

A Case Study: Evaluating a New Approach to Bible Translation

Faster, Less Expensive, and Higher Quality Translations

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This paper describes a new approach to Bible translation that reduces the time and cost of a translation project, and also results in a higher quality translation. For this particular case, the drafting stage was reduced by 93%, and the consultant checking stage by 50%. According to projections, the combination of these factors would reduce the time and cost of an entire translation project by approximately 35 to 40%. Additionally, with this approach, the team check stage is more conducive to critiquing the initial draft so that a clearer and more natural translation is produced. In this test case, independent reviewers evaluated the quality of the final translation as better than popular published translations.

1. Introduction

Bible translators are always looking for new methods and techniques to produce higher quality translations in less time and less cost. Certain methods definitely reduce the time and cost, but the quality of those translations always decreases. The combination of “faster, cheaper, and better” is often called “the holy triumvirate,” and it is generally considered unattainable. But in this paper we describe a new approach to Bible translation that accomplished all three objectives for the case described.

The members of All the Word Bible Translators (www.alltheword.org) have spent approximately 20 years developing a new software system designed specifically for Bible translation. The system is called The Bible Translator’s Assistant (TBTA), and it consists of three components:

- A thoroughly prepared template for each book of the Bible
- A lexicon and grammar prepared for each target language
- Software that applies a language’s lexicon and grammar to the templates in order to produce initial draft translations

A diagram of this system is shown below in Figure 1.

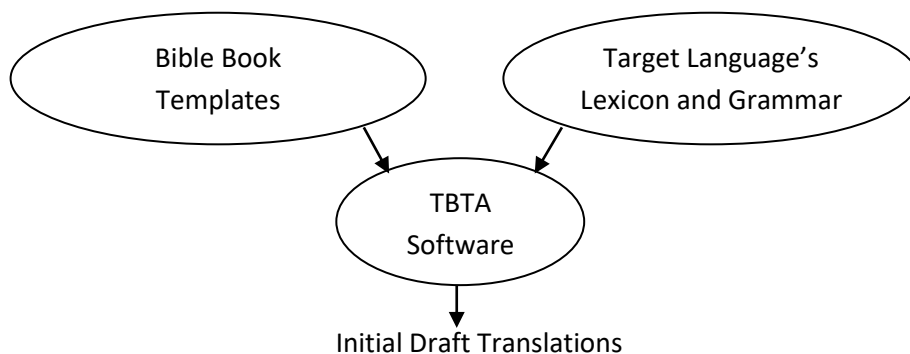


Figure 1. Diagram of the TBTA System

This system is linguistically motivated; it is not a memory based system, nor is it an adaptation system. It is also not a statistical system that requires bilingual corpora for training purposes. This system works equally well for both low and high resource languages. It has been tested with many languages, but this report will focus on a recent test performed by David Duncan, a member of OneBook, and a team of experienced mother-tongue translators at The Translators Association of the Philippines (TAP) in Manila.

2. Background

Before a Bible translation project can begin, a myriad of issues need to be dealt with (e.g., orthography, training the MTTs, developing relationships with national and local government officials, literacy work, etc.). After these issues have been addressed, a typical translation project consists of the following six stages:

- Drafting 35%
- Team Check 10%
- Community Check 25%
- Backtranslation 10%
- Consultant Check 10%
- Typesetting, Proofreading, etc. 10%

The percentage of a project's total time that is generally spent on each stage is shown in the list above; those numbers came from TAP which has translated the NT into many languages of the Philippines.

OneBook wanted to determine how significantly the TBTA system impacts the translation process, so David arranged a joint evaluation project between OneBook, TAP, and ATW. Specifically, David made arrangements to test TBTA's Tagalog translations of Ruth and Philippians¹ with a team of experienced translators and a translation consultant at TAP. Years before this test was started, several members of ATW had prepared templates² for Ruth and Philippians. A lexicon and grammar for Tagalog had already been developed, so TBTA was used to produce draft translations of the two books.

