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Report from EDUCAUSE 2006

By Claudia Lynch, Benchmarks Online Editor

The EDUCAUSE annual conference, held October 9-12 in Dallas, was a big success. According to a source at the EDUCAUSE headquarters in Colorado, approximately 4,000 people attended the entire session, with 300 opting to just go through the exhibit hall.* Approximately 2,200 additional attendees were exhibitors. At least 26 of those attending represented UNT, including people from CITC, the Libraries, CDL and other areas.

I attended the three excellent general sessions, discussed here in this month's Network Connection, as well as quite a few conference sessions. Of the conference sessions I attended (click for the full conference schedule), these currently have resources available on the EDUCAUSE website:

- Tell Us What You Want: Lessons in Student Centered Service Design

- Supporting Creativity . . . and Living to Tell About It
    - UM.SiteMaker Home [Web resource]
    - Support Database at UM [Web resource]
    - Complete User Manual [Web resource]
    - Data Tables Introduction [Web resource]
    - Free Demo at GVC [Web resource]
    - GVC.SiteMaker at Sourceforge [Web resource]
    - Campus Technology Award [Web resource]

- How Faculty Like to Learn (and What Should Be Done About It)
    - Power Point Presentation
    - Final page of handout.

Conference Presentations and Resources

As the conference website states, access to a growing pool of resources from EDUCAUSE 2006 is available to both those were in attendance and those who were unable to attend. These resources include online video recordings of select general and featured-speaker sessions, session audio tapes and CDs, and conference blogs and snapshots. Resources are added as they are received, so check back if you don't find what you're looking for. Check for:

- Session presentation materials.
- A complete listing of Speakers, including links to their sessions.

Presentation Videos

Following are select general session and featured speaker presentations from EDUCAUSE 2006. **Note**: The videos may not work with browsers other than Internet Explorer:

General Session Presentations

- **Uncovering the Science in Computer Science: Challenges for the 21st Century**–Vinton G. Cerf**,** Vice President and Chief Internet Evangelist, Google
  View: [Mediasite Windows Media](#)

- **The Tower of Google**–S. Georgia Nugent, President, Kenyon College
  View: [Mediasite Windows Media](#)

Featured Speaker Presentations

- **Time, Space, and History**–Edward L. Ayers, Dean, College and Graduate School of Arts and Sciences, University of Virginia; William G. Thomas, III, John and Catherine Angle Professor in the Humanities, Department of History, University of Nebraska - Lincoln
  View: [Mediasite Windows Media](#)

- **Still Crazy After Two Years** (Kuali panel)–Bruce K. Alexander, Director, FIS/HRIS Project, Michigan State University; J. Michael Allred, Associate Vice Chancellor - Finance/Controller, University of California, Davis; Lee Belarmino, Associate Vice President, Information Technology, San Joaquin Delta College; Sally Jackson, Vice President for Learning & Information Technologies and CIO, The University of Arizona; David Lassner, Chief Information Officer, University of Hawaii; John F. Walsh, Senior Director, e-Business Services, Indiana University
  View: [Mediasite Windows Media](#)

- **Career Development for IT Professionals**–Marilu Goodyear, Professor and ECAR Fellow, University of Kansas; Susan E. Metros, Deputy CIO & Exec Director for eLearning & Professor, Design Technology, The Ohio State University; Eugene L. Spencer, Associate VP for IS & Resources, Bucknell University; Moderated by Cynthia Golden, Vice President, EDUCAUSE
  View: [Mediasite Windows Media](#)

- **The EDUCAUSE "Grand Challenges" Initiative**–Brian L. Hawkins, President, EDUCAUSE
  View: [Mediasite Windows Media](#)

- **Good Judgment Comes From Experience**–Daniel A. Updegrove, Vice President for Information Technology, University of Texas at Austin
  View: [Mediasite Windows Media](#)

- **From Today's CMS to Tomorrow's Learning Support System**–Joel M. Smith, Vice Provost and Chief Information Officer, Carnegie Mellon University; Malcolm B. Brown, Director of Academic Computing, Dartmouth College; Carolyn Lee Windham, Student, North Carolina State University Moderated by David Lassner, Chief Information Officer, University of Hawaii

View: [Mediasite Windows Media](#)

- **Pioneering New Territory and Technologies**–Malcolm B. Brown, Director of Academic Computing, Dartmouth College; Saiid Ganjalizadeh, Assistant Director for Instructional Technology, The Catholic University of America; Leslie P. Hitch, Director, Academic Technology Services, Northeastern University; Pablo G. Molina, CIO, Information Systems Technology, Georgetown University; John S. **Moses**, Director, Technology Planning, Biological Sciences, University of Chicago; Art St. George, Manager, Advanced Communications Technologies, University of New Mexico; M. Christine McMahon, Manager, Advanced Technology, Saint Louis University
  View: [Mediasite Windows Media](#)

- **The Challenge of Campus Cyberinfrastructure**–James R. Bottum, CIO/VP For DCIT, Clemson University; Bonita M. Neas, Interim Deputy CIO/Executive Director ConnetND, North Dakota University System; Patrick Dreher, Project Director and Research Scientist, MIT
  View: [Mediasite Windows Media](#)

Next Year

I was very pleased with all the sessions I attended and look forward to more opportunities to attend EDUCAUSE conferences in the future. The [Southwest Regional Conference](#) will be in Austin February 21–23, 2007 and the next annual conference is slated to be in [Seattle](#) October 23-26, 2007. It's never to early to start planning!

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* If you are *really* interested, "2006 Attendee Demographics" can be found [here](#) (scroll down the page a bit).

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Helpdesk FYI

By Richard Sanzone, Manager of the CITC Helpdesk

This article marks the beginning, we hope, of a new monthly feature from the CITC Helpdesk. Each month they will tackle a topic that has been of particular interest to callers/visitors to the Helpdesk. -- Ed.

Having trouble connecting to the Eaglenet wireless system?

Are you having trouble connecting to the Eaglenet wireless system? If so, check the Eaglenet information website at http://www.unt.edu/wireless for configuration guides and other tips.

If you can get a wireless signal but cannot bring up the login page it is most likely due to an error in your system's wireless configuration. The most common error is the SSID entry. Make sure to enter "eaglenet" as the SSID in lower case letters. Also, be sure that WEP is disabled and a channel is not specified.

If you are not receiving a signal make sure your wireless adapter is enabled. Most laptops have a function key combination (Fn + F2 is common) to toggle the adapter on and off. Some laptops also have a button located on the side of the laptop which sometimes goes unnoticed and can unintentionally be toggled when moving the laptop in and out of a carrying case.

When you get to the Eaglenet login page you will be prompted to enter your EUID and enterprise password. If you need to retrieve your EUID and/or password visit the Account Management System website at http://ams.unt.edu

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TODAY'S CARTOON

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GLASBERGEN

"I haven't seen a photo of her yet,
but I've already got a crush on her font!"

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Network Connection

By **Dr. Philip Baczewski, Director of Academic Computing and User Services**

Paradigm Shiftwork

My last week was mostly occupied by immersion in the 2006 EDUCAUSE conference, conveniently held (for me) this year in Dallas, Texas. This event is an annual gathering of about 7,000 people either working with, supporting, or selling various information technologies used in institutions of higher education in the U.S. and elsewhere. As is the case with most of these types of events, there were numerous presentations around a variety of topics, a large vendor display area, and some prominent speakers to provide a high-level commentary to accompany the themes of the conference.

