Computer-Assisted Theology

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Introduction

The application of computers in theology has been affected by the nature of the discipline. The study of theology, and an interest in its results, is not confined to the university department. Theology is also studied in ministerial training colleges and, recently, interested lay people have been encouraged to study theology within the parish or diocese. Every so often theology finds its way into the popular media (suddenly every tabloid newspaper in Britain became a theological journal after the controversial statements made by David Jenkins, the former bishop of Durham, concerning the virgin birth and resurrection of Christ).

Theology is an interdisciplinary subject, taking as its subject matter all aspects of life and humanity; everything from creation to the end of the universe. From the first, theologians have not been reluctant to appropriate methods and concepts developed in other disciplines. Biblical scholars are attracted by literary critical theories; systematicians face the challenges and incorporate the ideas of contemporary philosophy; and church historians in all periods have viewed the church as intertwined with social and cultural history. Computing tools developed for other disciplines are just as likely to be appropriated as the ideas themselves. No doubt there will be theologians wandering through the classics, archaeology, philosophy, music, and history sections of this book. In the social sciences, anthropology, law, and sociology all have theological or religious aspects; whereas in the sciences the results of theoretical physics, genetics, and medicine, for example, are frequently examined by theologians.

The early use of computers by theologians was confined mainly to textual analysis and language learning. The present use of computing tools has greatly improved in biblical studies and broadened to include other subject areas. Theologians have made particular use of the Internet.

The future holds the promise of academic multimedia teaching packages for church historians and systematicians, similar to the packages already available for other disciplines, notably in some areas of literary studies.

The past

Computers used to be associated solely with the scientific disciplines. Once upon a time theology was reckoned amongst the sciences, certainly in the days of St Thomas Aquinas. It was appropriate then that the first humanities scholar to employ the computer as a significant part of his work was the Jesuit Roberto Busa in 1949, and that he should have used it to compile indices to the works of Aquinas. Busa's work formed the basis of the *Thomae Aquinatis Opera Omnia cum hypertextibus in CD-ROM*. Who, in 1949, would have imagined such a portable Aquinas, never mind the association of 'hypertextus' with his 'opera omnia'?

For the most part theology and computers have traditionally met in biblical studies. Indeed, the majority of non-theologians still think only of biblical software when computers and theology are mentioned in the same breath. The Bible has been central to Christianity and it still remains its mark of identity. This led James O'Donnell, who is known on the Internet for his non-biblical use of computers, to remark that:

> I like to speak of Christianity, indeed, as the high-tech religion of late antiquity, for the way it used the written word from the outset to create a community extending across time and especially space, where traditional Greco-Roman religion was quintessentially local and particularist (O'Donnell 1994, n.21)

The Bible's place at the centre of Christianity is particularly associated with the Protestant Reformation. However, the encouragement given to the individual to read the Bible led to a decentralization of a uniform biblical interpretation. From a Protestant background occurred the rapid growth of biblical criticism in the nineteenth century. The Bible has been treated as the printed book *par excellence*; God's book. The interpretation of no other book has influenced history and human life in the same way as the Bible. It is a well-defined work, a canon or model of literature; interpreted and re-interpreted by different generations for different situations. Scholars have applied to it the methods of literary and historical criticism. Theses have been written on single verses. It was only natural

that scholars would wish to feed its contents into a computer, another available tool which could be applied to its study.

Computers are fast at generating statistics and ordering material. A computer could do in a fraction of the time what had previously involved years of painstaking work and mounds of index cards—the production of biblical concordances. In 1957 John William Ellison successfully defended a ground-breaking two volume thesis at Harvard entitled, 'The use of electronic computers in the study of the Greek New Testament text'. The same year saw the publication of a complete concordance to the Revised Standard Version which had been supervised by Ellison and assisted by the Harvard mainframe computing facilities. The concordance was, of course, printed just as concordances had always been. But, it was not long before a small mental leap was made from simply printing out a concordance for further (traditional) analysis and actually persuading the computer to do some of the data analysis.