3. The Test

The test was divided into two parts. The book of Ruth was evaluated from December 2nd to December 13th, 2019, and the book of Philippians was evaluated from January 6th to January 31st, 2020. Ted Seres, the CEO of OneBook, came to Manila to observe part of the Ruth test, and David came to Manila to facilitate the entire Philippians test.

3.1 The Test with Ruth

In order to evaluate how significantly TBTA impacts the translation process, David asked the members at TAP to take TBTA's draft of Ruth through the standard translation process. Specifically, he

¹ David also included Psalms 23 and 100 in this evaluation, but TAP doesn't have historical timing data for translating Psalms. Therefore we can't compare the team's evaluation with TAP's historical data, but the evaluation of the two Psalms corroborates the conclusions that were reached regarding Ruth and Philippians. Specifically, the drafting stage was reduced by approximately 93%, the consultant checking stage was reduced by 50%, and the team check resulted in a clearer, more natural translation because the team members felt free to discuss every issue.

² These templates are prepared once, and are independent of the target languages. After the template for a book has been prepared, the software can use it to produce draft translations in a wide variety of languages.

asked the TAP team to confirm whether or not the edited TBTA draft was a workable first draft, and then take the text through a team check, community check, and consultant check. As the TAP team performed each check, their progress was timed, and the final results were compared with TAP’s data for the many Bible books their teams have translated in the Philippines. The results for each stage of this process will be summarized below. TAP’s final report for the Ruth test is available on the news page of ATW’s website (www.alltheword.org/news-and-events/).

3.1.1 Drafting – TBTA reduced the time required for the drafting stage by 93%

In a typical translation project, each MTT associated with the project is assigned a passage, and they each draft translations of their passages separately. Ruth is a historical narrative, and typically MTTs can draft 4 to 5 verses per hour for historical narratives. Ruth has 85 verses, so typically the drafting stage for Ruth would take between 17 and 22 hours.

In a TBTA project, the software produces the initial draft. Then one or more MTTs review that draft and edit it to make it a presentable first draft. We define a presentable first draft as a text that doesn’t contain any grammatical errors, communicates the message accurately, clearly, and completely, and could be read to a church audience and everyone would easily understand it. The text still needs more polishing before it’s publishable, but at this stage it’s presentable. For this test, a Tagalog MTT named Ephraim Rey edited the computer’s draft in order to make it a presentable first draft. He was timed during this process, and he spent 84 minutes editing the computer’s draft. That draft was then sent to the team at TAP. They confirmed that the edited draft was a workable first draft, so they proceeded directly to the team check stage.

By using TBTA, the drafting stage for Ruth was reduced from approximately 20 hours to 1.4 hours. This is a time reduction of 93%³. This reduction is confirmed by many other timed tests that have been performed with other books that were translated into Tagalog by TBTA. A table summarizing the timed tests that have been performed with historical narratives is shown below.

Historical Narratives	Verses	Hours required to Manually produce a Presentable First Draft	Hours Ephraim spent editing the computer’s draft into a Presentable First Draft	Ephraim’s editing rate	Time Reduction by TBTA
Judges	618	120 – 150	18	34 verses/hour	87%
Exodus 1-20	545	110 – 140	14	39 verses/hour	89%
Joshua	658	130 – 170	11.5	57 verses/hour	92%
1 Samuel	810	160 – 200	12.75	64 verses/hour	93%
Ruth	85	17 – 22	1.4	61 verses/hour	93%
2 Samuel	695	140 – 175	11	63 verses/hour	93%

Table 1. Summary of Timed Experiments with Historical Narratives

The books in the table above are listed in the order that they were translated. The next to last column shows the number of verses that Ephraim edited per hour for each book. As seen in that column, the number of verses edited per hour gradually increased until it reached the low 60s. At this point we think

³ TBTA won’t necessarily reduce the drafting stage by 93% for every language project. This reduction factor depends entirely upon the quality of the lexicon and grammar that have been developed for the language. If the quality of the lexicon and grammar is low, the reduction factor will also be low.

the editing rate has probably plateaued. We believe there are three reasons why the editing rate gradually increased during these initial tests:

- After we finished working through each book, Ephraim edited the computer's draft, and we entered as many of his edits as possible into the Tagalog lexicon and grammar. So the lexicon and grammar were gradually improving throughout this process.
- Ephraim learned what types of mistakes TBTA tends to produce, and he became faster at identifying and correcting those mistakes.
- The members at ATW who build the templates became better at setting all of the features properly, identifying the word senses correctly, etc. So the quality of the templates was improving throughout this process, and that resulted in fewer errors for Ephraim to edit.

