained until the present day. The nature of the link has varied. Once it was manifested in the service of our seamen on E ships as in the time of the French Blockade, or in merchandise from our ships in British ports, or in the penetration of English experts and E. capital into our shipyards (in 1930 the shipyard in Kraljevica was taken over by Yarrow & Co.), or as at present in cooperation between the experts of the two countries and in building vessels for British Shipowners in our shipyards. This link has existed in our shipping for more than 160 years, so the surprisingly large number of E. loans in our sea-faring terminology is a natural consequence.

The words were completely integrated into our system for the following reasons: a seaman who spends his life isolated on a ship produces a spoken language which in certain shades differs from the commonly accepted spoken language on land. In this language influences from different sources and the dialectal features of the sailor's district can be traced. The sailor regards his ship as a living being and knows the name of every tiny detail of it. The words he uses are of Croatian, Italian, English and Latin origin. In very many cases these terms differ from their synonyms used in the institutes or universities. Such typical, sailor's terms are not used by bilinguals; they cannot be found in written texts of any kind and sometimes it is difficult to trace their etymology. The sentence "vočman je na bodeku" (E the watchman is on the boatdeck") will be understood by

any rough sailor, though perhaps not by a young officer educated at a good college and coming to serve on a ship for the first time.

Duality of terms exists in non-technical terms as well. Ship and life are synonyms for a sailor and in life there are things besides those expressed by technical terms. (oficirski pentri, baksa cigareta, graš, sop, etc).

Between the two wars there have been strong purist tendencies coming from the University of Zagreb, the Navy and the nautical colleges, whose aim has been to reduce the linguistic loans in shipbuilding and seafaring to a minimum. They have only partially succeeded in replacing the loans by calques or made-up Croatian words in literature on the subject. This is the reason why in written documents very few E loans can be found. They exist in the everyday spoken language of uneducated sailors. The sailor and his master speak two languages and when the master wants to be understood by the sailor, he uses the sailor's language.

English loans on their oral way, via generations of monolingual speakers underwent considerable change before they were integrated into the SC system and because of this they offered the richest and the most interesting material for the analysis.

The Crude Oil Industry

In the oil industry in the SC-speaking area experts use terminology abounding in E. loans. They are phonologically modified but in most cases they have retained the original spelling. In the oil industry there are no significant purist tendencies. Untranslated E. terms have been used for years both in written texts and orally. This practice is similar to practice of other European countries flooded with E terms in exploration, research and production of crude oil. The reasons are obvious. Great Britain and the USA have been for years the leading countries in this particular field. The E loans used in SC in the field of the oil industry have been only partially integrated into our system and as they are mostly used by educated bilinguals this is probably their final status.

TV technology

Its history in this country is short. In 1956 the Zagreb TV center produced the first TV transmission, to celebrate the 30th anniversary of the first radio transmission. On both occasions Zagreb was to start a new era in this part of Europe. For the first two years French equipment was used, but in 1958

the machines produced by the American factories came into use (RCA, Ampex) In that year a flood of English words found its way into our TV terminology. The other European languages were exposed to the same influence since most innovations in the area of TV came from English speaking countries. At present the question of TV terminology is not settled. Our experts try very hard to beat a track. The general impression at the moment is that they try to compromise, accepting the loans accepted in European practice (e. g. the word "burst" is accepted in many languages); and where it is possible, they try to introduce Croatian words which are then popularised via textbooks and other publications.

Nuclear physics

Soon after the war research work on nuclear energy started in Yugoslavia. A number of young experts specialized in the United States, apparatus has often been bought there, so there is a considerable influence of E. terminology felt in this field. The terminology of nuclear energy is in a state of a permanent flux. There is a tendency to replace the E. names of the concepts by the SC words especially in the written language. When an expert in the field of nuclear energy writes a paper or an article, he will tend to make his language as free from loans as possible. In most cases he will use calques or periphrases. If a term is made ad hoc, to suit his needs, he will use the E. term in parenthesis. In terminology of nuclear energy a duality between spoken and written language is noticed, but the reasons are different from those in seafaring terminology.

Generations will pass before this branch of science establishes a tradition in this country and along with it a standard terminology. Whether in this terminology the purist linguistic tendencies or the opposite will prevail, the future will answer.

IV. THE PHONOLOGICAL ADAPTATION OF E. LOAN- WORDS

In the process of phonological adaptation the word goes through three stages before being integrated into the system of the borrowing language. In the first stage the word retains the English phonological characteristics and does not fit the system of the borrowing language. It has the status of a foreign word.⁹ In our corpus for analysis this is the stage in which the

⁸ *Ib.*, p. 42.

