Meeting of Workshop Architects, 13-17 Oct 75

ATTENDEES: 1

ARPA--C McLindon 1a

RADC--D Stone 1b

NSA--T Hassing 1c

AMC--R Uhlig, E Vongehern 1d

BRL--S Taylor 1e

AFDSDC--L Crain, L Simms 1f

MIT--R Sheppard 1g

BELL--I Mattiuz 1h

ETS--D Potter 1i

HUDSON--R Ruggles 1j

SRI--G Sherwood 1k

SRI-- D Englebart, J Norton, B Pine, J Bair, J Beck, S Rotter, R Jordan, B Boli, P Allen 1l

PURPOSE: 2

The purpose of the meeting was to provide SRI with feedback on the adequacy of the Utility service, explore areas where joint support might improve the service and to exchange information on applications. 2a

DISCUSSION: 3

Minutes of the meeting were recorded on-line for the 5 days. They will be edited and disseminated via the Journal. This report is a summary of the highlights. 3a

Monday 3b

A brief overview of applications and their progress at each site was given Monday. SRI gave a review of progress in the utility service over the last 6 months. 3b1

Tuesday 3c

Complaints about system cost, response time and lack of SRI

reponse to these comaints were aired. In general, the architects who comlained the most, were the ones using NLS the least. The response time complaints seemed to stem from comarisons with SNDMSG and MSG, which are simple message handling systems and cannot be compared with NLS. Other complaints were based on misinformation, like the up-time, which was thought to be 76%, when records show it to be 97+%. 3c1

The concern that SRI is not responsive to the Architect group was not founded, but turned out to be lack of communication. SRI had indeed been working on problems identified in the previous meeting, such as documentation, training and response time, but had not explicitly informed all architects. 3c2

An executive session was held, where pricing options were discussed. It was decided to hold a meeting in Washington near the end of Nov, where a position paper would be prepared and given to SRI, detailing the direction and priorities for further utility service. 3c3

Wednesday 3d

Current pricing of the utility service was discussed in detail. Of the $40K per slot per year, roughly 30 goes to TYMSHARE for computer lease and operation, with 10K going to SRI for operation, training, documentation, etc. SRI has 19 people supporting the utility sevice, only 8-9 are directly covered by contract. The rest are taken out of SRI overhead, with the intent that as subscribers increase, the internal SRI manpower "loan" will be payed back. 3d1

It does not appear that the cost of the utility can decrease for the next contract unless action is taken to decrease the hardware costs. The only potentially available means of doing this in the time frame is to add core to the facility. This involves changes in the BBN Pager, but has been accomplished once at ISI. 3d2

The pricing of the service will be changed from a slot basis, to a unit basis...where 3 units roughly equal a slot. This is part of a trend towards the goal of paying for what you use. This is possible due to a pie slice allocator delivered by BBN to all TENEX sites. Upon further inspection, however, it was revealed that the pie slicer heavily favored batch (core resident) jobs, an undesireable feature in an interactive system. The pie slicer does not worry about disc space, nor more importantly about disc accesses. SRI has been making changes in these areas, to assure the customer he is getting a % of all important system resources, not just CPU cycles. 3d3

A draft proposal for next year's service will be circulated by SRI within 2 weeks, reflecting the changes in costing and delivery made possible by the redesigned allocator. 3d4

Friday 3e

Demonstrations and talks on secific applications were given. There was a lot of interest in RADC's Financial Management System by Army, NSA, ETS and SRI. Discussions were held on areas where the architects might jointly support some limited SRI development. Making FMS general, redoing the Outut Processor to make it more completely support document procuction and control, and interfacing the calculator to BASIC seemed to gain the most support. 3e1

Side trip to COMPASS 3f

I made a trip up to COMPASS on Wed afternoon, to discuss the problems that lack of documentation on the Works Manager and the Program Management Tools are causing the government. COMPASS may be doing a tremendous job, but no one can tell, since they have not released any documentation on their part of the NSW project. 3f1

This would be a minor annoyance, if it were not for the fact that COMPASS has been charged with the overall intergration on the NSW system. This makes it even more important that their thinking be available to all as rapidly as possible so interfaces etc. can be worked on by others. 3f2

I explored with Bob Millstien, their attitude towards on-line documentation. He views it as an added burden if he has to do it both on-line and in the standard mode. There is no internal plan to move their company toward on-line documentation. It appears that they will be coding first and documenting last, a practice that is currently "forbidden" in modern programming shops. There seemed to be no appreciation for the on-line preparation and circulation of designs, notes, etc. 3f3