Featured Speakers

This year's featured speakers included Vinton Cerf, one of the "founding fathers" of the Internet (or "some guy from Google" as I heard one attendee describe him), Ray Kurzweil, inventor and futurist author, and Georgia Nugent, classics scholar and current president of Kenyon College. As you would expect, these three different speakers provided diverse presentations which approached the idea of information technology from different viewpoints. I came away from the conference, however, with a sense that they were all talking about the same concept: we can't escape the paradigm shifts which are occurring in this "Internet age."

Challenges for the 21st Century

One of the points that Vinton Cerf made was that our ability to create new hardware is outpacing our ability to produce equivalent software (a very general summation on my part). He also pointed out that while we can preserve more and more data, that data loses its meaning unless we have the software to translate the bits back to information. This is particularly salient in my experience with WordPerfect on my Macintosh. The MacBook Pro on which I write this is two software generations away from the last version of WordPerfect for Macintosh. The Intel-based Macintoshes, although still running OS X, cannot run the "Classic" Mac OS environment that predated OS X and which last supported a Macintosh version of WordPerfect. This renders all my important WordPerfect files (including my dissertation text) into mostly useless collections of bits (in the computing sense of the word). Even if there were a current version of WordPerfect for Mac OS, it's doubtful it would still be able to open and manipulate 15 year-old documents.

My view of my WordPerfect documents is now from the other side of a paradigm shift. WordPerfect was created to produce paper documents more efficiently. It is now much more efficient to store and manipulate online information, since much of our interaction with our peers or the entire world is now via an online world. Cerf's suggestion was that older

versions of applications should enter into a software escrow and be available for later translation of data back into information. Of course, many software versions are dependent upon specific a OS version,
and those OS versions are dependent upon specific hardware, so this is not as simple in practice as it might be in theory. A possibly more practical solution would be an escrow of data definitions
which might make possible the translation of obsolete data back into information, however, implementation of such a translation may require a degree of programming skill that is beyond most online denizens (not to mention the intellectual property issues which surround any of these possible solutions). However, the paradigm shift from electronic version as intermediary to electronic version as primary makes this ongoing access such an important issue.

The Acceleration of Technology in the 21st Century

At EDUCAUSE, Ray Kurzweil spoke of a different kind of paradigm shift. Kurzweil discussed the accelerating pace of technological progress and related that to human evolution. He presented a graph which illustrated that the evolution of life, the human species, and human technology have progressed at a regular rate of acceleration on a logarithmic scale. This means that the next paradigm shift happens in one tenth of the time that the last one took. In his books, *The Age of Spiritual Machines: When Computers Exceed Human Intelligence* and *The Singularity Is Near: When Humans Transcend Biology*, Kurzweil argues that technological change and human development will merge some time in this century fundamentally changing the nature of the human species.

You can observe this phenomenon in how humans store information. Before the era of the printing press, much information was transmitted in spoken (or sung) form and stored in human memory. Printing separated the information from the source, allowed efficient transmission via physical media, allowed for wider distribution, and offloaded the storage from human memory. Online information provides independence from the physical media and allows universal transmission within a virtual world. Unless you print it out, this column you are reading has no physical manifestation beyond the temporary display of it on your computer screen. Yet, you can access this column at any time and from any place. Each of these information storage and transmission paradigms have influenced human behavior and perhaps even human thought.

The Tower of Google

Georgia Nugent, in her 2006 EDUCAUSE conference speech, compared Google's aim of digitizing libraries of books to the attempts of Alexander the Great and other powerful figures through the ages to compile collections of knowledge as symbols of power. She emphasized that the Google project represented the first time that this kind of collection would be held in private rather than public hands. However, I see the Google boy billionaires as twin Alexanders to Bill Gates' Darius and think it's just a matter of time before that private wealth of knowledge migrates into the public arena (as many art collections and libraries have done in the past). She mentioned in passing the idea of a paradigm shift from scholarship as spoken to written word, which predates the shift to print technology discussed above.

This last concept generated a scene in my mind that might have been played out in ancient days. On one side is a scholar and on the other a technologist holding pen and parchment with the scholar saying, "I'm too busy THINKING to learn how to read and write." This is analogous to today's scholars who state, "I'm too busy with my research and teaching to

learn a new technology." This may be very true, yet, their children or grandchildren will soon be saying, "why do I have to learn to read and write when I have all this technology?" If you don't believe that, you should know that in many public schools handwriting is not taught after third grade because it is irrelevant. When my generation was in school, mastery of cursive was a requirement and taught as late as fifth grade. These days, cursive is no longer a requirement in public schools (or in most life situations), and if computers can do the reading for you, why do you need to learn that too?

What's next?

Kurzweil sees a singularity approaching when humans transcend the biological paradigm, but the truth is that not all humans live within the same paradigm. An example can be found in how we purchase goods and services. In 1966, you physically went to a store to purchase items. By 1986, you could order from a catalog and do your transaction via postal mail. In 2006, transactions can now be done entirely online with automated delivery via a number of package carriers. We all know people who are "stuck" in a previous paradigm, or at least are most comfortable in one of the earlier paradigms. In this example, the timeframe is that of a generation. We are soon approaching a situation in information technology and electronics where the paradigm will change every two years and soon after that, every two months. (How obsolete is your 6-month old cell phone?) Are we humans adaptable enough to keep up with the paradigm shifts?

My career in computing support has consisted of a continual process of moving academics from older to newer paradigms of information technology. From paper to computer, from mainframe to PC, from multi-user to network user -- it's been a continuous stream of ferry boat trips on a technology river (some faculty might claim it to be the Styx). I've learned that the river keeps flowing regardless of how hard you try to hold it back. It's best to try to keep up with the flow. And like Orpheus, sometimes it's best not to look back.

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Link of the Month

Each month we highlight an Internet, USENET Special Interest Group (SIG), or similar mailing list(s) or website(s).

The UNT Career Center is a valuable resource for students, alumni, faculty, staff, and employers. The Eagle Network is the "job system" on the Career Center website and it is now possible for UNT departments to post on-campus jobs directly into it. Contact Shaun Stoehr at shaun@unt.edu for further information about how to get started posting jobs into the system.

Also available on the Website are:

Going Global Career Guides

Going Global Career Guides are the ultimate international job seeker's guide! Updated continually, this massive research tool contains more than 10,000 resources for finding employment at home and abroad.

Check out all the Career Center has to offer from their website: http://careercenter.unt.edu/

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IRC News

Minutes provided by Sue Ellen Richey, Recording Secretary*

September 19, 2006

VOTING MEMBERS PRESENT: PHILIP TURNER, CHAIR, JUDITH ADKISON, PATRICK PLUSCHT, TIM CHRISTIAN, LOU ANN BRADLEY, JIM CURRY, ELIZABETH HINKLE-TURNER, UWE ROSSBACH, JON NELSON, DON GROSE, CENGIZ CAPAN, DON BUTLER (for JOHN HOOPER), MARGARET AMBUEHL, BRUCE HUNTER, RAY BANKS, ROBERT NIMOCKS, GUILLERMO OYARCE, RAMU MUTHIAH, GINNY ANDERSON **NON-VOTING MEMBERS PRESENT**: MAURICE LEATHERBURY, PHILIP BACZEWSKI, DOUG MAINS, JOE ADAMO, CHARLIE BRIEN, SUE ELLEN RICHEY (Recording Secretary) **MEMBERS ABSENT**: TOBYE RAE NELSON, SARA WILSON MCKAY, JOHN PRICE, ABRAHAM JOHN, BOBBY CARTER, CHRISTY CRUTSINGER, SCOTT WINDHAM **GUESTS PRESENT**: CHARLOTTE RUSSELL

The Chair asked for introductions of all members, since there were new members for this year, then welcomed everyone.

