Forty Years of Biblical Hebrew Information Systems

SASNES – Sept. 2010
Vanderbijlpark

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Abstract

The paper highlights the major trends and research topics that received attention in the past forty years of establishing Biblical Hebrew information systems. Deficiencies in existing products are indicated because they reveal the opportunities for future research that could build on the amazing body of work that has already been done. The paper explores various levels of analysis and the underutilisation of existing tools, and suggests integration as a solution to enhance the exploitation of these computerised research instruments. It is suggested that new developments that make use of more flexible functionalities and user-friendly visualizations may facilitate the creation and use of advanced Biblical Hebrew information systems in the next decade. The paper will be published in the Encyclopedia of Hebrew Language and Linguistics (EHLI) under the title "Information Systems, Biblical Hebrew".
Introduction

- Major trends and research topics
- Deficiencies in existing studies reveal further opportunities
- Various levels of analysis
- Underutilisation of existing tools
- Integration suggested as a solution to enhance the exploitation of these computerised research instruments
- New developments: more flexible functionalities and user-friendly visualizations - creation and use of advanced Biblical Hebrew information systems in the next decade
- The paper will be published in the Encyclopedia of Hebrew Language and Linguistics (EHLL) under the title "Information Systems, Biblical Hebrew"

Levels of analysis

- Digital representation of Hebrew Bible text – transliteration vs. phonological transcription: 14 Codex Leningradensis and 1 Aleppo Codex
- Morphological (I I), morpho-syntactic and syntactic levels (e.g. WIVU)
- Semantic and pragmatic levels have received less attention
- Translations, critical apparatuses, dictionaries and one reference grammar
- Searches on morphological and/or syntactical features allowed
Families of morphological tools

- Westminster Hebrew Old Testament Morphology (Groves-Wheeler)
- Werkgroep Informatica (Talstra)
- Bar-Ilan analysis
- Academy of the Hebrew Language
- Additional commercial and private morphological analyses (Tov)

Syntax databases

- Commercially available:
  - SESB – WIVU, formalistic base, steep learning curve, does not differentiate between linguistic levels; up to clause hierarchies
  - Bibleworks
  - Accordance
- Private:
  - Andersen and Forbes: syntactic information and semantic-role information are presented as horizontal trees/graphs
  - Richter’s database: syntagmemes include syntactic functions and semantic roles
  - Holmsted and Abegg: excludes semantic, pragmatic and discourse information – all ancient Hebrew texts; non-binary branching
  - Westminster Hebrew Syntax (Alan J Groves Centre): seeks to tag the text for clause boundary, clause constituent and hierarchical relations between phrases, main and dependent clauses
Underutilisation of existing tools

- Poswick (2004): "classical Biblical exegesis would not appear to be benefiting as yet from the results of this type of analysis".
  - Focus on creation of systems rather on use of tools (Tov 2006)
- Exception: many articles based on WIVU db – suitable for Biblical exegesis (Conybeare); PLOT (Winther-Nielsen)
- Feeling of information overload – hypermedia to the rescue (Bothma)!
- Lack of ease of use – gap between proficiency of creators and users (Tov)

Integration as a solution to enhance utilisation

- Various tools to be used to study different language modules
- Integration of divergent tools (Bothma)
- Hypermedia: linking electronic and originally printed materials
- Lexham Hebrew-English interlinear Bible
- Interlinear tables are two-dimensional representations of multi-dimensional data
- XML: facilitate creation of a platform independent databank
An XML-based integrative data structure

- Allows creation of database using mark-up
- Extensible and adaptable (required by readers of the BH OT text – Van der Merwe)
- Allows movement between teaching and reference grammars
- Could give impetus to a focus on communicative aspects in research (Poswick)
- Combination of hypermedia and database concepts – promising alliance of techniques
- May integrate results based on divergent theoretical models (Van der Merwe)

Visualisation and flexibility

- XML + database + visualisation techniques – exciting possibilities
- Friendlier user interfaces
- Easier to find and understand information
- Andersen & Forbes – pictorial rendering of syntactic structures – graphs and trees represent hierarchical syntactic structures
- Scalability – serious issue (59000 main clauses)
- Flexible tools allow interactive use and access to raw data (Tov)
- Images of critical material and cultural-historical objects
- Multiple disciplines involved - teamwork
Current and future projects

- AlBI – 1985-2008 – overview of past and present tools
- BHt (Richter) – four levels
- Winther-Nielsen – technology enhanced learning
- Andersen and Forbes – discourse analysis
- Holmsted and Abegg – include epigraphic and Qumran texts
- Groves Centre – expand databases, XML, semantic tagging, visualisation, data patterns

Conclusion

- Excellent, in-depth work done during past 40 years
- Further research possible and needed
- Advanced searching
- Differentiation of language modules, comparative studies
- Trans-disciplinary approach needed
- Integration of divergent projects
- Address underutilisation of current tools
- Flexible functionalities, user-friendly visualisations
- Towards advanced BH IS in the next decade!