Bibliography

Victor H. Yngve   71
The Outlook for Mechanical Translation
Le Linguiste. No.4, (1956), pp.5-7.

Discusses the direction of current MT research
and its possible effect on the translation pro-
fession.   In the future, the abundance of rough
mechanical translations of technical articles
may call attention to many that are of merit and
thereby increase the demand for accurate trans-
lations by competent translators.

                                                   Author

L. Brandwood   72
The Translation of a Foreign Language by
Machine
Babel. Vol.2, No. 3, October 1956, pp. 111-118.

See Brandwood, Mechanical Translation of
French, in this issue of MT.

Edmond Cary   73
Mécanismes et Traduction.
Babel, Vol. 2, No. 3, October 1956, pp.102-107.

A philosophical essay about the effect of mecha-
nical translation on people.   There is some
discussion of the development of special termi-
nology in various fields and the effect that it
has had on modes of thought.   One of the chief
benefits of mechanical translation, according
to the author, will be its contribution to our
understanding of the nature of language and
thought.
                                     J.R. Applegate

M.V. Heberden   74
Teaching the Machine Grammar
Babel, Vol.2, No. 3, October 1956, pp. 119-124.

A summary of the work of the Italian Operation-
al School based on Silvio Ceccato's article "La
grammatica insegnata alle macchine". (See
abstract 70, MT, Vol.3, No. 1.)
                                     J.R. Applegate

Andrew D. Booth   75
Present Objectives of MT Research in the
United Kingdom
Babel. Vol.2, No. 3, October 1956, pp. 108-110.

A presentation of the principles which form a
basis for research being done in England.   A
discussion of the problems encountered in de-
veloping machine techniques for the translation
of French to English is given.   The problems
include: reduction of look-up time for diction-
ary items, inflected forms, idioms and rear-
rangement.
                                     J.R. Applegate

Victor H. Yngve   76
The Outlook for Mechanical Translation
Babel, Vol. 2, No. 3, October 1956, pp.99-101.

See abstract 71 in this issue.

L. Brandwood   77
Previous Experiments in Mechanical Transla-
tion
Babel, Vol.2, No. 3, October 1956, pp. 125-127.

A comparison of three attempts at mechanical
translation (Georgetown, Birkbeck College
and the USSR Academy of Sciences) is given.
The author does not attempt to evaluate the ex-
periments because of the inadequacy of the
reports on which the article is based.

                                     J.R. Applegate

V.H. Yngve   78
Terminology in the Light of Research on
Mechanical Translation
Babel, Vol.2, No. 3, October 1956, pp. 128-132.

Discusses how research aimed at resolving
multiple-meaning problems in mechanical trans-
lation might help us to understand how words
with several meanings can be used unambigu-
ously.   Points out six kinds of contextual clues
that a reader uses in resolving ambiguity.
                                                   Author

D. Panov 79
Concerning the Problem of Machine Translation
of Languages
Academy of Sciences, USSR, (1956), 35 pages.

This is a report of research being done at the
USSR Academy of Sciences in the field of me-
chanical translation. The basic assumption
that mechanical translation requires more than
determining the meanings of words in the source
language leads to a division of the translation
program into parts: (1) analysis of the source-
language sentence to determine the meaning and
grammatical characteristics of each word in it
and (2) synthesis of the target-language sen-
tence according to previously formulated rules
that are applied to the information obtained
from the analysis of the source-language sen-
tence.

J. R. Applegate

D.Y. Panov 80
Automatic Translation
Academy of Sciences of the USSR, Moscow,
(1956), 45 pages. (In Russian).

A description of the methods used in program-
ming the BESM computer to translate from
English to Russian. It is considerably more de-
tailed than the Mukhin article. (See abstract 69,
MT, Vol.3, No.l.)

V.H. Yngve

Paul Garvin 81
Some Linguistic Problems in Machine Trans-
lation
For Roman Jakobson, Mouton and Co., (1956),
The Hague, pp.180-186.

The steps in translation can be discovered by a
reconstruction of the translation process from
a comparison of the original text with its trans-
lation. The results of this translation analysis
must be stated explicitly and unequivocally,
with each logical step in terms of the yes-no
decision required by the binary operation of
electronic circuits.