The minutes of the July 18, 2006 were approved as distributed.

Distributed Computing Support Management Team**

Philip Baczewski reported for the Distributed Computing Support Management Team that the committee met on July 21 when they established a subcommittee to look into the technical feasibility of replacing Novell Netware with Microsoft Server and Active Directory and moving from GroupWise to Microsoft Exchange for email services. A meeting of this subcommittee was set for the following week. Representatives from the Gartner Group presented a demonstration of using the Gartner portal to find the IT analysis information Gartner provides.

At an August 4th meeting of DCSMT, Elizabeth Hinkle-Turner reported on new statistical applications that are accessible on the markov.acs.unt.edu server and available for inclusion in desktop and lab computer images. This includes network license versions of SPSS, JAWS, and MAGIC.

DCSMT met again on September 15. The idea of anti-copy software was discussed and it was determined that support for data encryption seemed to be a better approach than trying to implement anti-copy software at the department or University level. Allen Bradley reported on the status of the CITC server maintenance service which supplements the manufacturer maintenance for Dell and HP servers with on-campus parts and service availability. He stated that most areas that had expressed interest had signed up for the service at the rate of $150 per server maintained.

Judith Adkison asked if DCSMT had come to any conclusion about the switch from Novell GroupWise to Microsoft Exchange Email. Philip replied that they are still in the process of making an assessment of the features of each product as well as the needs of various departments.

Learning Enhancement Planning Group

Patrick Pluscht reported for the Learning Enhancement Planning Group that TurnItIn will be renewed on November 17th for another year and stated that the integration of that product with WebCT Vista is working well. The product is available to all faculty and accessible by going to the TurnItIn website. Patrick also reported that the Horizon Wimba product, "Live Classroom", which is a web-conferencing system, will soon be available to faculty and staff for collaborative meetings. They already have VoiceTools available within and without Vista. He plans to send out information about the product as soon as it is available for use.

Patrick also reported that a clicker technology called "Turning Point" is being used by about a dozen faculty members; and COBA is conducting a test program with several instructors, which seems to be going well, so far, according to Cengiz Capan. Patrick stated that if the campus does decide to standardize on one particular clicker, it won't prohibit departments from using another product; but of course, there would be an advantage to using one technology across campus since it would save students the cost of having to purchase more than one. Ray Banks asked about the cost of clickers and asked if students were going to acquire them through the payment of a student fee, by purchasing one themselves, or by renting them by the semester. Patrick stated his hope that students will use them for multiple classes over multiple semesters, thus making the purchase of only one clicker more cost effective. Cengiz Capan stated that COBA is going to be charging students an annual fee for the use of a clicker (approximately $13/year). There was some discussion about some of the clickers currently being used by various faculty. Patrick said he would be willing to speak to student government senators if they would like him to. There was some discussion about session cookies used to authenticate the clicker, following a question from Uwe Rossbach.

Patrick also reported that they have had a response from Legal regarding the iTunes University contract; apparently there is a questionable clause regarding putting files up that do not have rights management. CDL or someone will need to develop a system to monitor and enforce copyrights; and CDL is checking with other universities to see how they have handled these same concerns.

Communications Planning Group

Lou Ann Bradley stated that the Communications Planning Group has not met since the last IRC meeting.

EIS Planning Group

Don Butler reported for the EIS Planning Group that information regarding on-going projects can be accessed at www.eis.unt.edu. Don stated that they are working on putting the UNT Fact Book online and expect to have it available by some time in November and the current year's Fact Book will be the last one published in paper form. Don also reported that the Campus Solution upgrade is presently underway and the new URLs will be published by early next week. A second request for bid will have to be conducted for the CRM module due to the fact that by the time the contract made its way through the legal department, UNT's needs had changed.

Standards & Policy Planning Group

Tim Christian stated that the Standards & Policy Planning Group has not yet met and will not meet unless there is a new charge or issue to deal with.

Student Computing Planning Group

Elizabeth Hinkle-Turner stated that the Student Computing Planning Group has not met but reported that presentations about student computing services have been made to over 6,000 incoming students and their parents, and a large number of pamphlets were distributed at the Mean Green Fling. In response to a question from Cengiz Capan, Elizabeth stated that this Planning Group is made up of representatives of GALMAC, GALC, RESNET, Student Government and Graduate Student Council.

Don Grose announced the expansion of library lab facilities by an increase of 40 workstations, and Elizabeth added that many standard office types of software applications have been added to the Library's public servers. Lou Ann Bradley stated that the Library has also added 10 laptops for checkout in the Science Technology Lab by faculty, staff and students.

WebCT

Dr. Turner reported that for the first time enrollments in online courses has crossed the 50,000 mark, with 25,000 individual students using WebCT. The peak usage has been 2000 simultaneous users. Distributed Learning will be forming a committee to look at the ramifications of Blackboard's acquisition of WebCT. UNT has been assured that WebCT Vista will be supported over the next 18 months or so, but WebCT will be putting out a fused product by the end of that time. Dr. Turner stated that there are a few technical problems with WebCT, but for the most part, they are satisfied right now. It was reported that in this year's Coordinating Board report, UNT is considered to be #1 in the amount of online enrollments, with University of Houston at #2, and TWU #3.

IRC Organization and Function

Maurice Leatherbury reported having met with UNT's new President Bataille regarding the organization and function of the Information Resources Council, and asked her what she thought of its current function. Pres. Bataille said she would wait to answer that until after the study group reports to her on the status of information technology at UNT.

Legal issues

The Chair asked if the council is still interested in having Nancy Footer attend an IRC meeting to discuss the processing of contracts through the legal office. The consensus was to invite her so Dr. Turner said he would ask her to attend either the October or November IRC meeting.

Firewall

Joe Adamo distributed a schematic drawing of the firewall since there was some discussion regarding the new firewall at the July IRC meeting. Joe explained that the first diagram shows the layout of the network as it exists presently. The second diagram shows the firewall itself, and Joe explained that they have moved the rules that were on the router over

to it, so everything should work about the same as it had before. Access has not changed and everybody still has the same level of capability as they had previously.

There being no further business, the meeting was adjourned.

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* For a list of IRC Regular and Ex-officio Members click here.

**DCSMT Minutes can be found here.

IRC Meeting Schedule

The IRC generally meets on the third Tuesday of each month, from 2-4 p.m., in the Administration Building Board Room. From time to time there are planned exceptions to this schedule. The schedule can be found here. All meetings of the IRC, its program groups, and other committees, are open to all faculty, staff, and students.

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University of North Texas

RSS Matters

Ade4TkGUI - A GUI for Multivariate Analysis and Graphical Display in R

Link to the last RSS article here: Tinn-R: A Convenient Script Editor for R on the Win32 Platform - Ed.

