

## **AMIKAI: Automated translation of on-line chat**

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### **Abstract**

In this article, use of AMIKAI, an automated translation engine seamlessly integrated with the interface of multilingual chatrooms, is examined. Language pairs include French-English, Spanish-English, Japanese-English and German-English. The possibility of invoking a “Huh?” function in cycles of reformulation, to question output by the engine, yields some phenomenally good translations.

### **Biography**

Françoise Herrmann is a freelance translator and interpreter for French and Spanish, in California. More information, including a photo, is located at my web site @ [www.fhphd.org](http://www.fhphd.org)

## **AMIKAI: Automated translation of multilingual on-line communication.**

If you can envision an international meeting place where people speaking languages as varied as Japanese, French, German, Spanish and English, can communicate with each other, *without* the help of human translators, think Amikai.com. That is, “Ami” from the Latin root meaning “Friend”, and “kai” from the Japanese root, meaning “world”, all on the web.

### **Introduction: AMIKAI Inc.**

Chances are in the New Economy of the New Millennium that you may be employed by a team of young entrepreneurs whose average age is half your own. This is the case of Amikai Inc., where CEO Nicholas Lee, CFO Thomas Ritter & CTO (Chief Technology Officer) David Lowsky are each respectively 24, 24 and 22 years old. Add to this executive troika, six more team members averaging the same age, one “elder” 30-something, one writer and four (human) translators, and you have the development, design, linguistic, administrative and contracted branches of Amikai Inc., : almost all Stanford University alumni.

Chances are that this company will be marketing a product that will bring transformative societal changes, and that the activity will be all but local. Again, this is the case of Amikai Inc., whose first product is an on-line multilingual chatroom. That is a time-space on the web where French, Spanish, Japanese, German and English speakers, from all over the world, can meet and talk to each other in language combination pairs, using a series of seamlessly integrated machine translation (MT) engines.

With web-lightning- speed, Amikai Inc., was incorporated in October 1999 following a two-week Summer brainstorming session. In April 2000, the company’s first product, a multilingual chatroom is currently undergoing its second round of field testing.

### **MT (Machine Translation): an overview**

Pure MT (Machine Translation) is fueled by a dream similar to the one that fuels the field of Artificial Intelligence. The dream of artificial Intelligence is the automation of human cognitive processes using symbolic codes. The dream of MT is that of automating the process of natural language translation in ways that match HT (Human Translation). Both dreams share a desire to anthropomorphize the machine. And both dreams share much intersecting history.

For MT, short of making the dream a reality over the course of a 50 year history, several approaches and new directions have emerged. The most important of these approaches is interestingly termed HAMT “Human-Aided Machine Translation” (Hutchins and Somers 1992). This approach arises in consideration of the fact that even Human Translations are the result of several drafts and revision cycles of proofing and editing. The goal of HAMT then is no longer to produce a high quality output translation for a given natural language input, rather it is to produce an output for human intervention, with the assumption that translations increase in quality as they go through cycles of intervention. The output of HAMT is termed “raw”, or “brute-force”. In some cases it even remains “raw” to supply “gist” of meaning and content. In other cases, intervention occurs prior to machine processing, when input is controlled or restricted.

In another and opposing direction, MT often also refers to tools developed to assist the activity of translation. This is termed MAHT (Machine-Aided Human Translation) and regroups tools that, in general, reduce the redundancy of tasks in the activity of human translation. In this area, such tools as TRADOS or LYNX are good examples.

On the path from dream to reality and back, the locus of agency in MT seems to have shifted from the machine to the user. That is, where the dream dictates that the machine does the “action” of translating perfectly, reality is handing the “action” back to Human agents. The qualitative difference in “action” handed back to users over the course of this history perhaps amounts to the accomplishments of the field of MT. Included in the accomplishments of MT, there is clear identification of the kinds of problems encountered in MT. Among these, in succinct terms, there are issues of 1> experience and context, 2> ambiguity and 3> embodiment.