V.H. Yngve

Lew R. Micklesen 82
Form Classes: Structural Linguistics And
Mechanical Translation
For Roman Jakobson, Mouton and Co., (1956),
The Hague, pp.344-352.

Discusses the differences between the form
classes of structural linguistics and MT. In
structural linguistics the initial division of the
word material into the most inclusive word
classes (parts of speech) and the possible sub-
sequent subdivision of these larger classes into
subclasses are made on the basis of the struc-
tural or grammatical meanings signalled in
each case. In MT the initial division of the
word material is made on the basis of the gram-
matical and non-grammatical meanings of each
word. The criterion of potential mutual pin-
pointing alone supplies the basis for the deter-
mination of both intended grammatical and non-
grammatical meaning; therefore, as far as
possible, no MT form class should contain both
pinpointers and pinpointees liable to occur as
IC's of the same pinpointing problem. Further
division of MT classes is governed by engineer-
ing considerations that essentially render more
frequently occurring words more accessible.

In comparing structural linguistic and MT form
classes the factor of non-grammatical meaning
has, of course, also to be considered. If we
ignore the modifications necessary because of
engineering expediency, it would appear that MT
classes are not only more inclusive because they
are based on a consideration of the total mean-
ing of linguistic forms but also more realistic
in view of the fundamental semantic and formal
nature of every linguistic sign.

Author

J.R. Firth 83
Linguistic Analysis and Translation
For Roman Jakobson, Mouton and Co., (1956),
The Hague, pp.133-139.

A plea for building bridges between languages
on the basis of linguistic analysis rather than
on the basis of "naked ideas" as an interlingua
or on the basis of some universal grammar.

V.H. Yngve

Robert E. Wall, Jr.   84
Engineering Process in Machine Translation
The Trend. Vol.8, No. 3, July 1956.

A review of recent developments in computer
machines, coding, and memory devices as they
pertain to or can be adapted to MT with ex-
amples taken from Russian and French. Some
attention is also given to the cost of translating
machines.

G.H. Matthews

Lew R. Micklesen   85
A Machine Translates from one Language to
Another
The Trend, Vol.8, No. 3, July 1956.

A translation into English of a newspaper report
on the English translation program for the BESM
at the Academy of Sciences of the USSR con-
taining a short description of the coding, dic-
tionary, some logical operations, and the output
of a given English text.

G.H. Matthews

Geoff Douthwaite   86
The UW Automatic Language Translator
Washington Engineer, Vol. 8, No. 4 (Feb. 1956)

Brief sketch, with general schematic, of a de-
monstration "translating" unit using "time
delay sequential relay circuits", a drum con-
taining a 35-relay German vocabulary, a cor-
responding English drum, and teletype input
and output, which will transfer selected
German texts with no syntactic operations into
a word-for-word English equivalent, printing
"internationals" in their unaltered German
form, but searching its memory for vocabulary
item in hand by successively stripping off the
ending a letter at a time. Author emphasizes
contrast between MT and computer design and
necessity for syntax program.

R. B. Lees

Victor H. Yngve   87
The Translation of Languages by Machine
Information Theory, (Third London Symposium),
Butterworth's Scientific Publications, London,
pp.195-205.

See abstract 62, MT, Vol.2, No. 3.

Yehoshua Bar-Hillel   88
Can Translation be Mechanized?
Mada'. Vol.1, No. 2, April 1956, (In Hebrew).

Any operation that can be decomposed into a
sequence of definite basic operations, even if
these number in the millions, falls within the
range of electronic computers. It is clear that
the operation of translation can be broken down
in this way, at least in part -- especially with
respect to scientific texts. But the hitherto ac-
cepted methods require a rapid access mecha-
nical "memory" with storage capacity greatly
in excess of that of available electronic compu-
ters. The central problem of mechanizing
translation, therefore, is the preparation of
methods that permit a more restricted memory.
Several such methods are described here.

Author's abstract translated by
A. N. Chomsky

Enrico Maretti   89
Adamo II
Civiltà delle macchine, No. 3, (1956), pp. 25-32.