COMPASS has apparently agreeded to use MULTICS for documentaion. They should be given NLS, as the Journal system is particularily powerful in coordinating a distributed software development project, to say nothing about its superior editing and publication facilities. Regardless of which system is used, their attitude of not revealing what they are doing before they have finished, is disturbing to say the least. 3f4

ACTION ITEMS: 4

Meeting of Workshop Architects, 13-17 Oct 75

I borrowed a copy of "The Mythical Man-month", essays on software engineering by Frederick Brooks, from Doug Engelbart while at the meeting. It is a book that should be in the hands of everone in the division who is associated with managing software development projects, or conducting R&D on how they can be better managed. It contains some very pratical guidelines based on his experience with managing the OS/360 development. The philosophy, methods, tools and procedures Brooks highlights overlap 99% with those in NLS. Is there a way that copies of this book can be made widely available to managers and engineers in IS? 4a

Determine who will be contracting through RADC for the 3rd year of Workshop Utility Support as soon as possible, so that work can start on procurement. 4b

Get documentation on FMS to interested DOD sites. Find out what the policy and timing will be on release. 4c

UNRESOLVED ISSUES: 5

How to get better and more timely documentation out of COMPASS. 5a

DLS 19-OCT-75 13:11 33698

Meeting of Workshop Architects, 13-17 Oct 75

(J33698) 19-OCT-75 13:11;;;; Title: Author(s): Duane L. Stone/DLS;
Distribution: /RDK([ACTION]) ARB([ACTION]) MAW([INFO-ONLY])
FJH([INFO-ONLY]) JLM([INFO-ONLY]) FJT([INFO-ONLY]) ;
Sub-Collections: RADC; Clerk: DLS;

33698 Distribution
Robert D. Krutz, Alan R. Barnum, Mike A. Wingfield, Francis J. Hilbing, John L. McNamara, Frank J. Tomaini,

ESV 19-OCT-75 15:39 33700

CONFUSED AUTHOR

I JUST SENT A MESSAGE OUT OF MY DIRECTORY AND WOUND UP HAVING AN IDENT OF "MC" AITACHED, ON FURTHER CHECKING I FIND THAT THIS BELONGS TO A MICHAEL CHINNERY, ON CAREFUL EXAMINATION OF THE MESSAGE HEADER I FIND THAT IT WAS INDEED "SENT" BY MICHEAL CHINNERY, I DONT KNOW WHAT MICHEAL WILL THINK WHEN HE/SHE LOOKS INTO HIS/HER AUTHOR BRANCH.....ON THE MORE SERIOUS SIDE- I DON'T LIKE THIS ONE BIT, SOMETHING IS WRONG AND AS I SEE IT, IT IS WRONG ENOUGH TO DESTROY THE PRIVACY OF THE SYSTEM IF THIS KIND OF THING CAN HAPPEN,
THIS MESSAGE IS FROM ED VONGEHREN@OFFICE 1

ESV 19-OCT-75 15:39 33700

CONFUSED AUTHOR

(J33700) 19-OCT-75 15:39;;;; Title: Author(s): E. S. VonGehren/ESV;
Distribution: /FEEDBACK([ACTION]) ESV([INFO-ONLY]) ;
Sub-Collections: NIC FEEDBACK; Clerk: ESV;

33700 Distribution
Special Jhb Feedback, E. S. VonGehren,

RWH 20-OCT-75 09:13 33701

PYES COMMENTS ON POSTED DOCUMENTS

I HAVE READ THE PAPERS WHICH YOU SENT ME AND HAVE THE FOLLOWING COMMENTS. 1

I HAVE A VAGUE SENSE OF UNEASE BECAUSE THE PRINTED PAPER GIVES THE IMPRESSION THAT ALL THE PRELIMINARY WORK DESCRIBED THERIN IS BY HOUGH AND HARKNESS. AS YOU KNOW, THIS IS SOMEHING ABOUT WHICH I AND MY COLLEAGUES ARE EXTREMELY SENSITIVE. I AM SURE THAT IT IS ONLY AN OVERSIGHT, BUT..... 2

A COUPLE OF COMMENTS ON THE IMPACT/SCENARIO MATRIX- 3

WHO IS GRYNDLEY? IS THE PETER IN "CHARGE" OF NATIONAL LEVEL IMPACTS PETER MILLER? ARE THE TRANSPORTATION SPECIALISTS INPUTTING TO IMPACT AREAS 14,15,16? ARE IMPACTS 18 AND 19 PROPERLY IMPACTS OR ARE THEY PART OF BACKGROUND ANALYSIS. I AM PREPARED TO OVERSEE WORK ON IMPACTS ON OFFICE EMPLOYEES AS WELL AS OFFICE ORGANISATIONS. 4