In general, issues of experience and context arise when the machine cannot determine the meaning one word upholds in context. A famous example is “The pen was in the box” compared to “The box was in the pen” where in the second utterance, “pen” refers to a “play-pen” and “box” to a “toy box” (example is from Yehoshua Bar-Hillel, cited in Silberman, 2000). Issues of ambiguity occur when the double meaning of sentences, such as the famous example by Noam Chomsky “Flying planes can be dangerous” cannot be determined by the machine. Finally issues of embodiment arise, when it becomes clear that while the machine can generate new language forms using rules, it cannot generate the emotions, feelings or sensations out of which language both spontaneously and truly arises. Thus for example, while the machine can easily generate such expressions as “The sun is scorching hot” or “Her smile is sweet”, these are in effect truly fake expressions as the machine can never experience the “scorch” or “sweetness” out of which the forms arise in the first place. In machine translation, the wiring simply cannot yield what Bahktin terms an embodied speech act or utterance (Bahktin, 1981). The question of course arises as to whether this really matters anyhow, and practically, since the translation may be appropriate and correct. However, the distinction does matter. At the very least it matters for all the “other” times when the translation does not work for readily identifiable reasons such as syntactic ambiguity or context dependency, and most importantly for communication in general, since the original truth of the text is *always* lost to a fake message, or translation. Using Bahktin’s framework, all utterances are lost. Using yet another related perspective, *voice* is lost (Wertsch, 1991).

The innovative handling of these issues, in an equally innovative context of communication for the field of MT (i.e. on-line chatting), constitutes the heartbeat of Amikai. Together with issues pertinent to translators, this, in turn, constitutes the object of this article.

### **How does Amikai work?**

Amikai Inc. invites its users to a chatroom web site. At the site each user selects one of four languages: French, Spanish, German or Japanese, for use in one of four language combination chatrooms: Eng./Fr., Eng./Ger., Eng./Sp. or Eng./Jp. Users then meet together in the selected chatroom where written utterances, constituting on-line chat, may be typed in one language of the selected combination pair, and where Amikai supplies immediate translation of each utterance. When users do not understand the output translation, or it somehow appears unacceptable, a “Huh?” cycle of reformulation may be invoked as many times as needed until communication completes, or moves on. Thus, users can chat with each other by typing in their utterances in a selected language which are translated into the other language of the combination pair. For example, if a visitor chooses French, in the French-English chatroom, every utterance typed in French by the user is translated to English, and all utterances typed in English are translated to French allowing for communication between French and English speaking visitors.

On a development level, this feat has been achieved by careful and sophisticated selection of a series of commercially available and patented MT programs. The programs are leased and integrated, into one, Amikai-tailored and coordinated, MT engine. These are structured and integrated, without internal changes, for optimal use in the Chatrooms.

On a design level, the whole and functioning engine is front ended in a fabulously slick and smoothly operating, multilingual user interface constituting the Web site. Complete with an Amikai logo reminiscent of the TV series “Friends” (see Figure 1), and an Ami host mascot for the chatrooms (see Figure 3), the Amikai.com site boasts an overwhelming gentleness and softness of feeling (see Figure 2 for an illustration of the English-Japanese chatroom). Finally, the speed at which translations are outputted, both raw, and in the cycles of reformulation, is that of lightning. Similarly, the speed at which applets load and navigation is enabled, is fast.

### **How do Amikai translations measure up?**

According to Hutchins and Somers (1992), there are no generally accepted and established methods of evaluating MT since all methods, whether qualitative or quantitative, invoke subjective judgment. Professional translators, in contrast, would most likely disagree, since their task is a constant performance at the level of consensual quality. That is where MT, is forgiving of issues such as style, register, and even accuracy of translation in a realistic, “brute-force” or “gisting”, or “raw, un-edited output” tradition, translators simply do not have the suicidal streaks to adopt such a perspective. Thus, from which

perspective do you evaluate translations generated by an engine such as Amikai? Do you uncompromisingly perform an evaluation according to consensual quality criteria of fidelity, accuracy, intelligibility, appropriate style and register, and risk confounding the differences between MT and Human translation? And further perform an evaluation using criteria derived from the writing genre of translation. This after all, is the goal, and dream of MT, and it is falling short of such a goal that ultimately fuels the quest for higher levels. Or do you shift the locus of uncompromised perspective to the difference between MT and HT, and adopt a weighted communicative approach? And, in the case of Amikai considering the mixed genre of chat (i.e.; written-conversation derived from both oral and written traditions - Murray, 1991) do you use a strong “good-enough” criteria for the practical purposes of mutual intelligibility? For all present purposes, here are some qualitative descriptions of Amikai’s “phenomenally clever”, and endearingly *excentric* ways.

