Machine Translation -The User's Perspective

LAURIE GERBER

The Association for Machine Translation in the Americas (AMTA) holds biannual conferences in that attract MT users, researchers and commercial developers of machine translation (MT) and related technologies. At AMTA 2000 (held in October 2000, in Cuernavaca, Mexico), the fourth of these conferences, a full-day pre-conference workshop was held with the goal of bringing together experienced machine translation users to discuss their experience using machine translation.

The workshop occupied a full day, and included two invited speakers, (Kathleen Egan from the U.S. Government, and Paul Sheng, CEO and co-founder of TheOne Technologies), a panel discussion on "What we need from MT", two submitted papers, and breakout discussion sessions. A few of the participants had long-term experience working with MT, others a few years or less. Still others came to learn more about whether to use machine translation. Of those with real experience using machine translation, some used machine translation in relatively traditional ways: for assimilation and dissemination, and some used it online in very innovative ways. Although a small booklet was prepared from the papers submitted, the richest content came from the interaction and discussion among the 25 attendees. This article is an effort to capture the main points that emerged from the day's presentations and discussions at the workshop, as well as from the presentations during the main conference.

APPLICATIONS: FROM OLD GUARD TO NEW GUARD

Members of the MT community are generally familiar with the classification of MT use into "assimilation", "dissemination", and sometimes "communication" applications.   In assimilation applica-

tions of MT, the goal of translation is information gathering. Typically high quality is not as important as getting the information translated as quickly as possible. Often, translation in an assimilation task is used only to identify texts that need to be fully translated by a human. In dissemination applications, the goal of translation is to publish and disseminate information. The classic example of this is product literature. High quality is more important than speed. Unlike assimilation applications, the users have control over the creation of the source text and can adopt a controlled grammar and vocabulary that will help the computer produce high quality translations. The newest addition to this list is communication applications. Special interest group members, friends or family separated by language use MT for real-time communication. In a chat situation, occasional infelicities in the translation can be repaired just as misunderstandings are repaired in face-to-face conversation. These represent uses of MT with proven records of success. Users' workshop participants described ongoing use of MT in these areas, as well as some new variations.

Government agencies have long represented a core group among MT users in both the U.S. and Europe. Government uses of MT include assimilation - rapid scanning/gisting/filtering of large quantities of text for intelligence purposes - and dissemination - translation and postediting for distribution, for example within the European Union and NATO, and the Pan American Health Organization. The need for MT in these areas continues to be strong because the volume of material that needs to be translated is much higher than can be handled by the available/affordable pool of translators. Kathleen Egan explained that within government, use of MT is sometimes pitted as a tradeoff between training linguists and investing in the purchase/development of MT, but this is a false characterization because there will never be enough linguists to translate the desired volume. Skilled translators must be used where they are most needed - for full translations of documents that have been identified as important for full translation. MT continues to have a key role in accelerating throughput for human translators and in giving monolingual analysts access to foreign language publications.

Gustavo Silva of PAHO (the Pan American Health Organization) described one of the venerable long-term success stories in machine translation, the use of ENGSPAN and SPANAM by this branch of the World Health Organization to translate medical, public health, and agricultural texts. Mr. Silva is a translator and posteditor at PAHO. Hearing his description of PAHO's MT use reminded me of the first line of Anna Karenina by Leo Tolstoy, "Happy families are all alike; every unhappy family is unhappy in its own way." The concerns that Silva presented were the same sort that would be unavoidable in any MT application - the ongoing change of language, ambiguous texts, misuse of terms and grammar by authors, all of which produce suboptimal translations. None of these are avoidable when translating unrestricted input text on any topic. Silva's presentation seemed to excite remarkably few questions or suggestions, in contrast to other presentations, each of which included concerns or reports of organizational tension over the suitability of MT, management commitment to a full and effective implementation, resistance of translators to work with MT output, and others. At PAHO, the use of the systems and the systems themselves have grown up together, optimized into a sort of ideal "happy family" MT implementation.

In contrast to these established and "conventional" applications, the new guard is pushing the limits of MT, and redefining the categories of MT use. In the "DotCom" panel during the main conference, Walter Hartmann (who has a successful translation business with MT as one means of speeding throughput) described a project for a previous employer which did not succeed in the end. The goal was to translate travelogues written in hip (e.g. "Wired Magazine" style guide) vernacular. The project, which required the addition of 12,000 new lexical items to the MT lexicon just for food, regional historical terms, and other travel-specific items, was ultimately scuttled as too expensive.