RE THE OVERALL OUTLINE - BRUCE CHRISTIE HAS DONE SOME WORK WHICH IS RELEVANT TO 2.4.2. 3.3 IS RELEVANT TO THE POLICY SECTION. 5

BACK TO THE PRINTED PAPER - FORCING FACTORS OTHER THAN TRANSPORTATION NEED TO BE MENTIONED E.G. THOSE THAT ENCOURAGE DECENTRALISATOON OF OFFICES. 6

COMMENTS ON RCH PAPER DATED 4/9/75 - FIRST A DEFENSIVE THOUGHT, HAA ANYTHING HAPPENED TO DISCREDIT DOXIADIS REPORT SINCE IT WAS WRITTEN, I AM VERY STRONGLY OPPOSED TO THE IDEA THAT WE SHOULD ONLY CONSIDER CHANGES IN MARGINAL GROWTH. I ACCEPT THAT IT IS OK WHEN CONSIDERING THE IMPACT ON A PLANNED TRANSIT SAYSTEM FOR SAY DETROIT, BUT THAT DOES NOT MEAN THAT IT IS ACCEPTABLE WHEN CONSIDERING THE IMPACT IN OTHER AREAS. FOR EXAMPLE WHAT WOULD BE THE IMPACT ON DETROIT IF TELECOMS ENCOURAGED DECENTRALISATION OF EMPLOYMENT WHEN THERE WAS NO GROWTH OF OFFICE EMPLOYMENT - ARGUABLY THE TAX BASE WOUD SUFFER ENORMOUSLY. (PAGE 16) ONE AUDIO TERMINAL PER 10 JOBS IS PROBABLY EXCESSIVE. FOR THE CIVIL SERVICE WE WOULD ESTIMATE 6 TERMINALS PER 1000 JOBS, ASSUMING 20% SUBSTITUTION. 7

COMMENTS ON ON RCH DOCUMENT DATED 8/28/75 8

IMPACT AREA 3: I CAN CONTRIBUTE TO THIS. AREA 4: SOME HIGH RISE BUILDGS AREVIRTUALLY IMPOSSIBLE TO DISMANTLE. 9

AREA 6; THE VALUE OF OFFICE WORK IN CENTRAL LONDON HAS BEEN QUESTIONED - I AM TRYING TO FIND THE REPORT. 10

AREA 11. THE IMPORTANCE OF AIR QUALITY VARIES FROM PLACE TO PLACE I.E. FROM LOS ANGELES TO EVERYWHERE ELSE. IT MAY BE WORTH DRAWING

ATTENTION TO THIS SINCE LOS ANGELES NEEDS FORCE CALIFORNIA STATE LAWS WHICH PRESSURE THE AUTO INDUSTRY TO MAKE NATIONWIDE CHANGES. 11

AREA 12. N.B. THE RECENT FINDINGS ABOUT CONCORDES NOISE LEVELS. 12

AREA 13. ONE OF THE CALIFORNIA UNIVERSITIES HAS BEEN DOING WORK ON RESIDENTS ATTITUDES TO THE VISUAL IMPACT OF BUILDINGS. I WILL TRY TO FIND OUT WHICH ONE. 13

AREA 14. I LIKE THE IDEA OF COMPARING ENERGY SAVINGS WITH ALTERNATIVE MEANS OF PROVISION. CAN WE ALSO COMPARE SIDE EFFECTS AND SECONDARY IMPACTS I.E. MAKE USE OF DICKSONS WORK? 14

AREA 15. I DISAGREE VERY STRONGLY. IN THE UK 87% OF BUSINESS TRAVEL TAKES LESS THAN 2 HOURS I.E. IS NOT INTERCITY. THAT CANNOT BE SO LIGHTLY WRITTEN OFF AS AN AREA FOR POTENTIAL SAVING. 15

AREA 16. CANT VOORHEES HELP BY TELLING THE LENGTH AND MODE OF SHOPPING, PERSONAL BUSINESS AND RECREATIONAL TRAVEL BY PEOPLE IN DIFFERENT TYPES OF LOCATION. I THINK THAT THESE EFFECTS MUST BE QUANTIFIED. 16

AREA 20. SEE THE LONG RANGE STUDIES PAPER BY JOAN GLOVER FOR DETAILS AND REFERENCES. 17

AREA 21. THERE IS LOTS OF BORING WORK BY ARCHITECTS ON BUREAULANDSCHAFT, I.E. LANDSCAPING OFFICES. I CAN FIND OUT ORE BUT IT MAY COST MONEY! 18