*Amikai is very sensitive to correct language use.*

Type in “ca va, et toi” without a “ç” c-cedilla, and the output translation is “ca goes, and you”. Re-type “ça va”, with a “ç” c-cedilla and the output translation reads “Fine”. Similarly, type in “a San Francisco” without “à”, an accented a, in response to the question, “où habites-tu?” (“where do you live?”), and the output translation is “has San Francisco”. Retype “à San Francisco” with “à”, an accented a, the output translation is “in San Francisco”. And type in “Je pense donc je suis” without punctuation yields “I thus think I am”. Finally, type in “Beaucoup misux”, the output is “Much misux”, while “Beaucoup mieux” yields “Much better”. Each of these examples illustrate how incorrect language forms, such as missed accent and punctuation marks, or a misspelled word, throw the translation engine off. Thus, Amikai appears very sensitive to correct language use.

This sensitivity is typical of MT, operating in an ideal world of written language use, in abstraction of readily occurring performance. That is, in comparison with all standards of live and occurring on-line chat performance, where playfulness and practicality of communication preempts most, if not all considerations, of accurate and expanded language input, Amikai may be further characterized as a meticulous dragon, and a very “literal” translator. This, however and conversely, is clearly odd. Since it guarantees by the same token, that Amikai will become a future friend, and ally, of all those that are “*deploring the lamentable use of improper language forms on-line, and the future tragic impact of such deplorability on generations to come*”. For all these “blah, blah” concerns, Amikai is a tool that tips the balance. It will train generations of internauts to accent their “ps” and “qs”, to use proper punctuation, proper spelling, and proper grammar. That is, unless MT developments and strides were to come to a sudden halt, and MT were to give up on endeavoring to use real-life and occurring performance, as source input – in particular on-line chat. And for the case of Amikai, unless the “Huh?” reformulation cycles were unavailable.

*Amikai is phenomenally clever.*

In much the same way that millions of users of Palmtop organizers learn to input their messages in Graffiti™, to enable successful recognition of handwriting, Amikai produces “phenomenally clever” translations by coaching users into “Huh?” cycles of reformulation. This Machine Translation method is inspired by the activity of translators, who draft, revise, and edit translations in varying cycles invoking several people, prior to outputting a final, finished and acceptable product. By analogy, when the raw output of the translation engine is deemed inadequate in ways determined by the interlocutor, clicking on a “Huh?” button prompts the sender of the problematic translation to “Try again”. This “Huh? Reformulation” cycle can occur as many times as deemed necessary by the interlocutor. Thus, on the one hand, the engine is coached to output a translation that is acceptable, and on the other hand, users learn how to reformulate their messages, in ways that will yield an acceptable translation. This method works particularly well within a chat context, precisely because chatting invokes two interlocutors, who are to some degree already trained in requesting message clarifications and rewording, and who in real-time can immediately check the output of the engine, and request a clarification or re-try.

The following two exchanges exemplify this “Huh? Reformulation cycle, yielding “phenomenally” good translations. The first exchange occurred following switch-over from the Japanese-Eng chatroom to the French-Eng chatroom. The second exchange occurred when one participant was leaving the French-Eng.

chatroom . The output translated by Amikai appears in both examples without the source input, for ease of reading. “Huh?” (Quoi?) appearing in bold type, in both examples, is repeatedly invoked by the recipient to question the output of the translation engine in French.

#### **Example No. 1**

L1. Il est beaucoup plus rapide pour saisir anglais

**Quoi?**

L2. Les mots anglais de dactylographie est beaucoup plus rapide que la dactylographie des mots japonais

**Quoi?**

L3. Dactylographier des mots anglais est beaucoup plus rapide que la dactylographie des mots japonais

L4. Il est souvent difficile trouver la meilleure manière d’exprimer une phrase.