In the users' workshop, Bob Sheng, CEO and co-founder of TheOne Technologies described his company's service localizing web content into Asian languages. The service is based on an "Application Service Provider" model, where the customer provides

only the content. A typical client would be a company with an online product catalog, or a news website with continually breaking stories. TheOne retrieves the updated content, translates it, and provides it to consumers in the requested language. This model provides a low cost barrier for the news organization because they don't need to add equipment or even change their workflow. TheOne does all necessary lexicon update and expansion. In fact, it is the posteditors working for TheOne who do the lexicon building, and who provide feedback directly to the MT developers. Mr. Sheng likened the introduction of MT into the translation process to factory automation where the people who used to be doing the hands-on work now oversee robots doing the work. Similarly, translators who used to do the translation themselves, now oversee an automated translation process as posteditors and lexicographers.

Services such as TheOne provides combine the demands of assimilation (where speed is more important than quality) and dissemination (where the provider's reputation is judged by quality) to squeeze MT performance from both sides. For a news site to provide relevant content in foreign languages, it must be available in all languages in near real time. This means little to no postediting, and constant dictionary updates to keep up with breaking stories and names in the news, etc. Like most assimilation tasks, this is one where speed is essential, but the news is subsequently disseminated, taking on properties of translation for dissemination as well.

Another innovative use of MT was that presented by Marina Urquidi who coordinates multilingual chat between international non-profit groups working on issues of economic development and standard of living in various regions of the world, including Latin America, Africa, and Asia. The field workers in each of these regions describe their experiences and seek advice from those in other regions. Urquidi's job is to run all the messages through the appropriate MT system, and disseminate them to the other regions. Urquidi, a translator by profession, typically does some minor touchup on about 30% of the translations produced. Interestingly, she felt that the unpolished translations have the distinct advantage of exposing the ways in which the writers think about the problems

they describe. The effort that readers must bring to understanding the message also leads them to a better understanding of the cultural perspective from which the messages were written.

Henry Story from AltaVista, who had described the beginnings of the AltaVista "Babelfish" translation service (using SYSTRAN) at the 1998 AMTA conference, reported that use of the translation service is still heavy, averaging 1.3 million translations/day. Users are requesting new languages ranging from Asian to Latin, as well as requesting higher quality output, chat and email. Challenges and areas for improvement include automatic topic identification (which would allow the system to invoke the appropriate specialized dictionary), automatic language identification (to automatically select the language pair), and working towards a profitable operation for this free service. 15-20% of Babelfish usage is translating web pages, the remainder is plaintext entered in the text window. Interestingly, many of the texts translated are only one or two words long, suggesting that some people are using Babelfish as a dictionary, rather than for full sentence MT.

As a final way of getting perspective on the profile of MT users, I include the 5 categories of users identified during a breakout session on how to identify a good fit between products and users

Internet users
-Want speed
-Need multilingual capability
-Text size is typically small

Small office/home office
-Typically one language pair (often the user's 2nd language)
-Typically specialized in one genre/domain

Professional Translator
-Willing to invest in customizing a system or writing rules
-Under pressure for quick turnaround of translation work
-Minimally needs good gist quality
-Often integrated with translation memory (TM)

Corporate user
- Needs to end up with 100% accuracy (after postediting)
- May invest time in customizing a system
- Human Translation is typically an option
- Speed is important

Translation service
- Uses some combination of human translation and MT

USERS' DESIDERATA

Dictionaries: Contrary to the conventional wisdom that users want bigger dictionaries, some users expressed a more pressing desire for better specialized dictionaries, and better lexicon building and customization tools. Walter Hartmann, whose translation service uses MT, claimed that beyond the most basic 2,000 words or so for a language, the lexicon delivered with an MT system is almost worse than useless. Translation clients tend to use a standard or proprietary set of technical terms, and corresponding technical translations for them. The fact that many words used in technical expressions also appear in general dictionaries means that when a technical term is not available in a customer or technical dictionary, the MT systems will revert to the general dictionary to create a translation compositionally. This is invariably the wrong translation. The worst part of this is that posteditors will see reasonable-looking output and skip over it. In the absence of good specialized dictionaries, Hartmann would prefer to build the entire lexicon for a given customer himself. Others also mentioned the need for easy lexicon building tools that identify new terms, and allow users to build dictionaries directly from source text, including single words, and multi-word phrases. These tools need to be usable by non-linguists, as well as specialists.

Documentation and training materials: In the main conference program as well as the workshop, Harry Somers of UMIST presented the results of his recent study on the adequacy of MT documentation. What he found was something that workshop participants also brought up - MT documentation uses too much jargon.