AREA23. I HAVE MORE INFO ON ATTITUDES TO TRAVEL IN ICI LTD. 19

AREA 23 CONT. ALSO INFO ON HOW MUCH TRAVEL IS BY DIFFERENT GRADES IN THE CIVIL SERVICE. 20

SEE OTHER DETAILS OF BRITISH STUDIES IN MY NEW RURAL SOCIETY PAPER, WHICH IS IN THE POST. 21

AREA 25, END. NOT SO DIFFERENT FROM WORKING FOR SAY SRI NOW. IT ONLY SMOOTHS THE MINOR BUMPS BETWEEN AN INDIVIDUALS EMPLOYMENT OPPORTUNITIES. 22

AREAS 26 AND 27. WHY DO TRAVEL COSTS ONLY IMPACT THE EMPLOYEE AND NOT THE ORGANISATION. 23

AREA 28. I DONT THINK LCB CAN HELP. 24

AREA29. END OF SECTION. CANT FANTAS SUPPPLY INFORMATION. 25

AREAS 33 AND 34. I DONT THINK THESE ARE REALLY DISTINCT. 26

RWH 20-OCT-75 09:13 33701

PYES COMMENTS ON POSTED DOCUMENTS

AREA 35, LOB STUDIES CAN GIVE INFORMATION ON TURNOVER OF EMPLOYEES, SEE MY NRS PAPER AGAIN, 27

AREA 43, I THINK AT&TS WORLD TELEPHONES GIVES STATS ON PRODUCTIVITY, 28

AREA44, I WOULD LIKE TO CONTRIBUTE TO THIS AREA, BUT OTHERS E.G, GODDARD WOULD ALSO BE USEFUL, 29

AREA 45, I AM VERY INTERESTED IN FLEXIBILITY, WHICH RELATES TO POLICY ANALYSIS VERY STRONGLY, 30

AREA 48, EDUCATION MAY BE VERY IMPORTANT AS A HIGHER LEVEL IMPACT, EG, IF TELECOMS CAUSES RELOCATION TO THE SUBURBS THEN IT MAY FURTHER POLARISE THE NATURE OF NEIGHBOURHOOD SCHOOLS, 31

WELL IM SURE THATS ENOUGH FOR NOW, THE IMPORTANT POINTS CONCERN NOT NOT ONLY DEALING WITH A NO GROWTH SITUTATION IN THE CITIES AND NOT CONSIDERING INTRA CITY SUBSTITUTION, LET ME KNOW WHAT YOU THINK, 32

33

PYES COMMENTS ON POSTED DOCUMENTS

(J33701) 20-OCT-75 09:13;;;; Title: Author(s): Roger W. Hough/RWH;
Distribution: /PIW([ACTION]) RA3Y([INFO-ONLY]) ;
Sub-Collections: NIC; Clerk: RWH; Origin: < HOUGH,
PYE-COMMENTS.NLS;1, >, 20-OCT-75 06:48 RWH ;;;;####;

33701 Distribution
Phil I. Weintraub, Raymond R. Panko,

RA3Y 20-OCT-75 09:25 33702

Should We Fit the Network Standard?

Jake recently suggested (26681,) that journal mail should fit the network standard. While I agree that we should have good interfaces between NLS and TENEX Sendmessages, that is as far as I would go. Sendmessage has grown like topsy, and it has suffered worse mangling by computer types than Sendmail. Sendmessage formats are exceedingly ugly, and message sending and reading programs are crude. So unless there is compelling need to fit NLS into that standard, I would oppose it.

And there is not compelling need. The number of ARPA Net users is large, but hardly staggering. A thousand or two at the most, if my guess is correct. Yet there are 40 thousand telex/TWX terminals, and these send 50 million messages each year. In time, some computer message service will meet these volumes and perhaps surpass them by one or two orders of magnitude. What we need is a computer message service for average people who will demand the simplicity and elegance of the telephone system. Neither Sendmessage nor Sendmail come near to what is needed, but I think Sendmail is on the right track.

RA3Y 20-OCT-75 09:25 33702

Should We Fit the Network Standard?

(J33702) 20-OCT-75 09:25;;;; Title: Author(s): Raymond R. Panko/RA3Y; Distribution: /SRI-ARC([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: RA3Y;

33702 Distribution

Douglas C. Engelbart, Martin E. Hardy, J. D. Hopper, Charles H. Irby, Harvey G. Lehtman, James C. Norton, Jeffrey C. Peters, Dirk H. Van Nouhuys, Kenneth E. (Ken) Victor, Richard W. Watson, Don I. Andrews, Israel A. Torres, Jan H. Kremers, Susan K. Ocken, Raphael Rom, David C. Smith, Buddie J. Pine, Andy Poggio, David L. Retz, Laura J. Metzger, Karolyn J. Martin, Jan A. Cornish, Larry L. Garlick, Priscilla A. Wold, Pamela K. Allen, Delorse M. Brooks, Beverly Boli, Rita Hysmith, Log Augmentation, Raymond R. Panko, Susan Gail Roetter, Robert Louis Belleville, Ann Weinberg, Adrian C. McGinnis, Robert S. Ratner, David S. Maynard, Robert N. Lieberman, Sandy L. Johnson, James H. Bair, Jeanne M. Leavitt, Rodney A. Bondurant, Jeanne M. Beck, Marcia L. Keeney, Elizabeth K. Michael, Jonathan B. Postel, Elizabeth J. Feinler, Kirk E. Kelley, N. Dean Meyer, James E. (Jim) White