By Dr Rich Herrington, ACS **Research and Statistical Support Services Consultant**

This month we take a look at some advanced functionality in R that is available from a drop down menu system in R. Ade4 is a package for multivariate analysis and graphical display for the environmental sciences. Much of this package's functionality will be useful for researchers in the social sciences as well. The package and accompanying documentation can be downloaded from the CRAN website - Ade4, Ade4TkGUI. A more complete tutorial on using Ade4 can be found at the website for Ade4. Methodologies in this package that will be of interest to researchers include **(see Table 1.): Principal Component Analysis**; **Centered and Un-centered Correspondence Analysis**; **Multiple Correspondence Analysis**; **Fuzzy Correspondence Analysis**; **Methods to analyze mixtures of quantitative (interval) and qualitative variables (ordinal, categorical)**. Additionally Ade4 implements: **Linear Discriminant Analysis; Canonical Correlation Analysis;** and **statistical tests for between group clusters** based on Monte-Carlo and Permutation based techniques. In this article we will look at how to use Ade4 to implement **"Correspondence Analysis" (CA)**. The technique of CA falls under a wider class of multivariate techniques called "ordination methods" (e.g. Principal Component Analysis; Multidimensional Scaling, etc.). These methods order objects on derived continua (subject to some optimization criteria) such that similar objects are nearer one another, and dissimilar objects are further from one another. Graphical depiction of these derived continua allow graphical based clustering of objects (e.g. row objects and column objects in the data table). The field of Psychometrics has contributed greatly to the development of these methodologies (see the journal Psychometrika). CA is based on a matrix decomposition algorithm called Singular Value Decomposition (SVD) and bears the greatest resemblance to a class of lesser known techniques that are more generally known as "optimal scaling" methods - variously known as: Dual scaling; Optimal Scoring; Reciprocal Averaging; Homogeneity Analysis; or Alternating Least Squares Methods (ALS - see the pseudonym Albert Gifi). These methods derive reduced rank representations (e.g. a reduced set of coordinate systems) or lower dimensional components of transformed categorical and ordinal data by an iterative algorithm that transforms the categorical scaling of the variables

into optimally derived numerical scales. These algorithms (and their variants) are, iteratively applied, constrained least squares optimization procedures (i.e. an iterative application of an eigenvalue/eigenvector (e.g. independent modes of variation in the original scores) extraction algorithm subject to certain row and column constraints - for a readable account see William Jacoby, 1999). As a result, nonlinear multivariate associations between sets of variables can be uncovered. These methods will be valuable in situations where survey researchers are interested in data tables where (for example) the relationship of the rows (respondents) to columns (items or survey questions) are of interest, regardless of whether the rows and columns represent nominal or ordinal level measured variables. These SVD based techniques for categorical or ordinal data bear a theoretical resemblance to techniques for interval level data that allow comparisons between respondents (rows) and items (columns) in "reduced subspaces" (coordinate system), the so called "latent variable" models (for a readable account see Bollen). For example, Factor Analyses (FA) are applied to interval measured data where the measured data (or manifest data) are an indicator of an unobserved, latent, continuous variable.   Item Response Theory Analyses (IRT) are applied to ordinal dichotomous, or polytomous ordinal, measured data that are an indicator of an unobserved, latent, continuous variable. Latent Class Analysis (LCA) is applied to data that is nominal or categorical in composition, assuming an underlying latent category for observed responses. What these methods all have in common are that they derive a reduced set of factors, components, or categories for observed or latent scores where the relationship between rows and columns are of interest (e.g. respondent by category; respondent by item; or category by item; item by item; etc.). While the methods in **Ade4** (e.g. **correspondence analysis**) are primarily descriptive and are not model-based (e.g. like Maximum Likelihood Factor Analysis) and do not involve the estimation of sampling variability or interval estimation for parameters, there are some nonparametric based statistical tests available (i.e. resampling or permutation based tests). Additionally, the eigenvalue/eigenvector extraction procedures (i.e. SVD algorithm) and the subsequent common scaling of the coordinate system, do allow researchers to explore respondent and item similarity in a highly useful exploratory graphical procedure (e.g. biplots) of item and respondent similarity. As a set of exploratory methods, these techniques are indispensable for reducing the complexity of multivariate data so that interrelationships amongst sets of variables may be uncovered (respondents, items, and other important covariates). My intention in this article is to demonstrate the steps necessary to produce an analysis with **Ade4** and **Ade4TkGUI** and to demonstrate how ordination based methods can be useful for survey research.

 Table I. From R news, http://cran.r-project.org/doc/Rnews/Rnews_2004-1.pdf (page 5)

Functions	Analyses	Notes
dudi.pca	principal component	1
dudi.coa	correspondence	2
dudi.acm	multiple correspondence	3
dudi.fca	fuzzy correspondence	4
dudi.mix	analysis of a mixture of numeric and factors	5
dudi.nsc	non symmetric correspondence	6
dudi.dec	decentered correspondence	7

The dudi functions. 1: Principal component analysis, same as prcomp/princomp. 2: Correspondence analysis Greenacre (1984). 3: Multiple correspondence analysis Tenenhaus and Young (1985). 4: Fuzzy correspondence analysis Chevenet et al. (1994). 5: Analysis of a mixture of numeric variables and factors Hill and Smith (1976), Kiers (1994). 6: Non symmetric correspondence analysis Kroonenberg and Lombardo (1999). 7: Decentered correspondence analysis Dolédec et al. (1995).

As a working example, we will use the five item survey tool - Satisfaction With Life Survey. Additional information can be found at: http://www.tbims.org/combi/swls/index.html. These data were collected as part of on-going classroom demonstrations here at UNT in both undergraduate and graduate course work.

Correspondence Analysis with the "Satisfaction With Life Scale" (SWLS)

The following are screen shots of the list-drop-down boxes that were used in the SWLS survey. The UNT Zope Survey server was used to collect the responses to the SWLS:

I am satisfied with my life.

Strongly agree

In most ways my life is close to the ideal.

Neither agree nor disagree

So far I have gotten the important things I want from life.

Neither agree nor disagree

If I could live my life over, I would change almost nothing.

Neither agree nor disagree

The conditions of my life are excellent.

Neither agree nor disagree

Submit Survey - Thanks for completing our survey!

Responses are collected on a 7 point ordinal (arguably an interval) scale; the anchors to the points on the scale are: **Strongly agree, Agree, Slightly agree, Neither agree nor disagree, Slightly disagree, Disagree, and Strongly disagree**:

Strongly agree ▼
Strongly agree
Agree
Slightly agree
Neither agree nor disagree
Slightly disagree
Disagree
Strongly disagree

Some demographic data were collected, however we'll not look at that data here, we'll only examine the responses to the 5 items Q1-Q5. The data are available for download at: http://www.unt.edu/rss/SWLS.questions.txt. Last month we discussed using the Tinn-R editor as a script editor and pager for the R environment on the Windows platform. Below is a screen shot in Tinn-R of the R commands used to: **1) load needed packages; 2) download the data from the URL given; 3) export the survey data to a delimited text file such that the data can be read in by the ade4 GUI interface; and 4) display the data in a window for examination**. Additionally, the **ade4TkGUI** menu is displayed as well. Below is a screen-shot Tinn-R with the necessary R commands. Additionally a screenshot of 16 out of 174 responses (as an example) to the SWLS are displayed below the Tinn-R screenshot.