In the same year that Ellison defended his thesis, Andrew Q. Morton and George H. C. Macgregor decided to use a computer to aid them in the stylistic analysis of the New Testament. Three years later they purchased a teletypewriter (with a Greek character set), a (paper) tape reader, and a control unit. They then set about typing in a machine-readable copy of the text. Andrew Morton recounts his own memories of this feat:

> Memories of the early days are all of paper tape. It waved in and out of every machine, it dried and then cracked and split or it got damp when it lay limp and then sagged and stretched. Sometimes it curled round you like a hungry anaconda, at others it lay flat and lifeless and would not wind. Above all it extended to infinity in all directions. A Greek New Testament, half a million characters, ran to a mile of paper tape, and the complete concordance of it ran to seven miles (Morton 1980, 197).

In 1961, *The Structure of the Fourth Gospel* was published. The work had involved the use of the computer to analyse the length of sentences and paragraphs of John's gospel. On the basis of this research the authors concluded that the fourth gospel had two sources. Although the computer presented the authors with the data they differed on the reasoning behind the conclusion. Morton believed the gospel had originally been written in a codex form (permitting the dislocation of pages) whilst Macgregor had already arrived at a two-source hypothesis by more traditional

methods of scholarship. Computers then, as now, were an aid to scholarship, they did not create it. As Busa, Ellison, Morton, and others found, the computer was best suited to doing the donkey work, to be treated as a sophisticated labour-saving device. The reasoning and final judgement still belonged to the scholar. The accusation that, rather than improving scholarship, computers would result in scholarly laziness was never entirely avoided. It was difficult to refute this accusation ten years later with the publication by Morton and S. Michaelson (1971) of a computer-generated concordance to the Johannine epistles. The concordance was, as one expected, exhaustive and provided the usual keyword in context index. Its usefulness for serious academic research was questionable, however, when the Greek transcription scheme by which the texts had been entered into the machine had included no breathings or accents, rendering the frequency tables inaccurate. In addition, every word form present in the text was reproduced without any reference to the root word. Stuart Hall in his review of this work concluded, 'The computer has in fact much to offer [the exegete], but he will reject it if it is offered as a substitute for scholarship rather than a handmaid'.[1]

The computer was, rather inevitably, brought in to help to decide, once and for all, the vexed question of Pauline authorship. In 1964 F. F. Bruce published the results of his computer assisted research claiming Paul could be declared the author of four of the fourteen letters (a claim which the Tübingen School had made in the previous century).[2] Morton, having followed his work on John with another joint work with Macgregor on Luke-Acts, turned his attention (with James McLeman) to the Pauline corpus. Combing his sentence/paragraph length procedure with a frequency analysis of the Greek common word 'KAI', Morton also favoured the four epistle theory (Morton and McLeman 1966). However, statistical analysis, as every politician surely knows, can be used to reach quite different conclusions. It is not quite sufficient to run a concordance generator or a text analysis package on a corpus without first having a well tested set of rules against which to measure the results. In textual analysis, especially in stylistic analysis, such governing rules tend to be questioned as much as the authorship of the particular text one desires to fix. A particular form of stylistic analysis could, for example, demonstrate that Paul was the author of the letter to the Hebrews, the one letter on which the large majority of (if not all) scholars agree he was not the author (Kenny 1986, 78).[3]

Computers and careful scholarship combined to produce J. Arthur Baird's ground breaking work, *Audience Criticism and the Historical*

Jesus (Baird 1969). The work, part of the 'new quest for the historical Jesus', sought to analyse the 'audience' in the Synoptic Gospels, especially regarding the consistency with which audience reference terms were used. The computer-generated statistics enabled Baird to conclude that the consistency levels were, in fact, the most stable element in the usually disputed Gospel passages. Contrary to what the earlier form critics had stated, descriptions of the audience could not simply be editorial additions to the 'logia' of Christ.[4]