JHC3 20-OCT-75 11:19 33703

test sendmail

NLS has facilities to let you do almost everything you need with text: compose it; edit ; send it to (and receive it from) other persons; file this in one or more categories ; and cite and easily obtain documents; search for documents by author and subject; search in documents by word or phrase; and print in practically any format. 1

NLS or online system is the name of the computer system you will be using, online means you receive immediate feedback about what you have just typed at your terminal. 2

although this primer describvess specific functio smm we add and delete notes at each step which generalize the operation, given this primer as a model, the inexperienced suer should be alble to perform any of the operations describbed here and reffer to other nls documentation for more information about the system.. 3

now is the time for all good men to come to the aid of their country. 4

yalyhouh this ptimer describes specific functions we add nootes att each step which generalize the operation, given this primer as a model, the inexperienced user should be able to perform any of the operationns described here and refer to other nls douumentation for more information about the system. 5

JHC3 20-OCT-75 11:19 33703

test sendmail

(J33703) 20-OCT-75 11:19;;;; Title: Author(s): James H. Collins/JHC3; Distribution: /WNC([ACTION]) ; Sub-Collections: NIC; Clerk: JHC3; Origin: < COLLINS, TEST,NLS;2, >, 20-OCT-75 09:31 JHC3 ;;;;####;

33703 Distribution
Willie N. Calcote,

testing

NLS or online system is the name of the computer system you will be using, OON LINEE MEANS YOU RECEIVE IMMEDIATE FEEDBCK AOUT WHAT YOU HAVE JUST TYPED AT YOUR TERMINAL. 1

nls has facilities to let you do almost everything you need with text. 2

NLS or online system is the name of the computer system you will be using, online means you receive immediate feedback about what you have just typed at your termninal. 3

this primer demonstrates the commands used for writing a memo, editing it, and distributing it to other people, this process is explained for INLS, which is the typewriter version of NLS, You will find it useful to be at a terminal, typing in the commands and text as the primer describes them. 4

thomas r, moore is a lousy typist, however he always tries very hard not to make mistakes i wonder if this is the problem, maybe????? 5

now is the time for all good men to come to the aid of their country, by thomas r, moore ???? 6

testing

(J33704) 20-OCT-75 11:22;;;; Title: Author(s): Willie N. Calcote/WNC; Distribution: /WNC([ACTION]) ; Sub-Collections: NIC; Clerk: WNC; Origin: < CALCOTE, BAKER1,NLS;2, >, 20-OCT-75 09:32 WNC ;;;;####;

33704 Distribution
Willie N. Calcote,

test send message

NLS has facilities to let you do almost everything you need with text: compose it; edit ; send it to (and receive it from) other persons; file this in one or more categories ; and cite and easily obtain documents; search for documents by author and subject; search in documents by word or phrase; and print in practically any format. 1

NLS or online system is the name of the computer system you will be using. online means you receive immediate feedback about what you have just typed at your terminal. 2

although this primer describvess specific functio smm we add and delete notes at each step which generalize the operation. given this primer as a model, the inexperienced suer should be alble to perform any of the operations describbed here and reffer to other nls documentation for more information about the system.. 3

now is the time for all good men to come to the aid of their country. 4

yalyhouh this ptimer describes specific functions we add nootes att eaCh step Which generalize the operation. given this primer as a model, the inexperienced user should be able to perform any of the operationns described here and refer to other nls douumentation for more information about the system. 5

test send message

(J33705) 20-OCT-75 11:24;;;; Title: Author(s): James H. Collins/JHC3; Distribution: /WNC([ACTION]) ; Sub-Collections: NIC; Clerk: JHC3; Origin: < COLLINS, TEST.NLS;2, >, 20-OCT-75 09:31 JHC3 ;;;;####;

33705 Distribution
Willie N. Calcote,

test sendmail

NLS has facilities to let you do almost everything you need with text: compose it; edit ; send it to (and receive it from) other persons; file this in one or more categories ; and cite and easily obtain documents; search for documents by author and subject; search in documents by word or phrase; and print in practically any format. 1