The last column in the table above shows the time reduction during the drafting stage by using TBTA's drafts rather than manually producing drafts. Those reductions are calculated by dividing the number of hours Ephraim spent editing the computer's draft by the number of hours required to manually produce the same text (e.g., for Joshua, $11.5 / 150 = .08$, so the reduction is 92%). We've done additional tests with epistles, poetry, and minor prophets, and a typical reduction for all those genres is approximately 93%.

3.1.2 Team Check – TBTA makes this stage more conducive to critiquing and correcting the draft, thereby resulting in a better translation

In a typical project, after all of the MTTs have finished drafting their assigned passages, they come together and review each other's work. In many cultures, this is somewhat stressful because the team members are generally reluctant to criticize each other's translations. As they're reviewing each other's passages, minor issues, inconsistencies, awkward wording, and lack of clarity are occasionally allowed to pass through the critiquing process solely because no one wants to overly criticize a colleague. Even though the drafting stage is the most time-consuming stage of the translation project, it's nearly impossible for the team to produce a translation that they're all truly satisfied with.

When using TBTA, the computer produces the initial draft. The MTTs are well aware that the computer has a limited knowledge of their language, and they have no expectations that the computer will produce clear, natural text. Therefore they feel completely free to critique the computer's draft, and they openly discuss even minor issues. This freedom to discuss every detail and nuance results in a better translation. The members at TAP who performed the team check for Ruth commented, "We can't hurt the computer's feelings." To them, this aspect of the TBTA approach was the most beneficial, despite the fact that using this system significantly reduced the amount of work and saved significant amounts of time and money.

3.1.3 Community Check – TBTA doesn't affect this stage

After the TAP team completed the team check, they invited Tagalog speakers from the community to respond to comprehension questions that were prepared for Ruth. The TAP team listened to their responses and made the necessary adjustments to the translation. This process was timed, but there are too many variables in this stage (e.g., the number of questions asked, the number of participants answering

the questions, the number of communities included in the check, the time spent adjusting the draft, etc.) to directly compare the timing of this team check with the timing of other team checks. Until we have more data, we're concluding that TBTA neither increases nor decreases the community check stage.

However, in the future, we're planning to prepare comprehension questions for each Bible book, and those questions will be added to the book's template. Then TBTA will be able to translate the questions into the target language, and that will certainly reduce the time required for the community check stage.

3.1.4 Backtranslation – TBTA doesn't affect this stage

For this particular test, a backtranslation wasn't necessary because the consultant was a mother-tongue Tagalog speaker. If a backtranslation had been necessary, we don't anticipate that TBTA would affect the timing of this stage.

3.1.5 Consultant Check – TBTA reduces this stage by 50%

In a typical project, the translation consultant checks the backtranslation, and raises questions about accuracy and clarity. The MTTs then address the questions, adjust the translation, produce a new backtranslation, and send it to the consultant. This process is repeated numerous times until the consultant and the MTTs are all satisfied.

When using TBTA, the templates are checked by translation consultants before they are ever permitted to be used in actual translation projects. The consultants ensure that the templates are exegetically accurate and clear in every detail. Additionally, necessary implicit information is expressed explicitly in the templates to ensure that the readers understand the message. Footnotes explaining Jewish culture during biblical times are also added to the templates. Similarly, book introductions are prepared in the templates, and the consultants ensure that all of the relevant information is accurately encoded in the templates before the templates are made available to translators using the TBTA system. Since the software produces draft translations directly from the exegetically accurate templates, there are very few exegetical issues in the translations, so there are fewer issues for the consultant to question. In this particular test, the consultant, Lani Mallorca, gave us permission to quote her as saying that when the templates are exegetically accurate, there are approximately half the usual number of issues in the translation that need to be addressed. This reduces the consultant's time for the project by approximately 50%.