This article is primarily a description of the
mechanical model of mental processes con-
structed by the author and exhibited at the Inter-
national Exposition of Automation at Milan in
April 1956. Much of the article is devoted to a
discussion of the Italian Operational School and
the work of Silvio Ceccato. [See abstract No.70
in MT, Vol. 3, No. 1.] There is also some dis-
cussion of neurological theory which was used
in planning the model. A note by Ceccato on
the significance of the model is included.

J. R. Applegate

V.H. Yngve   90
The Technical Feasibility of Translating Lan-
guages by Machine
Electrical Engineering, Vol.75, No. 11, (1956),
pp.994-999.

This is a general discussion of the problems in-
volved in mechanical translation. The machine
requirements — size, speed, economy— for
word-for-word translations are considered. In
addition, the linguistic problems arising in me-
chanical translation on a sentence-for-sentence
basis are introduced, and possible avenues of
solutions for these problems are presented.

Author

R.E. Wall, Jr. 91
Some of the Engineering Aspects of the Machine Translation of Language
Communication and Electronics (AIEE), No. 27, November 1956, pp. 580-585.

Suggests various, presently feasible design characteristics for a Russian-to-English translator, yielding better than 10 words/sec. to compete economically with human translator: internal machine code for Cyrillic employing both 5 and 10 digit codes for the 80 distinct characters; omission of "internationals" from dictionary (about 10% of running scientific text); use of only end-of-word letter stripping from Reifler's compound-separation scheme to avoid skipping to new addresses in memory; use of alphabetic listing in dictionary, requiring one unique address per spelling; use of King, Brown, and Ridenour's optical storage on photographic plates; indexing scheme to locate approximate row address before scanning individual 6500-bit rows; separate storage of about 1200 most frequent words if dictionary search is longest (limiting) time factor, and possibly a similar separate idiom dictionary; and Bliss and Ruedy's cathode-ray screen high-speed teleprinter output. Design yields about 42 1/2 megabits of storage with 0. 065 sec/word access time. Author asserts need for further immediate research on linguistic problems attending use of grammatical "tags" in dictionary.

<div align="right">R.B. Lees</div>

A. Koutsoudas and R. Korfhage 92
The Computer as a Translator
Michigan Alumnus, Vol.63, No. 10, (Dec. 1956), pp.34-37.

Gives some of the history of Mechanical Translation and of the University of Michigan project. Indicates that most of the Russian endings are inconsequential in translation and that the problem of word order is a minor one. Words should be entered in the dictionary alphabetically by the first two or three letters and then in order of frequency. Endings should be discarded in most cases, and a few rules should be used to deal mainly with word order. Multiple meaning problems can be approached with a context of from two to six words. The whole meaning of an idiom is attached to a central word, with no translation of the other words when they occur in an idiom.

<div align="right">V.H. Yngve</div>

R.A. Crossland 93
Graphic Linguistics and its Terminology
MT, Vol.3, No. 1, pp. 8-11.

This paper represents a proposal for developing a procedure and appropriate terminology to be used in the analysis of written texts analogous to the procedures and terminology used in the analysis of spoken languages. The author proposes scientific analysis of written texts without reference to the spoken form of the language. He also suggests that the written and spoken forms of a language represent different realizations of concepts and should, therefore, be treated separately.

<div align="right">J. R. Apple gate</div>

A.F. Parker-Rhodes 94
An Electronic Computer Program for Translating Chinese into English
MT, Vol.3, No.1, pp. 14-19.

This is a discussion of the problems that arise in preparing a computer program for translation. Although the language pair considered is English and Chinese, general problems, symbols, dictionary ordering, etc., are considered The contrast between the "lexical" and "algorithmic" approaches is explored. The first requires listing all forms of the source language with target-language equivalents. The second means prescribing rules which permit discovery of word orderings represented by numerical symbols with rules for subsequent conversion of these symbols to significant forms in the target language.

<div align="right">J. R. Applegate</div>

R.H. Richens 95
Preprogramming for Mechanical Translation
MT, Vol.3, No.1, pp. 20-25.

In this paper the author gives a discussion of the steps required before a program for mechanical translation can be prepared. Translation is defined as a type of communication involving a change of symbols between utterance and reception. The operations of transferring meaning, structure and ambiguity as well as the insertion of necessary information and prevention of excessive semantic analysis are discussed.

<div align="right">J. R. Applegate</div>