R Commands needed to load packages; download data; and start the ade4 GUI:

```
1  # Load libraries
2  library(relimp)
3  library(ade4TkGUI)
4
5  # Read data
6  SWLS.dat<-read.delim("http://www.unt.edu/rss/SWLS.questions.txt")
7
8  # Write out as delimited text
9  write.table(SWLS.dat,
10              "C:/SWLS.questions.dat.txt",
11              sep="\t", col.names=TRUE, row.names=FALSE,
12              quote=TRUE, na="NA")
13
14 # Display spreadsheet
15 showData(SWLS.data)
16
17 # Load multivariate library
18 ade4TkGUI()
19
```
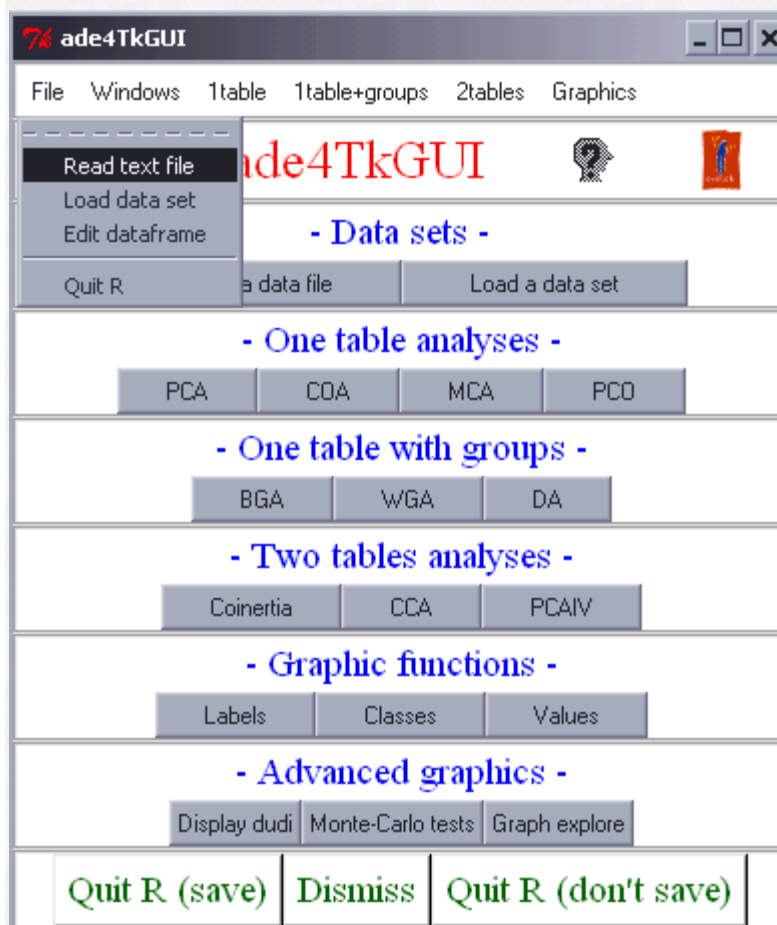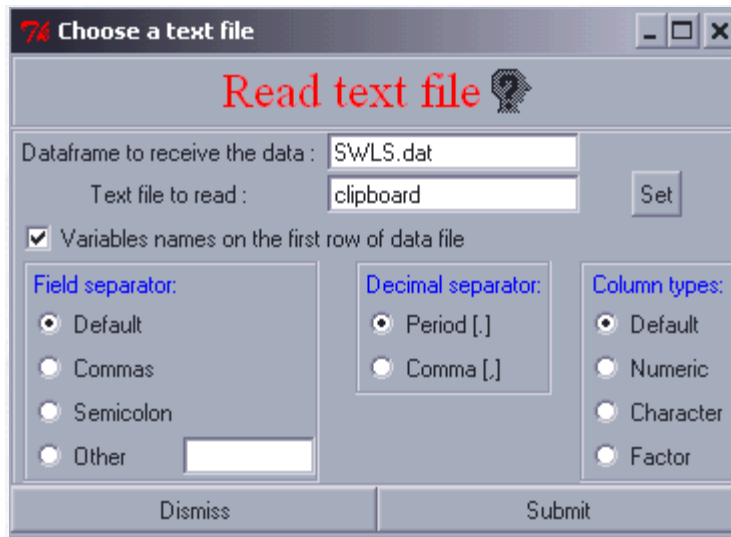
16 out of 174 responses are displayed:

The Initial ade4 GUI:

To begin, we need to read the data into the R working environment: On the Ade4 main menu bar, select: **File - Read Text Data** which will bring up the following window:

The defaults will work for the tab-delimited file SWLS data file (with variables on row one). Give the dataset a name of **SWLS.dat.** This will be the data set name for the workspace that we are using in R. Select the **"Set"** button and **browse to the location of the SWLS text file** (for this example the data was exported to **"c:\" drive**). Once the data is selected, a data editor appears. Close this window after a visual inspection - make sure the data loaded properly. When you are finished inspecting the data **close the R data editor by clicking the "x" in the upper right corner of the data editor**. For example:

|	Q1	Q2	Q3	Q4	Q5	v
1	2	3	2	3	6	
2	1	1	2	2	2	
3	1	1	1	2	5	
4	4	4	6	2	3	
5	2	3	4	2	5	
6	2	2	2	2	6	
7	6	4	5	5	5	
8	2	1	2	1	1	
9	5	5	6	6	6	
10	5	5	5	3	4	
11	1	1	1	1	1	
12	6	5	6	6	7	
13	4	4	4	4	4	
14	3	4	5	3	2	
15	2	3	3	2	6	
16	2	3	4	3	2	

The "read-text" dialog box should disappear and the display returns to the initial Ade4 dialog box. In the "One table analyses" panel, **Select the "COA"** button for the **"correspondence analysis"** method:
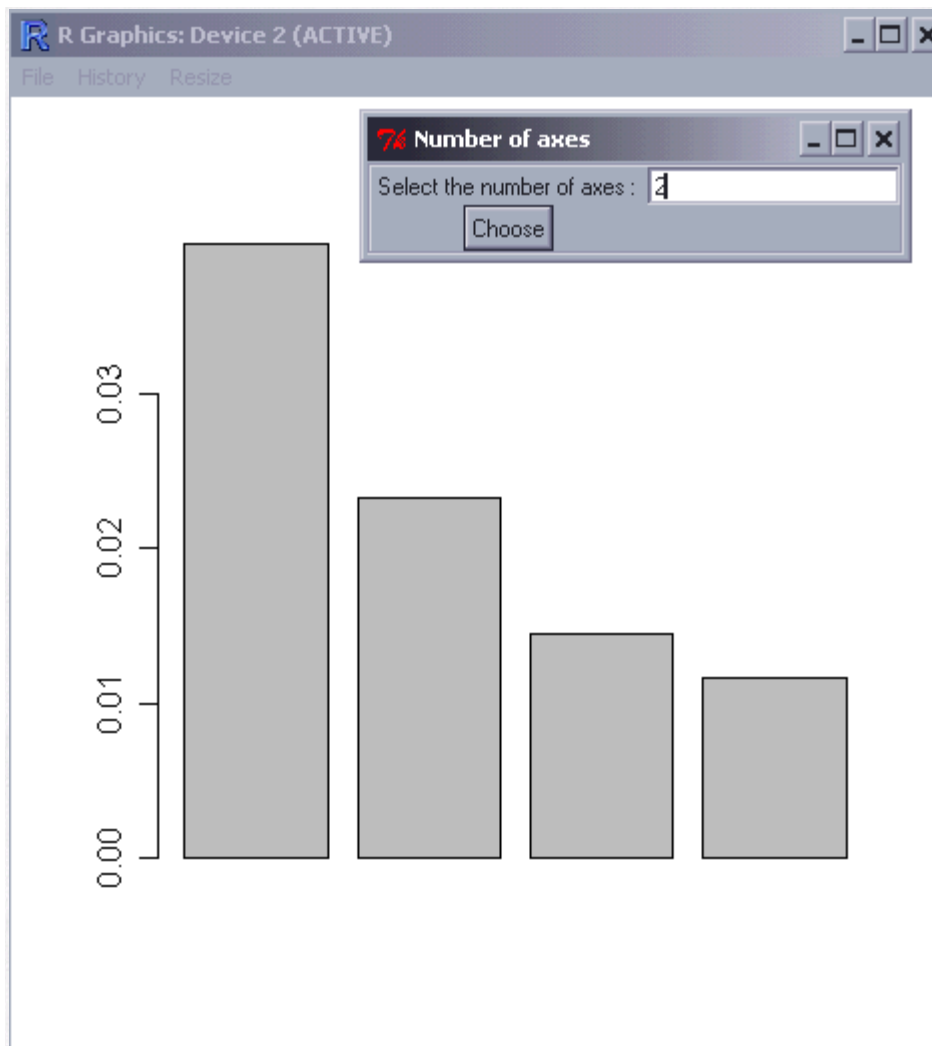
- One table analyses -