Even terms such as "domain" (meaning topic area) are not clear to novice users. Documentation tends to dwell on the mundane, while glossing over the more complex (and potentially valuable and dangerous) functionality of the system. With so many emerging types and levels of users, there is a need for many different types of documentation. So far, documentation seems to target only one type of user, which may not represent the majority of a system's users at all. (A full paper on this topic is available in the main conference proceedings.)

Technical support: People jokingly suggested that MT systems should be sold together with a linguist who knows how to use them. On the serious side, it did suggest the need for a new sort of professional training - something like the certificate programs for working with Microsoft networks. Not the same as a degree in computational linguistics, this would involve a general familiarity with the issues involved in implementing language technology, including encoding (ANSI? ASCII? UniCode?) and markup (HTML, SGML, XML and the specialized markup schemes used for translation memory or publicly available lexicons), as well as character rendering, and workflow/process integration.

Flexibility of Integration: Ben Sargent of TransClick suggested that MT systems be more modular, to allow users greater flexibility in building customized applications from system components.

Automatic preprocessing: Some users expressed a desire for scoring/assessment of translation quality (after the fact) or pre-analysis of translatability before translation is attempted (which was coincidentally the subject of a half-day tutorial by Claudia Gdaniec and Arendse Bernth of IBM the following day).
Good practices for effective use of MT

- Know the quality requirements of the job and don't over-edit the output. (Gustavo Silva, PAHO)
- Update the dictionary before translating. (Everybody)
- Utilize named entity recognition to demarcate proper names as strings not to be translated. This can improve the handling of proper names, as well as avoiding some of the damage

to translations that happens when proper names are treated
as regular words. (Harry Somers, UMIST)

• Effective use of MT requires commitment. MT tends to
fail when its implementation is a "part time" effort, and when
it becomes the subject of interdepartmental conflicts.

Challenges

Negative stereotypes and fear of technology: When presenting
services (that may include MT) to clients, how much to tell?
Customers may be attracted to the idea of using technology for
speed, but if clients have seen raw MT output, they may be scared
away. A strategy suggested by Walter Hartmann was to present MT
as a tool, not a solution.

Rule-writing tools: Products that offer rule-writing capability
may be a two edged sword. Some warned that you can do more
damage than good by altering the system. Walter Hartmann
suggested developing macros for repetitive postediting tasks, rather
than trying to customize linguistic rules. On the other hand Marina
Urquidi reported that she was quite happy with customizations she
has made to her system via Writing her own rules.

JUSTIFYING MT USAGE

I once heard a claim that there were no real savings to be had from
introducing MT, and that any savings realized were from the
rationalization of project management and workflow that
accompanied the introduction of new technology, not from the
technology itself (a claim that is hard to refute since most companies
are reluctant to share details of their internal costs with the general
public.) However, the story from PAHO suggests that there are
real savings to be had. PAHO does 86% of their 4 million words/
year with MT support (MT+human postediting), at a savings of
27% over human translation alone. Posteditors get paid less per
word (8.75 cents) than HT (12 cents), but earn as much or more
because of increased volume.

Beyond cost-benefits

Some applications, such as real-time translation/localization of webpages, or the dialog among non-profit groups working in developing countries simply would not be possible or affordable by conventional means. In 1992 at an MT evaluation workshop in San Diego, Mike Tacelosky, president of the upstart MT company "MicroTac" declared that MT doesn't eliminate translators, it increases translation. In the case of these two types of applications, that appears to be true.

The benefits of MT may not be so clearly in the cost savings realized by the translation department, but in whether introducing translation technology can accelerate business. Kathleen Egan reported that the U.S. Government has a perennial shortage of linguists/analysts and translators. MT can help to increase the volume of material that gets translated and give monolinguals access to information without always having to bring a translator into the loop.

INDUSTRY STANDARDS

It seems appropriate to conclude with a promotional message for the current efforts, led by IAMT president John Hutchins, to establish a certification process for translation technology products. At the workshop, Mr. Hutchins spoke about his concern that the public is generally rather ignorant of language technology, what is available, how it is being used, and what the nomenclature means. Developers who do not participate in the MT community fail to use standardized terms, and potential buyers have no way to assess claims they make. In the closing address of the conference, Mr. Hutchins presented the certification plan that has been developed over the past two years by the certification committee. The goal of a certification process has been discussed at the last 3 AMTA conferences, and significant progress has been made toward defining terminology and how MT system functionality can be certified. Hopefully, certification standards will be in place soon that can help buyers to make informed choices about MT products, and lead to success stories they can bring to future workshops.

Resources and information

http://www.isi.edu/natural-language/organizations/AMTA.html
Association for Machine Translation in the Americas web page

http://www.eamt.org European Association for Machine Translation

http://it.jeita.or.jp/aamt/index-e.html Asian Association for Machine Translation