Computers were not the monopoly of the biblical critics. It was, however, their work which received the most attention. Nearly every theologian had some interest in the findings of biblical scholars. Not as many were interested, for example, in the results of a historical reconstruction or the analysis of a less significant text than the Bible itself. Sixteenth-century catechisms (recorded and analysed on a computer by Ralph Dengler) did not hold the same appeal. Fortunately, this distinct lack of interest did not deter individuals from drawing on the tools developed by others (whether in biblical studies or in other disciplines) and applying them to their own fields of research. Even today the Bible remains central to computer packages advertised for the theologian. Every theology undergraduate will be expected to know biblical texts in some detail. The subjects of study after that depend as much upon the choice of the individual as does the particular teaching tradition of the academic department.

The present

The technology of 1995 is far removed from the infinite lines of paper tape Andrew Morton had to contend with in 1960. On as least as many theologians' desks there will sit a computer as well as a Bible. The machines used today for word processing have greater power and capabilities than the large, foreboding machines into which Busa, Ellison, and Morton fed their texts. One would expect the ubiquitous personal computer to have quite radically changed the way we approach theological computing from thirty years ago. The text remains central, that cannot be disputed. But whose text? The word processor, and more recently, the development of hypertext models, has blurred the boundaries between author, reader, and text. Not entirely unrelated to this shift has been the steady challenge to the idea of a fixed canon (whether biblical or other theological literature).

Word processing

Biblical and patristic scholars in particular have always required the use of non-standard character sets. Not so long ago scholars were required to insert Greek, Hebrew, or Syriac words into their typed manuscript by hand or with a specialized typewriter. Fortunately, for most scholars this is no longer a problem. Greek, Hebrew, and gradually, Syriac fonts are available for Macintosh or Windows word processors (and these fonts can be shared by other applications). No longer should it be necessary to purchase a non-standard word processor for Greek or Hebrew. There are, of course, specialized word processors which remain popular, often for other reasons than simply supplying Hebrew and Greek. Nota Bene, Multilingual Scholar, and Nisus are three examples. These applications are often more expensive than the mass-market packages such as Microsoft Word or WordPerfect. Increasingly, students are being asked to hand in typed essays and obviously an inexpensive, standard word processor is preferable (especially if the students are encouraged to use university facilities). Peter Gentry and Andrew Fountain's WinGreek fonts (Greek, Hebrew, and Coptic) are a popular and inexpensive option for Windows users, whilst Linguist software produce a range of Greek, Hebrew, and Syriac fonts for both Macintosh and Windows platforms.

Scholars who require a range of language sets but are reluctant to switch to non-standard word processing may be attracted to Gamma UniType from Gamma Productions, the makers of Multilingual Scholar. This is a powerful font and language application for all Windows packages which claims to be compliant with the international standard for encoding language character sets (Unicode). The version for classical and biblical languages includes three styles of Syriac. As the number of word processing options increases and moves towards a cross-platform standard of display and printing, even the most reluctant techno-theologian would agree that the ability to produce camera-ready copies from one's own personal computer is far preferable to the traditional typewriter and blank spaces.

Electronic texts

Biblical scholars were converting printed texts to electronic form before they began to create their own texts on computer. The rise of inexpensive scanners and OCR software has made this task even easier. Although scanning texts is a vast improvement on feeding in paper tape, it is not

without its difficulties. After thirty years it should certainly be the *biblical* scholar's last resort. The fruits of earlier computer assisted research are available to today's biblical scholar. Biblical texts in which each word is morphologically parsed for grammatical searches are available with software like Bible Windows or from text archives such as the Computer Centre for the Analysis of Texts (CCAT) at the University of Pennsylvania. Theologians working in patristic or medieval theology would also be well advised to consult the holdings of the Oxford Text Archive or CCAT. Individual texts can be obtained from these archives via the Internet or sent on a floppy disc.