PCA	COA	MCA	PCO
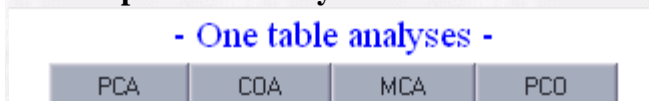
On the following dialog box, click **"Set"** and fill the **"Input data frame"** field by selecting the **SWLS.dat** entry in the next popup window. Then click **"Choose"** and then **"Submit":**
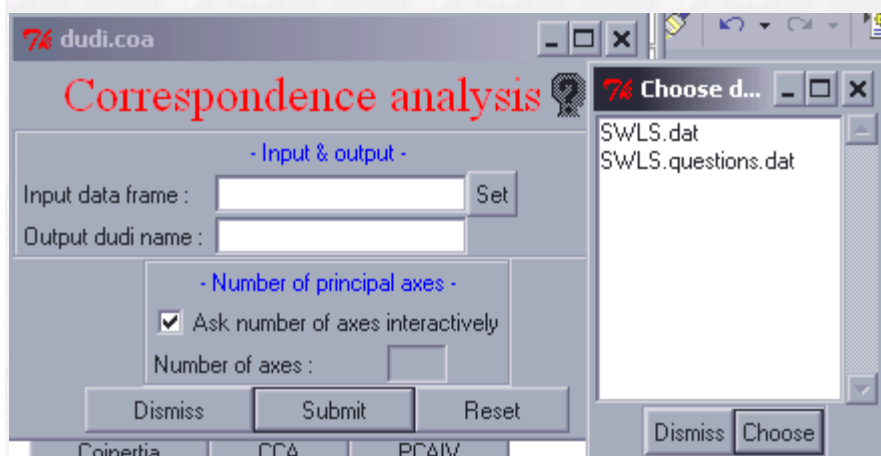
We see:
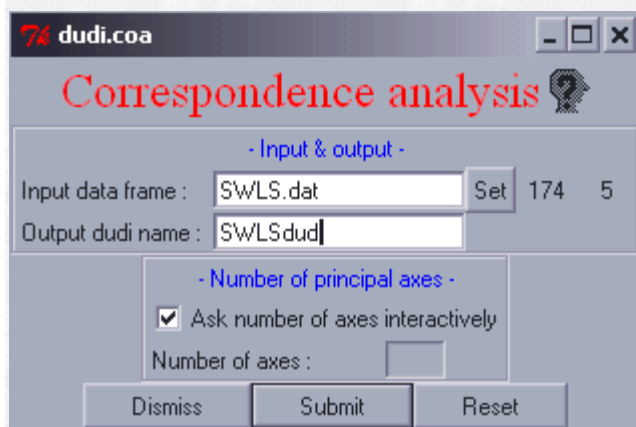
The dialog box shows that 174 rows with 5 columns have been selected. Give an **"output dudi name"** of **"SWLSdudi"** and click **"Submit"**. The following windows are generated:

Select **"2"** axis for the display and click **"Choose"**. **The bar chart that is displayed is a representation of the number of modes of independent variation accounted for in the original scores, where the heights display the relative amounts of variation accounted for in the original scores**. By selecting, "2", we are choosing to plot row objects and column objects in a coordinate system scaled such that the first two independent modes of variation are represented by the **(x, y)** axes of the coordinate system. By having the axes scaled in a common metric, row and column objects can be compared in terms of distances.

The following dialog box appears:

SWLSdudi

Duality diagram : summary and graphics

Correspondence analysis

Class:	coa dudi
Call:	dudi.coa(df = SWLS.dat, scannf = TRUE, nf = 2)
Axes:	2
Rank:	4
Eigenvalues:	0.03973 0.02334 0.01449 0.01161

	Vectors:	Length:	Mode:	Content:
1:	SWLSdudi$cw	5	numeric	column weights
2:	SWLSdudi$lw	174	numeric	row weights
3:	SWLSdudi$eig	4	numeric	eigenvalues

	Dataframes:	Nrow:	Ncol:	Content:
1:	SWLSdudi$tab	174	5	modified array
2:	SWLSdudi$li	174	2	row coordinates
3:	SWLSdudi$l1	174	2	row normed scores
4:	SWLSdudi$co	5	2	column coordinates
5:	SWLSdudi$c1	5	2	column normed scores

Select X and Y axis numbers for graphics - X axis : 1   Y axis : 2

Dismiss	scatter(SWLSdudi)	score(SWLSdudi)