⁹ R. Filipović, *The Phonemic Analysis of English Loan Words in Croatian*, 1960, p. 13.

names of the new technological processes, new appliances, new techniques are found. Here are found the words from TV technology, nuclear physics, electronics (preview switcher, pencil tube, steprecovery dioda.) These words are used by a small number of technological experts. The moment the technological process is assimilated, the word is either translated into Croatian or, used in the English version by a wider circle of people, it is transphonemized and so it reaches the stage of phonetic compromise.¹⁰ In this stage many terms used in the oil industry are found. (blowdown uređaj, bright stock).

In the third stage the word has been completely integrated into our phonological system and phonemic distribution and accentual system correspond to the system in our language. Such words are present in great numbers in the language of seamen; they are used to denote parts of the ship, the engine room and other objects closely connected with the work of a seaman (banak, bodek, krulista).

The element determining the form of the loan is the process it went through on its way to the borrowing language. Words that came via written documents usually base their pronunciation on spelling. In these words the pronunciation is much more consistent than in those that came orally.¹¹

There are words in our corpus that probably came orally and they were so successfully assimilated into our system, that it is sometimes difficult to trace their etymology (štubok-, stuffing box, likof- leak off). The above mentioned are extreme cases clearly illustrating the way a word passes from a native speaker to a poorly-educated monolingual of the borrowing language who uses the word in a narrow technical sense. The words which have come into SC recently via magazines and other written documents, do not change their pronunciation according to spelling since they are used by bilinguals, mostly intellectuals. Both spelling and pronunciation are minimally changed and almost correspond to the original spelling and pronunciation (heat transfer, single side band, etc.).¹²

The analysis of our corpus confirmed the results of Professor Filipović's analysis in the following:¹³ English vowels from the first group /i:/, /e/, /ʌ/, /ɔ:/, /u:/ are adapted according to the pronunciation /i: > i (breeder > brider) e > e (dead wood > dedwud) ɔ: > o (foreman > forman) with the exception of the word trawler which is pronounced according to its spelling (travler); u: > u (crew list > krulista) ʌ > u, o. The

¹⁰ *Ib.*, p. 34.

¹¹ *Ib.*, p. 37.

¹² For a more detailed account, see the MA thesis, quoted in pp. 35. 36.

¹³ R. Filipović, o. c. see note 9, p. 37.

pronunciation of this phoneme is formed on the basis of English spelling (cutter > kuter, sponge > šponga).

Pronunciation of the diphthongs of the first group has been formed according to English pronunciation $ei > ej$ (container > kontejner). Exceptions are some words that formed their pronunciation according to English spelling (copperpaint > koperpajm).

The vowels of the second group have been adapted in the following way: $i > i$ (clipper > kliper), $e > a, e$. Words borrowed earlier have the phoneme *a* whereas the words borrowed recently have *e* (flange > flandža, cracking > kreking). The latter have probably been imported by bilinguals. $a: > a$ (target > target) $o > o$ (joggle > džoglovati), $u > u$ (push > puš). Diphthongs of the second group: $oi > oj$ (boiler > bojler), $ou > o$ (stroker > štroker).

Vowels and diphthongs of the third group have been adapted as follows: $ə > ar, er$ (turning gear > tarning gir, burst > berst), $ə$ in the final position becomes *er* (marker > marker), $iə > ir$ (gear > gir) $eə > er$ (square > škver). There is no diphthong $uə$ found in our corpus.

Consonants of the first group (b, g, m, n, f, l, h, s, zʃ, ʒ, tʃ, dʒ, j) and consonants of the second group (p, t, d, k, r) have been replaced by their Croatian counterparts, whereas the consonants of the third group modified as follows: $θ, ð > t$, $ŋ > n$, $w > v$. Interference of a foreign language may lead to a redistribution of phonemes in the borrowing language. In our corpus we have found 14 initial consonant clusters with two consonants, and six consonant clusters with three consonants. 13 initial clusters (two consonants) exist in SC and *fl* is an innovation. Among the clusters with three consonants *srp* > *špr* is an innovation, coming to our language via German. *skv* > *škv* is also an innovation due to the borrowing from E.

In the final consonant clusters very interesting innovations are found. In SC linguistic system there are only four final consonant clusters *st, št, zd, žd*. In the analysed material there are 15 final consonant clusters, only one of which-*st*-corresponds to the SC cluster (formast, berst). Consequently, 14 groups are innovations. The most productive is the cluster *ng* (šeping, špring, bojling, etc).