The Internet can often prove a good source of plain texts (i.e. those without any formatting or markup tags). The documents of the Second Vatican Council, for example, are freely available from the University of Toronto. There are miscellaneous texts placed on Gopher servers dedicated to Anglican or Catholic sources. Texts on the Internet have often been provided by altruistic individuals or by particular groups within a certain tradition (patristic texts provided by an Anglo-Catholic group, for example, or Greek liturgy from an Orthodox World Wide Web site). The American *Book of Common Prayer* (*BCP*) has been converted to an electronic form which preserves the page numbers of the original and includes the tagging of rubrics and congregational responses. The American *BCP* is available in this form only because the original printed text is in the public domain without the copyright restrictions which prevent the conversion of the Anglican *BCP* or the revised liturgies of the Roman Catholic Church. Thus, electronic texts on the Internet tend to be those no longer in copyright and provided by groups or individuals with little or no budget. This inexpensive provision can result in texts where the lack of proof-reading and information about the edition make them unsuitable for scholarly research.

The development of the CD-ROM as a means of storing large quantities of texts has resulted in whole corpora being sent through the post. The *Thesaurus Linguae Graecae (TLG)* , already mentioned in the chapter on classics, is one of the best examples of how a massive electronic text library can be created. Of its 58 million Greek words a substantial proportion belong to early Christian sources. The beauty of the *TLG* is that it is neither software nor platform dependent; the texts are specially encoded ASCII files. Since the *TLG* fits on a single CD-ROM a scholar could, if so desired, work with the corpus at home, the equivalent of pocketing 8,203 works of 2,884 authors. The *TLG* project has proved to be a model digital library because the project team

consisted of scholars determined to find the best scholarly edition of each text. The quality and quantity of the *TLG* CD-ROM in many cases exceed the holdings of a college or university library.

The Latin equivalent of the *TLG* is the CETEDOC (Centre de Traitement Electronique des Documents) Library of Christian Latin Texts developed under the directorship of Professor Paul Tombeur at Louvain and published by Brepols. Consisting of 945 works by 211 authors, this body of texts is, in essence, the *Corpus Patrum Latinorum* series on CD-ROM with the *opera omnia* of figures such as Augustine, Jerome, and Gregory the Great. Unfortunately the retrieval software is not platform-independent but is limited to an IBM-compatible machine. On a different scale from CETEDOC is Chadwyck-Healey's *Patrologia Latina* Database (PLD). The full edition consists of all 221 volumes of J.-P. Migne's *Patrologia Latina* on a set of CD-ROMs. The SGML encoding of the texts differentiates primary texts from commentaries, identifies biblical citations, and allows the user a range of powerful search options. However, the usefulness of simply putting Migne's volumes into electronic form (including Migne's errors and ignoring a century's scholarship) rather than selecting the best available edition of each work might be questioned. The cost of this product, compared with either the *TLG* or CETEDOC, is far higher than academic libraries or departments might wish to pay. It will be interesting to see whether, over time, electronic archives such as the PLD fall in price since there will not be the reprinting costs associated with multi-volume printed works.

Commercially available electronic texts for the theologian using more modern texts are slowly being developed. KAB Konsult (Sweden), for example, has recently announced electronic text databases of the Radical Reformation, and Barth's *Die Kirchliche Dogmatik*. They are also considering the works of Tillich, Rahner, Urs von Balthasar, and other twentieth-century theologians. The collected works of Thomas Aquinas in English translation form part of the Past Masters Series produced by InteLex Corporation. Electronic text collections are generally produced for research rather than for teaching purposes. This is becoming less true for biblical software. Bible Windows, Bible Works, and Logos Bible Software, three popular biblical packages, include fully-parsed Hebrew and Greek texts, as well as English translations. The ability to generate concordances, and perform grammatical searches makes these valuable research tools. The inclusion of Greek and Hebrew lexicons, an interlinear text, synchronously scrolling windows of texts, translations, and commentaries as well as the ability to copy and paste texts into a word