NLS or online system is the name of the computer system you will be using, online means you receive immediate feedback about what you have just typed at your terminal. 2

although this primer describvess specific functio smm we add and delete notes at each step which generalize the operation, given this primer as a model, the inexperienced suer should be alble to perform any of the operations describbed here and reffer to other nls documentation for more information about the system,. 3

now is the time for all good men to come to the aid of their country. 4

yalyhouh this ptimer describes specific functions we add nootes att each step which generalize the operation, given this primer as a model, the inexperienced user should be able to perform any of the operationns described here and refer to other nls douumentation for more information about the system. 5

test sendmail

(J33706) 20-OCT-75 11:32;;;; Title: Author(s): James H.
Collins/JHC3; Distribution: /WNC([ACTION]) ; Sub-Collections: NIC;
Clerk: JHC3; Origin: < COLLINS, TEST.NLS;2, >, 20-OCT-75 09:31
JHC3 ;;;;####;

33706 Distribution
Willie N. Calcote,

JHC3 20-OCT-75 11:36 33707

test sendmail

NLS has facilities to let you do almost everything you need with text: compose it; edit ; send it to (and receive it from) other persons; file this in one or more categories ; and cite and easily obtain documents; search for documents by author and subject; search in documents by word or phrase; and print in practically any format. 1

NLS or online system is the name of the computer system you will be using, online means you receive immediate feedback about what you have just typed at your terminal. 2

although this primer describvess specific functio smm we add and delete notes at each step which generalize the operation, given this primer as a model, the inexperienced suer should be alble to perform any of the operations describbed here and reffer to other nls documentation for more information about the system.. 3

now is the time for all good men to come to the aid of their country. 4

yalyhouh this ptimer describes specific functions we add nootes att each step which generalize the operation, given this primer as a model, the inexperienced user should be able to perform any of the operationns described here and refer to other nls douumentation for more information about the system. 5

test sendmail

(J33707) 20-OCT-75 11:36;;;; Title: Author(s): James H. Collins/JHC3; Distribution: /WNC([ACTION]) ; Sub-Collections: NIC; Clerk: JHC3; Origin: < COLLINS, TEST,NLS;2, >, 20-OCT-75 09:31 JHC3 ;;;;####;

33707 Distribution
Willie N. Calcote,

practice

when will we ever learn to use this? 1

DW2 20-OCT-75 11:42 33708

practice

(J33708) 20-OCT-75 11:42;;;; Title: Author(s): Deanna Williams/DW2;
Distribution: /DW2([ACTION]) ; Sub-Collections: NIC; Clerk: PAW2;

33708 Distribution
Deanna Williams,

practice

Revision of to 0035d-54

Practice

(J33709) 20-OCT-75 11:42;;;; Title: Author(s): Lucille B. Happy/LBH2; Distribution: /PAW2([INFO-ONLY]) VIG([INFO-ONLY]) ; Sub-Collections: NIC; Clerk: PKA;

33709 Distribution
Priscilla A. Wold, Violet I. Gleason,

testing

this is for testing purposes only. 1

this is the middle of october. 2

testing

(J33711) 20-OCT-75 11:59;;;; Title: Author(s): Willie N,
Calcote/WNC; Distribution: /JHC3([ACTION]) ; Sub-Collections: NIC;
Clerk: WNC; Origin: < CALCOTE, FRANCES,NLS;1, >, 20-OCT-75 11:52
WNC ;;;;####;

33711 Distribution
James H. Collins,

testing

NLS or online system is the name of the computer system you will be using. OON LINEE MEANS YOU RECEIVE IMMEDIATE FEEDBCK AOUT WHAT YOU HAVE JUST TYPED AT YOUR TERMINAL. 1

nls has facilities to let you do almost everything you need with text. 2

NLS or online system is the name of the computer system you will be using. online means you receive immediate feedback about what you have just typed at your termninal. 3

this primer demonstrates the commands used for writing a memo, editing it, and distributing it to other people. this process is explained for TNLS, which is the typewriter version of NLS. You will find it useful to be at a terminal, typing in the commands and text as the primer describes them. 4

thomas r. moore is a lousy typist, however he always tries very hard not to make mistakes i wonder if this is the problem. maybe????? 5

now is the time for all good men to come to the aid of their country. by thomas r. moore ???? 6

testing

(J33712) 20-OCT-75 13:36;;;; Title: Author(s): Willie N, Calcote/WNC; Distribution: /JHC3([ACTION]) ; Sub-Collections: NIC; Clerk: WNC; Origin: < CALCOTE, BAKER1,NLS;2, >, 20-OCT-75 09:32 WNC ;;;;####;