In the cluster *nk* a complete integration into SC phonological system took place and *a* was inserted (banak).

To sum up: The analysis of E elements entering our phonological system shows an adaptation of E phonemes into their SC counterparts, innovations can be observed in consonant clusters, especially those in final position.¹⁴

¹⁴ For a more detailed analysis see the MA thesis, pp. 34–59.

V. MORPHOLOGICAL ADAPTATION OF E. LOAN- WORDS

The degree of morphological adaptation of loans found in our corpus varies, depending on the number of people who have been using the word and on the time this word has spent in our language.

Words from sea-faring terminology that have become a part of the seaman's everyday life have been completely integrated into our system. (Na *bodeku* ima mnogo vode). Most of the words in the oil industry which have been used predominantly by bilinguals and experts in this branch of industry are transphonemized but as a rule keep their original spelling. They have been morphologically adapted and can be inflected. (Nastao je kvar na pipe-stillu).

Interesting are the words where the process of integration has only just started. They are usually the names of the most recent "technical procedures"¹⁵ to use Bloomfield's term. In TV technology for example, there are words so foreign to our language that they cannot be inflected. As they have to enter syntactic relations which in SC are expressed by flexions, they are followed by a SC word in juxta- position. (Oscillator s pencil-tube cijevi). It is evidently only a temporary solution as it is not likely that a hybrid consisting of an E. noun and its translation into SC could persist in the language. It is questionable whether this dilemma will be solved in favour of "pencil-tube", or "pencil cijevi". The relation between the number of bilingual and monolingual speakers will probably be decisive, but the solution of the problem could as well be a calque or an original Croatian word taken from the inventory of our language.

One of the essential differences¹⁶ between the E and the SC morphological system is the category of gender. All the E. nouns change their natural gender into grammatical on entering our linguistic system. As a rule the stem of the new noun is the nominative singular of the E. substantive. In only one case in the corpus the nominative plural formed the stem of the E. loan. (Binsovi su napunjeni žitom). The case is analogous to the nouns cakes and drops,¹⁷ the subject of Filipović's investigation

Masculine

The nouns ending in a consonant are declined as SC masculine nouns ending in a consonant. Exceptions are a limited

* For a more detailed analysis see the MA thesis, pp. 60—78.

¹⁵ L. Bloomfield, *Language*, New York, 1933, p. 444.

¹⁶ R. Filipović, "Jezici u kontaktu i jezično posuđivanje", *Suvremena lingvistika*, Zagreb, 1967, u. n. p. 72.

¹⁷ *Ib.*, p. 74.

number of nouns that have received feminine gender. So called "masculine gender tendency" played an important part¹⁸ in determining the gender of the E loans. The gender is recognized by the case flexions and by the gender of the attributive. (Prebaci konop preko *bima*. U *ovom* vinktanku . . .).

English loans are represented in the names of different types of ships. They have all become masculine (coaster, liner, tanker > *koster*, *lajner*, *tanker*). The noun *tramper* (bio je ukrcan na *tramperu* nekoliko godina) does not appear in standard E. dictionaries in the meaning of "a freight ship that has no regular schedule". Only the form "tramp" is registered. It seems that in this case the analogy was so strong that the E suffix was given to the noun in the borrowing language, though there was no suffix in the model language.

Feminine

is represented by a smaller number of nouns. There are the nouns spelled with *e* in the final position. In SC they end in a (flange > *flandža*, sponge > *šponga*, line > *lajna*, etc) Filipović suggests¹⁹ that the feminine here is due to another feminine noun of a similar meaning He mentions the examples of *yawl*, *yacht* > *jola*, *jahta* and their analogy to *lađa*.

In our corpus there appears the noun "list." Entering the compounds it obtains the ending *a* probably under the influence of the German noun *die Liste* which must have been known in Croatian for a long time. It is not impossible that the Italian noun *lista* was known in sea-faring business. The nouns in our corpus are *krulista*, *čeklita* (crew list, check list).

The adaptation process of the compounds whose second element is the noun *pump*, coming first from German, is very interesting. The compounds *wire-pump* and *worthington-pump* lose their second element and receive the suffixes for feminine nouns *-ica*, *-ka* — *vajerica*, *vortingtonka*. It is assumed that the following process took place: new kinds of pumps were introduced on the ships, along with their names. As the noun *pump* already exists in the language and is feminine (German variant), the new specimens are classified as feminine. As our language has not got compounds in juxtaposition, the compounds lose their second element and receive the suffixes for feminine *-ica*, *-ka*. (analogy to *blanjatica*, *alatljika*).