processor, make these a viable option for integrating into a biblical studies course. The natural development from electronic archives is the integration of primary texts and secondary source material. The growth of multimedia has resulted in hypermedia archives or hypermedia editions in other disciplines (for example, The Perseus project in classics). Such developments are gradually becoming apparent in theology. Dead Sea Scrolls Revealed, produced by Logos Research Systems, includes images of the scrolls, translations, and video or audio interviews with scholars. It would be marvellous, for example, if there was an equivalent to the Perseus project for early Christianity which made use of the *TLG*/CETEDOC texts alongside translations, images, and background material for the classroom.

Reference and bibliographical sources

Not all theologians are required to work with primary sources in the same detail as users of electronic text archives. Many simply require easy access to bibliographies of secondary sources. Theology is well served in this manner by the ATLA Religion Index on CD-ROM which consists of articles from journals and multi-author works. The CD-ROM can be searched by a range of fields and the results imported directly into a bibliographic database. In addition, a number of theology libraries have made available their catalogues on the Internet alongside the more general resources such as the Library of Congress and MELVYL, the Californian consortium of libraries. Bibliographical databases for specific areas of research are in various stages of production, including *La Base d'Information Bibliographique en Patristique* (Université Laval) and the International Medieval Bibliography on CD-ROM (Brepols). Brepols distribute the *In Principio* index of manuscript incipits on CD-ROM. A database of manuscripts held by the Hill Monastic Manuscript Library (St John's, Collegeville) is available over the Internet and will eventually include digitized images of the manuscripts; whilst at Princeton University the conversion of the large Index of Christian Art to electronic form is in progress. The CANTUS project at the Catholic University of America has assembled indices of chants contained in manuscript and early printed sources of the Divine Office. Another liturgical project is the Renaissance Liturgical Imprints census (RELICS) at the University of Michigan which will also become available over the Internet.

Electronic mail and the World Wide Web

Seeking to discover research in progress, having an interest in the work of colleagues, and the possibilities of international collaboration have all been made substantially easier by the popularity of electronic mail. Theology has been at the forefront of the electronic mail discussion group in the humanities. Ioudaios-l is often held up as a model for an e-mail forum. Founded in 1990 by a small group of scholars with a similar interest in the works of Josephus, the group has grown in size to represent a large range of international scholars researching first century Judaism and early Christianity. The group is a self-styled community appropriately based on the lost community of Qumran (though it could hardly be described as a desert community and it certainly does not have the same strict admission policy). The friendliness of the community was epitomized in 1994 by an online *Festschrift* presented to Robert Kraft by e-mail on the occasion of his sixtieth birthday. Theology is better represented online in its range of subject areas than it is off-line. In the same year that Ioudaios was celebrating the birthday of its founder, the UK Mailbase list 'feminist-theology' was created. This list almost immediately attracted many of the prominent figures in the discipline. It has served (despite the potentially contentious subject matter) to extend, to anyone with access to the Internet, a powerful and serious discussion of the place of women in theology and the Church beyond the immediate confines of academic books and departments. 'Feminist-theology', and other similar e-mail groups, are not simply *about* theology but are examples of 'theology in action'.

The e-mail discussion forum has been used successfully in teaching. It is far less time consuming to set up and monitor an e-mail forum for a course than it is to design specific courseware, and yet often the students can gain more from it than simply from an electronic textbook. The e-mail group is unique in its ability to give the single voice a chance to speak (from undergraduate to professor) yet not in isolation. James O'Donnell (University of Pennsylvania) created an e-mail group for his course on Augustine. He personally invited colleagues from around the world to subscribe and opened up the group to other interested scholars and students. The course syllabus was published along with the reading material which he expected all participants to have read. Each week a student on the course would submit a summary of the lecture to the list, subscribers would respond, students would discuss, and an informal yet solid conference would commence. The Augustine discussion group was

supplemented by James O'Donnell's World Wide Web pages of relevant source material including articles and reviews. He is also known for using the MOO (text-based virtual world) environment for a real-time international seminar and for Latin conversation practice. As the network technology improves and better compression techniques are developed it will not be too long before we are able to participate, for example, in the first Augustine videoconference conducted over the Internet.