3.1.6 Typesetting, Proofreading, etc. – TBTA doesn't affect this stage

For this test, the TAP team did not do any typesetting or proofreading.

3.1.7 Community Evaluation

After completing the consultant check, the TAP team extracted excerpts from each chapter of their final translation of Ruth, and they also extracted the corresponding excerpts from the two most popular Tagalog translations. Then the team asked six other members of TAP who had not been involved in this project to compare the three sets of excerpts. The participants did not know where the excerpts had come from or how any of the translations had been produced. They were simply asked to assign a score ranging from 1 to 10 to each excerpt. Out of a possible 240 points (6 people evaluating four excerpts), the edited

TBTA draft received a total of 202.5 points, and the other two published translations received 187 points and 185.5 points. The number of participants in this evaluation process was insufficient to demonstrate statistical significance to these numbers, but the edited TBTA translation was the preferred translation among this small set of evaluators. However, all the credit for the high quality of this translation goes to the TAP team for thoroughly editing and checking the text. TBTA simply produces an initial draft to get a team of MTTs started. After that, it's entirely up to the team to edit the draft into a quality translation.

3.2 The test with Philippians

The test with Philippians did not go as originally planned. When preparing the template for Philippians, Richard Denton and Tod Allman, members of ATW, had used the NIRV as their primary source⁴. TBTA then produced a Tagalog translation, and Ephraim edited the text into a presentable first draft. That draft was sent to the team at TAP, and they were told that the primary source for the Philippians template was the NIRV. When the team at TAP reviewed the translation, they said that TBTA had produced a good Tagalog translation of the NIRV's version of Philippians. However, they don't consider the NIRV sufficiently accurate to be used as a source text for translation. They said that in the NIRV, too many discourse markers are either missing or bleached, and the text doesn't contain all of the essential information. They concluded that they would prefer to retranslate the text themselves from scratch rather than edit the draft we sent them. We then asked them which text they would prefer that we use as our primary source when building the template, and they proposed the Greek text.

Richard and Tod then built a new template for Philippians chapter 2 using the Greek text. Using the new template, TBTA produced a new Tagalog translation of that chapter, and Ephraim edited it into a presentable first draft. When the members at TAP reviewed that translation, they said too much information was missing and the message wasn't clear. In order for them to produce a workable draft from TBTA's draft, they would first need to provide all of the missing information and clarify many of Paul's points. This was not considered a productive approach, so we asked them to suggest another source for a new template. They suggested that we use the NET Bible.

Richard and Tod then built a new template for Philippians chapter 3 using the NET Bible as their primary source. TBTA then produced a new Tagalog draft, and Ephraim edited it into a presentable first draft. When the TAP team reviewed that draft, they said it was too literal. They wanted a Tagalog text that didn't contain Greek euphemisms or idioms, and again they wanted more implicit information made explicit. One TAP member suggested that we use A Translation for Translators (T4T) by Dr. Ellis Deibler as our primary source when building the template. The T4T makes explicit the information that is implicit in the Greek, identifies and explains the Greek euphemisms and idioms, uses reasonably simple words and sentences, and is accurate.

⁴ The NIRV was considered an appropriate source for several reasons: TBTA is generally used to produce translations for newly literate people groups. By design, TBTA generally produces translations that are intended for people who read at approximately a sixth-grade reading level. The NIRV is also intended for young readers and people who read English as their second language. The NIRV strives to make the message easy to understand, yet clear and accurate. Therefore, TBTA's goals align well with the NIRV's, so we selected it as our primary source while building the template for Philippians.

Richard and Tod built a new template for Philippians chapter 4 using the T4T as their primary source. TBTA then produced a Tagalog draft, and Ephraim edited it into a presentable first draft. When the TAP team reviewed that draft, they said it was a workable first draft.

Due to time constraints, the TAP team was only able to do a team check, community check, and consultant check on ten verses of chapter 4. Those checks were all timed, and the results corroborate the findings of the Ruth test. Specifically, the time of the drafting stage was again reduced by approximately 93%, the time of the consultant check was reduced by 50%, and during the team check, the members felt free to discuss every issue, regardless of how minute it might be. After the TAP team finished their editing and checking, the final result was a very clear, natural, and accurate Tagalog translation.