33712 Distribution
James H. Collins,

JCP 20-OCT-75 15:41 33713

Test Message

This is a test message to the ARC-ADG expand group. It should be received by three individuals: JMB, LJM, and JHB. If/when any of you receive this, will you please let me know? Thanx - Jeff 1

JCP 20-OCT-75 15:41 33713

Test Message

(J33713) 20-OCT-75 15:41;;;; Title: Author(s): Jeffrey C. Peters/JCP; Distribution: /ARC-ADG([INFO-ONLY]) ; Sub-Collections: SRI-ARC ARC-ADG; Clerk: JCP;

33713 distribution
Jeanne M. Beck, Laura J. Metzger, James H. Bair,

ESV 20-OCT-75 21:05 33714

scholar

bob-
i tried to log into bbn to use "scholar" tonight, the system accepted the log and password, but rejected the account number i had copied (it doesn't like acct # 10004),
can you straighten me out?
ed vongehren

1

ESV 20-OCT-75 21:05 33714

scholar

(J33714) 20-OCT-75 21:05;;;; Title: Author(s): E. S. VonGehren/ESV;
Distribution: /RMS2([ACTION]) ; Sub-Collections: NIC; Clerk: ESV;

33714 Distribution
Robert M. Sheppard,

PCB 21-OCT-75 08:50 33715

hmmm

dear larry, saw your messasge re a bunch of things. Cant send you info desired right now as i dont have a printer on this terminal. Expect to see you 29 oct at china lake. Dave may be there too...
regards , pcb

1

hmmm

(J33715) 21-OCT-75 08:50;;;; Title: Author(s): Paul C. Bishop/PCB;
Distribution: /ILA([ACTION]) JDB([INFO-ONLY]) ; Sub-Collections:
NIC; Clerk: PCB;

33715 Distribution
I. Larry Avrunin, Jerry D. Burchfiel,

PCB 21-OCT-75 09:10 33717

testing

hi ! just testing, havent heard anything form the dancing girls in a long time.... i wonder why???? bye, pcb 1

testing

(J33717) 21-OCT-75 09:10;;;; Title: Author(s): Paul C. Bishop/PCB;
Distribution: /RH([ACTION]) JDB2([ACTION]) PCB([INFO-ONLY])
; Sub-Collections: NIC; Clerk: PCB;

33717 Distribution
Rita Hysmith, J. David Brown, Paul C. Bishop,

IAT 21-OCT-75 15:33 33718

practice

i want to send a message, this message isgoing to go on until i get stopped, do you still want me to go on with tis message ihaven, 1

IAT 21-OCT-75 15:33 33718

practice

(J33718) 21-OCT-75 15:33;;;; Title: Author(s): Israel A. Torres/IAT; Distribution: /PKA([INFO-ONLY]) IAT([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: IAT;

33718 Distribution
Pamela K, Allen, Israel A, Torres,

Bev notes

I have to send you a message thanking you for the notes youve been sending. (If only this noisy line will stop deleting everything I start to write (third times a charm). 1

I haven't had a chance to meet any people on a social basis so especially appreciate the time you've taken to fill me in on what's happening. Just like letters from home. 2

If you'll allow me (as an ex clerk typist at ARC), I would like to sympathize with the delema of not taking notes, or letting a sister do all the work. I think it's disgusting. A little coordination among the peons seems in order. 3

I think the reason it is so disgusting to me is because after all this ltime, I still have not faced the fact that these people who are administrating such an advancedtechnological wonder and who are ahead in many of their ideas, display such senile behavior. 4

On to other things: I'm pretty familiar with the scholar project as of a year ago. If they've done anything since then, I'd be interested in playing around with it. Go ahead and send the password, etc. 5

Your note was the first time I've heard of a possible reshuffling of ARC documentation. What kinds of possibilities do you see? What do you think would be best? (Liquidation of certain personalities presumably not included.) I haven't done much constructive thinking about it because I didn't know the possiblity existed. But if it does, we should determine what would be best and present a united front. 6

God damn noise keeps deleting my paragraphs! (thank god I'm on a terminal with hard copy!) (knock on wood, cross my fingers, hold my breath, I'm learning these are all useful techniques when dealing with the probabilities of random uncertainty.) 7

What was I saying? Oh yeah, I think if we could get the time to do it right, we could generate usefull hardcopy documentation from help files that could pass for "userguides". (I don't know about "textbook", but probably even that. I would certainly beat the Glossary ... and if they like THAT ...) If I get nothing else done this winter, I hope to show how this can be done. 8

I'm suprised to hear about negative commenns on the training. We know the source of the negative comments on help. I think those are fixable. But I thought we were doing a pretty good job with training. 9

Bev notes

I thought your characterizations of the architects were astute. Ed Von Gehren is a new one to me though. 10