The World Wide Web is an ideal environment for the inexpensive display of teaching materials. Its ability to incorporate media other than text (images, sound, and video) makes it comparable to packages created with more complex authorware. The Web is becoming the choice for departments who do not have the necessary computing skills, the time, or the funds to program authoring tools like Multimedia Toolbook or HyperCard. Placing material into a World Wide Web environment does not necessarily mean making it accessible to the whole world. Most Web browsers can be configured to permit only local access to files. Of course, good material (free of copyright restrictions) which is accessible across the Internet tends to enhance the reputation of a department, perceived as a reflection of its teaching and research skills. The ease with which material can be placed on the Web and the ability to hyperlink it to other resources (whether created in-house or already available) opens up the possibility of students being encouraged to gather material themselves, evaluate it, and create a hypertext page in which to display it. The ways in which hypertext is created gives some indication of what is interpreted to be significant within the text and which sources are considered significant enough to warrant a direct link. Students, given access to the appropriate technology and training, are likely to gain a greater satisfaction from a finished World Wide Web site which is their creation (their text) than simply writing a dissertation on the same topic.

It is not always necessary to create new materials in order to use the Web in the classroom. The global nature of the Web creates the possibility of using resources which already exist. The Dead Sea Scrolls exhibition from the Library of Congress provides commentary and images on the background of the Scrolls, and includes a bibliography for further reading. Other resources might include the University of Michigan and Duke University's digital papyrus projects (perhaps used alongside Timothy Seid's Interpreting Ancient Manuscripts teaching resource), The Ancient Palestine presentation created by John Abercrombie (University of Pennsylvania), the *Christus Rex* exhibits of Christian art and

architecture, and the Religion in England Web (Brown University, supervised by George Landow), to name only a few.

The future

The computer in theology will not only supplement our study of theology but is also likely to change the way we approach the subject. This has been true for quantitative biblical studies and is increasingly likely to affect other areas of theology. The development of electronic archives, particularly when this is not simply the conversion of printed texts, imposes few assumptions about value and authority. The *TLG* archive defined its own canon simply by the language and availability of the text. Within the *TLG* early-Christian writings stand on an equal footing with the heritage of earlier Greek writing and contemporary non-Christian works. Much has been written about hypertext and authority. We can look forward to adding hypertext as another hermeneutic in biblical studies. Hypertext on the World Wide Web opens up the creation of works not restricted by the local presence of contributors or the requirement for a finished product. The ECOLE Initiative, for example, has commenced the creation of a scholarly online encyclopaedia of early Christianity. The editorial board consists of the contributors who in turn referee subsequent articles. The articles are published as soon as they have been converted to HTML; and the Web does not constrain the size of the work nor the number or location of the cross-references.

The World Wide Web also opens up the possibility of publishing in electronic form sources which have hitherto been ignored or inaccessible to most scholars. The collaboration of the Vatican Library with IBM is a prime example of the inaccessible becoming accessible. IBM, working closely with Fr Leonard Boyle, the Library's Prefect, will initially digitize over 10,000 manuscript pages at high resolution. Software is being developed which will permit scholars to browse the catalogue over the Internet and download manuscript images to a personal computer. As part of their Digital Library Project IBM are also working to digitize the holdings of the Lutherhalle Wittenberg museum, the largest collection of Reformation history. This is both an act of preservation and an attempt to make the rare books and art more accessible.