4. Additional Benefits of using the TBTA System

The TBTA system includes several additional capabilities that are beneficial to Bible translators and linguists. Four of the capabilities will be briefly described here.

4.1 TBTA is able to produce different translations tailored for different audiences within each people group

Within each people group, there are always multiple audiences that need the Bible. So TBTA lets users define up to five different audiences for each language, and it will produce different translations tailored for each audience. For example, TBTA will produce one translation for adults who have never read the Bible before. That translation will include extra explanatory information in order to make the message clear and easy to understand. The extra explanatory information isn't in the Greek or Hebrew texts, but it's added to the templates and tagged so that it can be either included or excluded during the translation process. TBTA will produce another translation for adults who are already knowledgeable of the Bible. That translation won't include any of the extra-biblical material. TBTA can also produce another translation specifically for children. That translation will use simple vocabulary and simple sentences that the children easily understand.

4.2 TBTA is able to translate study notes and book introductions that are included in the Bible book templates

Some passages in the Bible can't be understood properly unless they're explained by a qualified teacher. For example, when Genesis 3:15⁵ is translated into a new language, the readers think the verse is talking about a child and a snake. Even if that verse is translated perfectly, no one understands the full significance of that verse unless it is explained by a teacher. So ATW is including an optional set of study notes in the book templates so that the software will be able to produce study Bibles. By including study notes in the translation process, readers will be able to fully understand and appreciate the significance of their new Bibles. Similarly, book introductions are being added to the book templates so that readers will know the historical setting for each book, the purpose of each book, and how each book contributes to God's message.

⁵ Genesis 3:15 (NIV) "And I will put enmity between you and the woman, and between your offspring and hers; he will crush your head, and you will strike his heel."

4.3 TBTA is able to translate other materials such as Bible stories, a commentary, community development articles, video subtitles, etc.

TBTA is able to translate any document for which a template has been prepared. So the members of ATW are preparing templates for Bible stories, community development articles that will improve the quality of people's lives, literacy materials, etc. After the templates for the entire Bible have been completed, another template will be prepared for a commentary so that pastors in the remote corners of the world will be able to prepare their sermons with a clear understanding of the Bible's details.

4.4 TBTA is able to produce dictionaries and grammar sketches

Because TBTA is linguistically motivated, its lexicons and grammars contain a wealth of linguistic data related to the target languages. A language's lexicon can be exported to produce a dictionary for the language, and the grammar can be exported to produce the beginnings of a grammar sketch for the language. TBTA is a tool that simultaneously translates texts into a language and also documents the language.

5. Findings and Conclusions

This test was limited to two small books, one language, and one NBTO. More extensive tests are planned for the near future. The findings and conclusions of this test are as follows:

- Using drafts produced by TBTA rather than manually prepared drafts reduced the drafting stage by 93%, and the consultant checking stage by 50%. This results in a reduction of both the time and cost of a translation project by approximately 35 to 40%⁶.
- When the initial drafts are produced by TBTA, the MTTs feel free to discuss every issue during the team check stage. This results in a better translation.
- While building the templates for the Bible books, the choice of the primary source text is crucial. The TAP members decided that A Translation for Translators (<https://ebible.org/t4t/>) is the most appropriate source for their preferred translation style.

If you'd like more information about this test, please visit All the Word's website at www.alltheword.org. You can also send us an email at info@alltheword.org. TBTA is free and available for downloading at ATW's website.

⁶ TBTA reduced the drafting stage by 93%, and the consultant checking stage by 50%; the timing for the other stages was unaffected. Therefore the calculation is as follows:

Stage	Manual Translation	TBTA
Drafting	.35	.35 x .07
Team Check	.1	.1
Community Check	.25	.25
Backtranslation	.1	.1
Consultant Check	.1	.1 x .5
Typesetting, proofreading, etc.	.1	.1
Total	1.00	.62

So TBTA reduces the time required to produce the translation by approximately 38%. The cost of the project will also be reduced by approximately 38%.