This dialog box gives us information regarding the eigenvalue/eigenvector extraction and row and column scalings that Ade4 performed ("Vectors" panel). In the Vectors panel we see: column weights, row weights, and eigenvalues. Four eigenvalues were extracted with values of: .039, .023, .014, and .011 (note: since there are 5 items only 5 eigenvalues could be extracted; only the set larger than .01 are displayed). Clicking the **"scatter(SWLSdudi)"** button produces an **(x, y)** plot of the **case and item scores** (labeled with row and column number IDs) where the scaling for the **(x, y)** coordinates are equivalent. The upper left panel of the window displays a shaded bar graph of the two eigenvalues that are producing the **scores** and **scalings** of the coordinate system **(x, y), which are the two largest modes of variation in the row (respondents) and column (items) objects**:
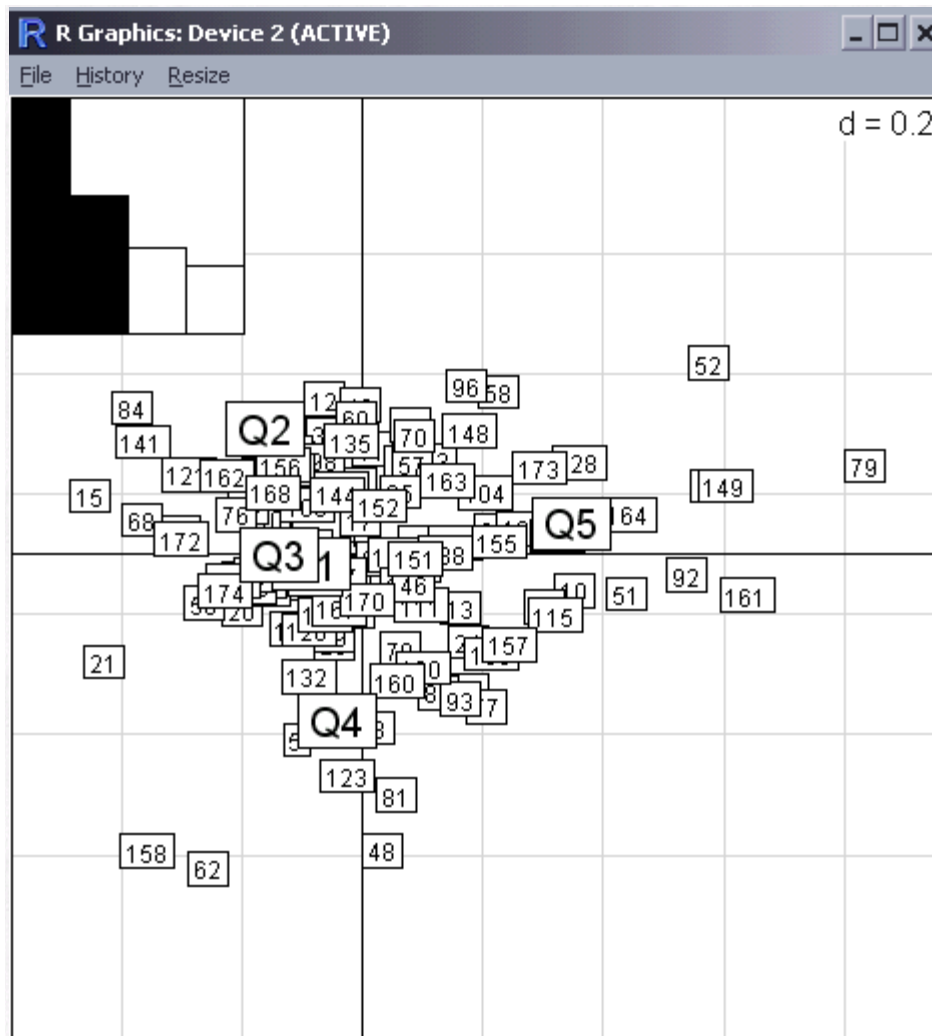
Initial Interpretations of the Correspondence Analysis

The pair of axes **(x, y)** represent independent coordinates or uncorrelated "components of variation", or "units of information" for the row and column objects. The units are scaled in a common metric for both **x** and **y** axes. Which, as a set of **(x ,y)** pairs, describe each of the row objects (n=174 respondents), and column objects (5 items). For a set of perfectly homogeneous items, we would expect the items to cluster fairly close to one another on both axes, with most of the clustering occurring along one axis. Since these items were semantically constructed to elicit the self report of a theoretically defined variable called **"Life Satisfaction"**, **we expect a single or unidimensional construct to emerge across individuals such that items look similar in terms of the (x, y) coordinates**. That is, we expect all of the information in the original set of elicited responses to be contained in the transformed values **(x, y)** with most of the information contained in either **x** or **y**. We would expect that the **(x, y)** values would be close for the items that are more homogeneous (i.e. responded to similarly by respondents). Additionally, individual respondents who are close in their **(x, y)** pairs would be considered to be more similar in their response patterns across the set of items as opposed to individuals whose **(x, y)** values differ substantially. Moreover, **the closeness of individuals AND items on (x, y) scores would allow a researcher to cluster "similar individuals" on clusters of "similar items"**. In our survey of 5 items, we see that items Q1, Q3 and Q5 are more similar to one another on the **x coordinate**. And, Q1, Q2, Q3, and Q4 are more similar to one another on the **y coordinate**. **Item Q5 can be seen as standing apart from the other four items (even more so than Q2)**. Also notice

that **the bulk of the respondents fall near items Q1-Q4. Item Q5 might be better reworded or be discarded entirely**. One way of thinking of this situation is to **see that there are 3 seperate TYPES of questions: 1) Low (x) values - [Q1,Q2,Q3,Q4]**; and **2) Low (y) values - [Q1, Q3, Q5];** and **3) Low (x, y) values - [Q1, Q3]**. These patterns of variation would account for three of the largest eigenvalues (e.g. indpendent modes of variation in the original scores). **Perhaps the smallest eigenvalue is accounted for by item Q2** since it resides some distance from both the **x** and **y** axes to some extent. Notice that **respondents 21, 48, 52, 62,79, 158, & 161** reside a substantial distance away from the bulk of the other respondents.

Conclusion

In summary, our conclusion is that this Correspondence Analysis has helped reveal a potentially informative source of heterogeneity in the set of items and respondents (rows and columns). The original presupposition of a **unidimensional construct underlying these items does not seem to hold**, at least upon a graphical inspection (and is supported by multiply large eigenvalues). Our **next step might be to look for subgroups of individuals** that account for the heterogeneity that we see in respondents responses on certain items (e.g Q5). Additionally, **we might try to clarify the wording in the survey items to better communicate the semantic content** that we are hoping will elicit correlates of the construct "Life Satisfaction" in our respondents responses.

References

 Statnotes: Topics in Multivariate Analysis, by G. David Garson - Correspondence Analysis Section

 Multivariate Statistics: Concepts, Models, and Applications, by David Stockburger - Linear Transformations Section

 Statistics With R, by Vincent Zoonekynd - Factor Analysis Section

 Special Announcements: RSS will be maintaining a blog devoted to research and statistics related news - *RSS-Blogs*; Additionally, RSS will be maintaining a Zope/Plone website devoted organizing communities and resources involved in survey research - *RSS-Surveys*.

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RSS Matters

Benchmarks Online

WWW@UNT.EDU

Zope: Error Value: [Errno 28] No space left on device

By Shannon Eric Peevey, UNT Central Web Support

Recently, we kept receiving the following error message when trying to import a 1.5GB zexp file into Zope:

Error Value: [Errno 28] No space left on device

After finding a reference to this error in the following email:

http://mail.zope.org/pipermail/zope/2002-May/114219.html

we checked the size of our partitions and found that the /tmp directory was actually in the root partition:

Filesystem	Size	Used	Avail	Use%	Mounted on
/dev/hde3	1.8G	826M	866M	49%	/
tmpfs	443M	0	443M	0%	/dev/shm
/dev/md2	74G	7.1G	63G	11%	/export
/dev/hde1	45M	9.4M	33M	23%	/boot
/dev/md0	5.5G	770M	4.5G	15%	/usr
/dev/md1	9.2G	393M	8.4G	5%	/var

and the root partition only had 866M of free space. It appears that Zope is using the /tmp directory during the import process, which caused the "No space left on device" error.

If you run into this problem, you can try the following work-around:

1. Create a "temporary" temp directory in a partition which has more free space, then the size of your zexp file, and set the sticky bit on it:

    chmod 1777 /export/tmp

2. Move /tmp to an alternate location:

      mv /tmp /tmpOLD

3. Create a symlink from the new temp to /tmp:

      ln -s /export/tmp /tmp

Since the /export partition on our machine had 63GB of space, Zope no longer gave us an error when we tried to import large files.