L5. :-)

#### **Example No. 2**

L1. Je vais mieux de nouveau au travail. Avoir de l’amusement

**Quoi?**

L2. J’irais mieux de nouveau au travail

**Quoi?**

L3. Je devrais mieux aller de nouveau au travail

**Quoi?**

L4. Il faut que je travaille

L5. Adios

Thus, in the first example, following two “Huh?-reformulate” cycles, the message about “typing being faster in English than in Japanese” became understandable. Similarly in the second example, following three “Huh? reformulate cycles, the message about “Having to get back to work!” was successfully translated. It became understandable. As my interlocutor commented, however in the first example (Line 4), it does require certain practice and familiarity with Amikai to be able to reformulate in ways that will eventually yield an acceptable translation. The English input, and reformulated input, for both Examples No. 1 and No. 2, is the following :

#### **Input for Example No.1**

L1. It is much faster to type in English.

L2. Typing English words is much faster than typing Japanese words.

L3. To type English words is much faster that typing Japanese words.

#### **Input for Example No. 2**

L1. I better get back to work.

L2. I’d better get back to work.

L3. I should better get back to work.

L4. I should get back to work.

To a certain extent this means learning “Amikai-ese” (similar to Graffiti™) involving at the very least practice in reformulating as expansion, syntactic transformation and re-wording. For example a Spanish speaking user learns Amikai-ese when subjects are re-inserted in utterances. For example:

<b>Input</b>	<b>Ouput translation</b>
¿Vive con sus padres?	It lives with its parents?
¿Usted vive con sus padres?	You live with your parents?

*Amikai is sometimes endearingly excentric.*

Amikai is known to have, on occasion, deleted the gender of the personal pronoun “she” in the French-English chatroom. Thus, “she” is translated as “It”. Similarly, Amikai is known to have translated, to the continued amusement of this user, the term “anglais” (English in that context) as “Englishman”. For example in the following exchange, both “she” translated as “it”, and “the Englishman” appear in the translation output – including one other systematic “Languageman”, “Chinese” as “Chinese man”.

Input	Output translation	Comment
L1. explique moi ce qu'elle a fait avant en français et en anglais	explain to me what it did before in French and Englishman	*She ---> it. “She” refers to another chatter “Marie”. *Anglais ---> Englishman.
L2. Those darn Englishmen	Ces anglais de darn	Switch to English input with French output translation.
[..]	[..]	
L8. Bonjour.	Hello	Enter new chatter
L9. en chinois.	in Chinese man	*Chinese ---> Chinese man

When the “Huh? -Reformulate” cycle is not invoked, as in the above exchange, what becomes significant, perhaps, is the way in which the very “quirkiness” or rawness of the translation “grabs the floor”. That is, the tool or medium of communication, becomes “topic” or “object” of communication. In a recursive way, inaccurate language uses become chat segments, or threads of playful conversation. The conversation spins “out of control” with a new meaning and direction. For example in the above segment, the incorrect translation of “English” as “Englishman” (Line 1) prompts the comment, with switch of input language to English, “Those darn Englishmen” (Line 2). And, at the end of the segment, when another unexpected conversational twist occurs with the entrance of a new chatter, whose introductory “Hello” (Line 8), is followed by the response “in Chinese man” (Line 9).

Thus, when errors and inaccuracies are upheld as objects of interest, they become endearing. The focus of chatting shifts to using the translator “for fun”, to test it and try it out, to fool it, to be surprised, or amazed by it.. “It” (the machine!), also becomes an actor in the conversations, as “it” is upheld by chatters, and as translation “quirks” change meanings and offer new directions in the flow of communication.

The following exchange between three chatters provides additional illustration of playing with the MT engine as part of the flow of chat. Translation output in both French and English appears in parenthesis.