Nouns denoting kinds of timber are feminine in SC and receive the suffix *-ina* (*borovina*, *jelovina*, *hrastovina*, etc) The kinds of timber used in shipbuilding are often of E. origin and

¹⁸ *Ib.*, p. 72.

¹⁹ *Id.*, p. 73.

²⁰ *Pomorska enciklopedija* vol. 2, Leksikografski zavod FNRJ, Zagreb, 1955, p. 525.

this led to the development of hybrids used not only in the jargon of seamen, but even in the literature on the subject. So in *Pomorska enciklopedija*²⁰ the following terms can be found: pić-pinjevina, white-pinjevina, weymoth-borovina).

Neuter

is not represented in the E. loans except in the verbal nouns which were derived from the verbs borrowed from E. and given the suffixes -ovati, -ati. The verbs were derived into nouns by suffixes -ovanje, -anje

Number

The plural of the E. loans is formed by Croatian flexions and follows the general rules of plural formation in SC. (deriči, vinčevi, lokovi, štofemboksovi, travleri, lajneri, vočmani, feribotovi, etc).²¹

Case

E. loans in SC are either completely integrated into our morphological system and consequently take all Croatian case endings, or remain unchanged and on the morphological level correspond to the original E. nouns. The latter case is represented by a small number of nouns; the loan stands in juxtaposition with the SC noun which is qualified by it and receives the flexion. (Brod je opremljen kargo-ker uređajem, Centrala radi po Cross-bar sistemu).

Most nouns have been completely integrated into the Croatian morphological system. As many of them have been accepted by monolingual speakers with very limited education, they have even been attributed some dialectal characteristics of the speaker's native district or village. So, for instance, the seamen in Hrvatsko Primorje use the loans with the flexions for short plural — štuboki, ringi (stuffing box, ring) by analogy to the short chakavian plural -zidi, vuki, etc.

Verbs

According to what we found in our corpus the verbs borrowed from English are integrated into our verbal system by taking aspectual infixes and infinitive flexions -ati, -ovati, and the ending *ira* coming via German plus infinitive ending *ti*.

One of the differences between the two languages is the category of aspect. Being integrated into Croatian verbal system the English loans are aspectually unmarked and this is an innovation in our verbal system. Most of the borrowed verbs function as ambivalent. As our language has been *borrowing*

²¹ For a more detailed analysis see the MA thesis, pp. 70, 71.

verbs extensively from other languages, it could lead, as Professor Filipović warns,²² to a new subcategory of aspectually unmarked verbs.

Ambivalent verbs are: kodirati, kabirati, koksovati, čarterovati etc.

Some verbs have been integrated into our verbal system to such an extent that they even accept the category of aspect. But here the semantic component of verbs was decisive in defining the aspect.

Adjectives

are represented in a comparatively small number. They can be divided into those: a) that remain in their original English form, morphologically they do not enter our system — inšor, ofšor, on air, off air. (Brod plovi inšor rutom). *Ofšor* and *inšor* are indeclinable, though they have been phonologically integrated. In their English form these words had been originally adverbs, but they have been used in our language as adjectives. But already in English, conversion has taken place and in the Shorter Oxford Dictionary "inshore" is defined as "adverb and adjective." b) adjectives formed from English nouns take the Croatian adjectival suffix *ni* — ("barrier layer" has been translated as "barijerni sloj", whereas from the noun "slip" the adjective "slipni" is derived. "slipni škopac," "slipna kuka" etc.²³

VI. SEMANTIC ADAPTATION OF LOANS

Because of the narrow specialisation in different fields of technology, polisemy is a very frequent phenomenon in technical terminology. In the English-speaking world, terminology varies not only between England and America, but among different industries and fields of technology, having a similar function and problems.²⁴

The chaotic situation in the field of technical terminology on the semantic level in English is reflected in the loan- words that have entered our technical vocabulary. One and the same term can be used in several areas of technology in different

²² R. Filipović, "Jezici u kontaktu i jezično posuđivanje", *Suvremena lingvistika*, Zagreb, 1967, u. n. p. 80.

²³ For a more detailed analysis see the MA thesis, pp. 74, 75.

²⁴ *Ib.*, pp. 79—84.

meanings. It is difficult to draw a line between polysemy and shift in application,²⁵ especially, as each new day brings about semantic changes and each state is only temporary.