Once digitized, rare and precious manuscripts offer other possibilities to the scholar. In 1993 infra-red imaging technology from NASA's Jet Propulsion Laboratory was used to examine fragments from the Dead Sea Scrolls. The digital infra-red camera greatly enhanced previously

illegible characters. Similar technology is currently being used to examine the earliest manuscripts of the New Testament.

The development of computer-based resources for undergraduate teaching requires funding and solid academic input to ensure the quality of content. The most suitable applications will result from the collaboration of academics and publishers. APS Research under the direction of Scott Pell C.S.C, at St Michael's College (University of Toronto), are developing a hypermedia edition of the Decrees of the Ecumenical Councils which will present the texts in their original languages, translations, background material, and include previously unseen material from the Vatican Library. This is an example of a multimedia edition which loses no scholarly credibility and yet should prove attractive to the commercial market.

As further research is undertaken into the value of computer-assisted learning and as the quality assessors of teaching take an interest in new methods of course delivery, theology departments are likely to develop local, small-scale projects. Supplementary material on a computer is more portable and adaptable than a combination of lectures and bibliography and can often be used by colleagues in their own teaching. In these days of inter-disciplinary learning, projects which not only cross subject areas within a single discipline but are inter-departmental are more likely to attract funding. The Internet opens up the possibility of European-funded or international projects which are still firmly academic in their content and direction. The development of courseware is time consuming but the future promises to count such work in any assessment of research or teaching. Local projects advertised across the Internet enhance the reputation of an institution and provide the springboard for greater things. Those departments which have proved to be successful in small projects may be presented with larger opportunities, whereas those who have not, even what they do possess might be taken away (to paraphrase Matt 25:29, the possible source of some funding policies).

Horses for courses, however—no one (especially a member of the Computers in Teaching Initiative) would advocate the use of computers where their presence was superfluous, inappropriate, or harmful to the student's learning process. Much of theology, like philosophy, revolves around the discussion and evaluation of ideas. The student is expected to respond to the written thoughts of others. It is difficult to transfer ideas-based disciplines to the computer screen without it simply becoming an electronic version of the printed page. The student is in no better a position to truly interact with the text on a screen than she is whilst

reading a book. The traditional lecture and seminar is no more doomed than the printed book. Thirty years on from when computers first assisted biblical scholarship they have not replaced it. Computers are a tool; a means by which theories may be tested for the research community and the results delivered to the students.

Finally, the rapid growth of the Internet and the information age will present its own set of challenges to the theologian. The option for the poor, and the empowering of the oppressed, demand responses in the light of the provision or otherwise of this new technology. From the manipulation of sacred texts to the ecclesiology of the Internet, from a theology of virtual worlds populated with real people, to as yet unknown effects, these are some of the issues which may be addressed by theologians. The Chorus World Wide Web pages for humanities computing, under the directorship of Todd Blayone (McGill University), has recently included a page of religion scholars who are critically studying the Internet and new forms of technology. It will only be a matter of time before we can look forward to seeing the first course outline of 'Theological Approaches to the Information Age'.

Notes

1. Stuart Hall, in *Computers and the Humanities*, 7 (1973), 221.
2. F.F. Bruce, 'St. Paul in Rome', *Bulletin of the John Rylands Library*, 46 (1964), 326-45.
3. John Ellison suggested that the application of Morton's analysis to his own work would result in the conclusion that Morton's essays were the product of not one but several hands ('Computers and the Testaments', in *Computers for the humanities* (New Haven, 1965), 72-4.
4. Audience criticism and the historical Jesus was reviewed, appropriately, by John W. Ellison in *Computers and the Humanities*, 4 (1970), 199-205, who ends his review with the clarion call, 'To your computers, O Israel!'.

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Further information

Further information about the *Thomae Aquinatis Opera Omnia cum hypertextibus in CD-ROM* may be obtained from EDITEL, Via Savona 112/a, 20144 Milano, Italy.