- L1. Do you know how to say scrollbar? (= Savez-vous dire scrollbar?)
- L2. en français? (=In French?)
- L3. yes. (=oui)
- L4. non. (=No)
- L5. barre de défilement (=bar run)
- L6. merci! (=thank you!)
- L7. Ah (=Ampèreheure)
- L8. Ah (=Ah)
- L9. 3 watts par kilogramme (=3 watts per kilogram)

The playfulness occurs when the English input message “Ah” (Line 7) is translated as the measurement “Ampèreheure” (Line 7), though in the other direction, the French input message “Ah” (Line 8) is translated correctly in English as “Ah” (Line 8). This correct translation prompts the (expert) user, to add in French “ 3 watts par kilogramme”, echoing the previous quirk.

In sum, by inviting the active participation of interlocutors in the process of translation with its “Huh?” option cycles, a triangulated structure of communication is created. In this triangle, Amikai is flanked by two, or more, interlocutors, who are constantly able to monitor and check its output, coaching and manipulating it with their own utterances and rewordings, to satisfy their communicative needs. Thus, raw machine output, which is sometimes excentric, may be upheld for fun, or most importantly changed and improved to the satisfaction of interlocutors. It is this possibility of achieving communication by shaping, or sculpting, the raw output to acceptable and functional levels with re-formulated utterances, that accounts for the “phenomenally good” quality of translations. And in this way also that subjectivity is harnessed, since it is in participation, and up to the interlocutors to decide when the translation is good enough, and many times surprisingly “outstanding” for the purposes of achieving communication.

### **Where, when and how will Amikai be available?**

The expected launching date of the Amikai multilingual chatrooms is May 15, 2000. These will likely be available as a standalone site (@ <http://www.amikai.com>), initially for no membership fee, as well as at other sites desiring to offer multilingual chat. The history of Amikai Inc.’s evolving vision is an interesting one in this respect. Initially, the vision was to create on the web an international meeting place. This was an idea that arose out of observation and experience with the WEB’s increasing fragmentation. The idea of using MT (Machine Translation) to make this international meeting place a reality was apparently subsequent, or incidental to the desire of creating an international time-space. Finally, practical considerations of company growth arising out of a deeper desire to continue working together as friends, coupled with the successful experience of developing this first product, have broadened the vision a second time. Amikai Inc., seems to be propelling itself in the direction of supplying compelling solutions on the web, including the use of Amikai multilingual Chatrooms to fulfill the international dreams of other sites, and the development of various MT applications to support interactions on the Web which are currently hindered by language barriers. Thus, Amikai Inc.’s path seems to spiral, fueled both by vision and the deep bonds of friendship in the practical reality of ensuring the growth of the company, and always in view of making possible the reality of internationalism and globalization.

For translators, the steering direction of unlocking international contacts is simply: quantum possibility and opportunity.

### **Conclusion: Forget losing your job!**

The dark side of the promise of technological innovations is fear. In the doomsday-Armageddon tradition, this is the projected fear of impending chaos due to machine error, or machine-gone-mad; in the labor relations tradition, this is legitimate fear of changing work structures (e.g.; more alienation and fragmentation of activity) and the fear of losing one’s job to the machine. That is, if payroll can be automated, who needs a payroll operator? And for the case of translators, if machines can translate, who needs translators?

It is unquestionable that machines, and computers in particular, take over tedious jobs, and efficiently replace people in many areas ranging from switchboards to space exploration, and land mine detection. Clearly though, this is also good. The computer creates new (safer, more enjoyable and more complex) structures, and for translators, at the very least, it reduces the redundancy of tasks. Further, at the turn of the XXI century, one might add, incidentally, that computers have actually created nothing less than a sparkling and booming New Economy with hundreds of new and hitherto un-imagined spheres of activity and services, all of which, in a global international economy, increase the demand for translation.

Thus, rather than recoil from the developments of MT and its derivatives, it seems that translators will feel better embracing them, as cumulative and exponential possibilities. The very premise of MT research is that the demand for translation is far greater than what human translators can handle. Add to that, the new structures of demand that the field of MT is currently generating with Assisted-MT, as well as those hitherto unimagined demands, when the quest for the Holy Grail of perfect MT has completed, and translators are likely to be *forever* guaranteed a job.

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## Figures



Figure 1: The Amikai Logo



Figure 2: Screenshot of the Amikai Japanese-English Chat-room



Figure 3: Ami, the Amikai mascot and chatroom host