Among the English loan- words the term *bunker* appears in different contexts:

1. A large bin for a ship's coal and hence the verb *bunkerat* (to load the coal)

2. A container for radioisotopes

In both cases the function appears to be identical so this is obviously the case of a monosemantic word where shift in application occurred. Similar is the word *container*, but quite different the polysemantic word *bar* which Professor Filipović has already discussed in one of his papers.²⁶

In our semantic analysis of English loans we have limited ourselves to those items that have in our language been sanctioned by written or oral usage. Out of five categories Filipović²⁷ distinguishes in his analysis of E. loans, we found three in our corpus, namely: 1) the changes in semantic extension, 2) ellipsis, 3) the change of proper names into common nouns. According to Filipović²⁸ the changes in semantic extension go in three directions:

1. a) *Zero semantic extension*. The word remains semantically unchanged and corresponds to the meaning in E. To this group belong words denoting fundamental technological processes, mechanisms, parts of the ship or engine, units of measure, e. g. *forpik* (forepeak), *vinktank* (wing-tank), *travler* (trawler) *kreking* (cracking), *berst* (burst), etc.

Many invented words are in this category -*laser*, *maser*, *radar*, etc. Most words analysed in this corpus belong to this group as should be expected, keeping in mind the fundamental function of technical terminology.

b) *Restriction to only one specialised meaning of the word*.

In this group there are words classified by T. H. Savory as borrowed from everyday spoken language. In English, "coexistence between old meaning and new within the same synchronous system" has taken place,²⁹ but in our language the word exists only in its new, specialised meaning. Monolingual speakers regard such words as purely technical, bilingual speakers on the contrary associate them with their everyday meaning. Such

²⁵ St. Ullmann, *The Principles of Semantics*, Glasgow, 1957, p. 119.

²⁶ R. Filipović, *Filološki pregled* 1—IV, 1967, p. 92.

²⁷ *Ib.*, p. 87.

²⁸ R. Filipović, "Semantic Extension Changes", *SRAZ*, 25—26, 1968, p. 110.

²⁹ St. Ullmann, *o. c.* in note 25, p. 89.

words are bim (beam) kriket (cricket) šponga (sponge), špring (spring). In these words two semantic changes have occurred. In the model language, transfer of meaning and polysemy has taken place; in the borrowing language, restriction of meaning made them monosemantic words limited to a technical item.

c) *Expansion of meaning*. In this corpus only one noun with an expanded meaning has been found, and that is *boiler*. In English it means "a tank in which water is turned into steam" and in Croatian it also means a heater.

2. *Ellipsis*

is very frequent in English loans in Croatian. A number of English words lose one of their two elements: bajpas (by — pass valve) likof (leak off ejector), kaštel (forecastle), blenking (blanking pulse). Michel Breal³⁰ treats such processes as "infection" in which one word has been "infected" by the meaning of the other with which it is in frequent contact.

3. *The Change of Proper Names into Common Nouns*

Professor Ullmann says that proper names are a means of individualising³¹. They are analytic as opposed to appellatives which *synthesize* and classify. The phenomenon of appellative use of proper names is found in our corpus in a number of cases. The measuring units named after the scientists who invented them belong to this group. They came to our system with a polysemantic function, denoting proper names and measuring units; and remained in this double function in the borrowing language:

Joul — džaul

Watt — vat

Rutherford — raderford

The second group of the proper names used as appellatives make the words found in the spoken language of seamen. Two semantic changes took place there. Still in English, the proper names Worthington, Kingston, Butterworth, passed into the appellatives and in juxta-position with the second element formed the name of a certain technological concept (Worthington pump, Kingston valve, Butterworth system). When these words were borrowed by our seamen ellipsis occurred and the final linguistic product found in the spoken practice of uneducated seamen has been: vortinktonka, kingston, batervort.

³⁰ Michel Bréal, *Essai de sémantique*, Paris, 1921, p. 151.

³¹ St. Ullmann, *o. c.* in note 25, pp. 73, 74.

³² A complete analysis of the corpus, the MA thesis pp. 98—182.

Semantic changes that took place after the English technical terms had entered our linguistic system, have been classified into the three above-mentioned groups, but it has been impossible to come to any definite conclusions, as the technical terminology is in a state of a permanent flux.

In SC technical terminology two opposite trends can be discerned: one leading to internationalizing and the other to linguistic purification of terminology. As technical innovations accompanied by linguistic innovations are flooding the scene, no final statements are possible. The only thing that can be done in this extremely dynamic state of affairs is to register changes and trends.