Links:

"Zope - Error Value: [Errno 28] No space left on device" http://speeves.unt.edu/newindex/?p=130

"[Zope] import and setting tmp dir" http://mail.zope.org/pipermail/zope/2002-May/114219.html

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Short Courses

By Claudia Lynch, *Benchmarks Online* Editor

Surf over to the Short Courses page for a list of courses that are being offered this fall. Classes still available are: R & S-Plus Programming, New Technologies for Survey Research, and LaTeX (helpful especially, for those preparing theses, dissertations, and/or research papers for classes or conferences).

Customized Short Courses

Faculty members can request customized short courses from ACS, geared to their class needs. Other groups can request special courses also. Contact ACS for more information (ISB 119, 565-4068, lynch@unt.edu).

Especially for Faculty and Staff Members

In addition to the ACS Short Courses, which are available to students, faculty and staff, staff and faculty members can take courses offered through the Human Resources Department, the Center for Distributed Learning, and the UNT Libraries' Multimedia Development Lab. Additionally, the Center for Continuing Education and Conference Management offers a variety of courses to both UNT and the general community, usually for a small fee.

EIS Training

Questions or comments relating to EIS training should be sent to the EISTRN GroupWise account. Upcoming EIS training events may be found at the links below:

- Learning to Use EIS

- EIS Timekeeper Training Schedule:

- EIS ePro Training Calendar

- Ongoing training is available on WebCT

GroupWise Training

Information about GroupWise training can be found at the GroupWise Support site. A list of GroupWise 7.0 "Tutorial Topics" can be found here: http://ncs.unt.edu/gw/howto/index.htm See "What's New in GroupWise 7"

here: http://ncs.unt.edu/gw/howto/info/whatsnew/index.htm also.

GroupWise 7.0 Seminars

If would like to have a Basic GroupWise seminar for your area, please contact Jason Gutierrez, Network Computing Services, jasong@unt.edu.

Center for Distributed Learning

The Center for Distributed Learning offers courses especially for Faculty Members. A list of topics and further information can be found here.

The center also offers a "Brown Bag" series which meets for lunch the first Thursday of each month at Noon in Chilton 245. The purpose of this group is to bring faculty members together to share their experiences with distributed learning. One demonstration will be made at each meeting by a faculty member with experience in distributed learning. More information on these activities can be found at the Center for Distributed Learning Website.

Technical Training

Technical Training for campus network managers is available, from time to time, through the Network Computing Services (NCS) division of the Computing and Information Technology Center. Check the NCS site to see if and when they are offering any training.

UNT Mini-Courses

There are a variety of courses offered, for a fee, to UNT faculty, staff and students as well as the general public. For additional information surf over to http://www.unt.edu/minicourses/

Alternate Forms of Training

Many of the General Access Labs around campus have tutorials installed on their computers. The Library has a Computer Training Resources webpage with lots of resources listed. The Training website also has all sorts of information about alternate forms of training. Computer Based Training (CBT) is one of the alternatives offered.

For further information on CBT at UNT, see the CBT website. Note the article the September issue of *Benchmarks Online*, "Fall 2006 - Computer-Based Training Update." Note also, two articles in the November issue of *Benchmarks Online*, "Using the Adobe Education Website - Revised November 2005" and "SkillPort and Thomson NETg Offer Easy-to-use Browser Compatibility Testing for Online Learning." The recently published article "Project Management Courses Added to the SkillPort CBT Website" may also be of interest.

The article Tracking Progress in New KnowledgeNet Courses in the January issue of *Benchmarks Online* gives instructions on how to set up tracking for each course. The article SkillSoft Site Re-organized With New Course

Offerings in the April issue of *Benchmarks Online* should also be noted. This information is also available on the CBT website.

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Transitions

New Employees:

- **Akhil Parekh,** EIS Tools & User Services Student Assistant (part-time).

- **Casey Logan Colby**, Telecommunications Student Assistant (part-time).

No longer working in the Computing and Information Technology Center:

- **Ariel M. Furman**, Telecommunications Student Assistant (part-time).

- **Samantha Moss**, Administration and Planning Administrative Assistant.

Awards, Recognition, Publications, etc.

Soaring Eagles

The following people will be recognized at the President's Staff Lunch on October 24. Their names appeared in the October *Human Resources Newsletter*:

- **Howard Draper**, Computer Support Specialist, Information Security.

- **Marc Knight**, Information Security Intern.

- **Graham Pocta**, CITC LAN Technical Assistant (part-time).

Please note that information published in *Benchmarks Online* is likely to degrade over time, especially links to various Websites. To make sure you have the most current information on a specific topic, it may be best to search the UNT Website - http://www.unt.edu . You can also search *Benchmarks Online* - http://www.unt.edu/benchmarks/archives/back.htm as well as consult the UNT Helpdesk - http://www.unt.edu/helpdesk/ Questions and comments should be directed to benchmarks@unt.edu

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Don't Forget Our Monthly Columns!

By Claudia Lynch, *Benchmarks Online* Editor

In addition to our feature articles, *Benchmarks Online* publishes monthly columns that are focused on specific aspects of computing here at UNT (and beyond, in some cases). Check out what is waiting for you this month:

- **RSS Matters** - "RSS Matters" is the monthly column written by the Research and Statistical Support Group in Academic Computing Services. Their articles focus on topics of a statistical and/or research methods nature. **This month, Dr. Rich Herrington talks about "Ade4TkGUI - A GUI for Multivariate Analysis and Graphical Display Software in R."**

- **The Network Connection** - "The Network Connection" may well be the longest running column in computer publishing history. Certainly in University of North Texas computer publishing history.

  In this month's article, "Paradigm Shiftwork," Dr. Baczewski reflects on the thought-provoking topics that were discussed at the recent EDUCAUSE 2006 conference in Dallas.

- **Link of the Month** - As it says on the top of the "Link of the Month" page, "each month we highlight an Internet, USENET Special Interest Group (SIG), or similar mailing list(s) or Website(s)." Lately we have been confining ourselves to featuring UNT specific sites. **This month find out about the UNT Career Center.**

- **WWW@UNT.EDU** - "WWW@UNT.EDU" is a monthly column written by the Central Web Support Group in Academic Computing Services. The topics usually focus, in some way, on World-Wide-Web-related issues. **This month Shannon Eric Peevey talks about " Zope: Error Value: [Errno 28]."**

- **Short Courses** - Every semester, Academic Computing Services (ACS) offers short courses on computer-related topics, many of them having to do with statistical research. This column keeps you up-to-date on what is being offered and when as well as other training opportunities. **Short Courses continue through November 6. Check it out!**

- **IRC News** - As their Webpage says, "the IRC is an advisory and oversight body created to foster communication and cooperation between and among UNT information resources providers and users." We publish the minutes of the IRC meetings each month, when they are available. **The September 19, 2006 minutes are included this time.**

Don't Forget Our Monthly Columns!

- **Staff Activities** - This column focuses on new employees, people who are no longer employed at the Computing and Information Technology Center, awards and recognitions and other items of interest featured here.

Please note that information published in *Benchmarks Online* is likely to degrade over time, especially links to various Websites. To make sure you have the most current information on a specific topic, it may be best to search the UNT Website - http://www.unt.edu . You can also search *Benchmarks Online* - http://www.unt.edu/benchmarks/archives/back.htm as well as consult the UNT Helpdesk - http://www.unt.edu/helpdesk/ Questions and comments should be directed to benchmarks@unt.edu

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