Further information about the edition of Aquinas in the Past Masters series may be obtained from Intelex Corp., P.O. Box 1827, Clayton, GA 30525-1827, USA.

WinGreek can be obtained from Dr Peter Gentry, WinGreek, 55 Ambercroft Blvd, Scarborough, Ontario, Canada M1W 2Z6 (E-mail: pjg@io.org).

Linguist's Software can be contacted at Linguist's Software, PO Box 580, Edmonds WA 98020-0580, USA. The UK distributor is Lingua Language Services, 63B Woodhead Road, Holmfirth, Huddersfield. HD7 1PR.

Gamma UniType can be obtained from Gamma Productions, Inc., 12625 High Bluff Drive, Suite 218, San Diego, California 92130-2746, USA.

The Centre for Computer Analysis of Texts can be accessed at gopher://ccat.sas.upenn.edu/11/

CETEDOC Library of Christian Latin Texts, *In Principio*, and information about the International Medieval Bibliography can be obtained from Brepols Publishers, Steenweg op Tielen 68, B-2300 Turnhout, Belgium.

Patrologia Latina Database is available from Chadwyck-Healey Ltd, The Quorum, Barnwell Road, Cambridge CB5 8SW. URL: http://www.chadwyck.co.uk/

KAB Konsult can be reached at: KAB Konsult AB, Storgatan 59, 264 32 Klippan, Sweden.

The documents of Vatican II as well as other theological texts can be obtained from the University of Toronto via ftp://ftp.epas.utoronto.ca/pub/cch/religious_studies

Information about the ATLA Religion Index CD-ROM may be obtained from American Theological Libraries Association, 820 Church Street, Suite 300, Evanston, Illinois 60201-5603, USA.

The Dead Sea Scrolls Revealed can be obtained in the UK from Hodder and Headline, 338 Euston Road, London, NW1 3BH or from Logos Research Systems, Inc., 2117 200th Ave W, Oak Harbor, Washington 98277-4049, USA.

The 1979 American Book of Common Prayer is available online at gopher://listserv.american.edu:70/11/anglican/bcp

The Hill Monastic Manuscript Library can be accessed at, http://www.csbsju.edu/hmml/index.html

The CANTUS Project at the Catholic University of America can be accessed through, gopher://gopher.cua.edu.:70/11/special-resources

Information on the Renaissance Liturgical Imprints Census can be accessed at, http://www.umich.edu/Gateway/Catalog/Relics.html

Further information about *La Base d'Information Bibliographique en Patristique* can be obtained from René-Michel Roberge, Faculté de Théologie, Université Laval, Cité universitaire, Quebec G1K 7P4, Canada.

James O'Donnell's 'Augustine on the Internet' pages including information about the Augustine e-mail group can be accessed at http://ccat.sas.upenn.edu/jod/augustine.html. The PennMOO hosts MUGIT (*Multorum Utentium Gregi Interesse Transcribendo* — 'to be in a flock of many users by writing') a Latin-only electronic classroom (telnet://ccat.sas.upenn.edu:7777).

An extensive list of discussion groups for theologians is available on the University of Durham's gopher, gopher://delphi.dur.ac.uk:70/11/Academic/P-T/Theology/Computing/Lists

A selection of World Wide Web resources for theologians can be found through http://info.ox.ac.uk/ctitext/service/lectures/trmay95.html

The ECOLE Initiative can be accessed at http://www.evansville.edu:80/~ecoleweb/ Further information from Anthony F. Beavers, General Editor (ecole@evansville.edu)

Further information about IBM's Digital Library Projects at the Vatican Library and Lutherhalle Wittenberg can be obtained from the IBM Web page, http://www.ibm.com/Features/library/

The Chorus World Wide Web pages, which include a section on biblical analysis, can be accessed at, http://www.peinet.pe.ca:2080/Chorus/special.html