I find that I am not used to the pace of upper division course work while working 20 hours / week. It is keeping me busy. In particular, I'm taking a course in Applied Probability that takes most all of my time. Besides not having attended school full time for four years, and not ever having a course in probability or systems analysis, the professor is really laying out the homework. 11

On top of that, I changed my one lower division course to an upper division "individual study" class which will be more interesting, but will also take more time. It is officially titled (i got to make up the title myself) "Neural pharmacological models of motivation". I will be investigating the validity of the neural-adrenal model of motivation in the "Maximizing Capabilities" paper. The lower division class is called "action and decision in sensory motor systems" and includes readings in neurophysiology, psychology, and automata theory. I am continuing to audit this course as part of the individual study. 12

I will be giving a seminar on the "Maximizing Capabilities" paper to the class mentioned above. I have already received lots of valuable feedback from the people who have been exposed to various parts of the philosophy. I hope to get a lot more. 13

The Information Science 1 students were dutifully impressed with the WUC tape. It was rather hard to get them to discuss any of the ehtical or socialogical implications. There were also a few people from the communications department and OASIS (Open Access Information Systems) who were interested, I'm not sure what may develop. 14

The capability theory is taking so much of my time, I'm afraid I've let the Whole Universe Catalog slip. I could major in programming instead of systems analysis and spend my time on WUC instead of the philosophical framework. Sometimes I wonder if that wouldn't be the more practical route. The problem is the philosophy is ultimately more interesting. The one professor I've asked (Michael Cunningham) thinks it could be carried into a PhD. That's a long way off though. 15

In the mean time, I hope to get some feedback from the local people into things similar to WUC (like OASIS) about where I might carry it. Waiting for this is one reason (besides not enough time and several other factors) why I didn't get around to submitting the WUC paper for the next issue of the Coevolution Quarterly. Rumor has it, by the way, that this issue is supposed to have Gov. Brown, S. Brand, and Gregory Bateson all interviewing each other! 16

I have a small room on the second floor of the house. Also on the

second floor are a couple, Don and Mary. On the first floor is Nora and her daughter Liza. Nora is recently divorced and her son Michael comes over often. He is about 5 and very very loud. His father, who just moved out with Michael is into alternative education at the public alternative school. I've been looking into getting a computer terminal for the school. Michael likes to come up and play tic-tac-toe with the computer. 17

I live on Mission street which is Highway 1. There are lots of big heavy trucks which make a lot of noise. Between the traffic and the children, I'm thankful for the FM stereo which I listen to alot while I work and study. But the interferrence here is unbelievable! There is a "secret" defense radar installation in the hills which causes an annoying 1 second buzz every 10 seconds. There is a ham radio operator next door which comes through in the middle of the music. The cars going past in the street sometimes make the FM stations sound like AM in a thunder storm. In addition, the phone line to the computer is so full of noise that it frequently types random characters instructing the computer to do unwanted things. I feel like I'm in an electro-magnetic no man's land. Right now it's sounding pretty good though. 18

Well, I better get back to solving some more of those conditional cumulative mean probability mass distribution continuous functions or what ever they're called. 19

They changed my phone number to (408) 425-0780 in Santa Cruz or (408) 354-4096 in Los Gatos. My new address if you dont already have it, is 911 Mission, Santa Cruz, California 95060. 20

Bev notes

(J33719) 21-OCT-75 19:47;;;; Title: Author(s): Kirk E. Kelley/KIRK; Distribution: /BEV([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: KIRK;

33719 Distribution
Beverly Boli,

Background of SRI (NLS) Utility service and Architect 1

The SRI Utility slot was established by ORO for development of potential applications within the Institute. The Utility Architect is responsible for assisting with the evaluation of NLS with respect to its appropriateness and cost-effectiveness for institute projects. 1a

The ARC has been developing NLS (oN-Line System) for over a decade now with the approach of providing generalized tools for knowledge workers, NLS being thought of as providing a working media via computers. Although it is difficult to learn initially, it has unmatched power and fexibility for the experienced user. It was not designed to support "casual" users, but rather to provide the tools that were not availible anywhere else in such a way that would allow proficient and experienced users to develop their own particular tools. 1b

The Architect is to be this expert NLS user who coordinates the introduction, integration, and support of other users...serving as the interface between the system and its application users. Because of the prerequisite experience necessary to function as an architect, the emphasis to date has been on learning NLS, and recently L10/CML for development specialized usersubsystems. 1c

I have been functioning as an applications/systems programmer at SRI for several years now, and shortly after assuming the architect role (Mar. 75) it became quite evident that programming special user tools was of critical importance. The intent was to show the-powers-that-be some "payoff" for their $40k before slot renewal time as well the challenge of realizing the much belabored potential of NLS. The past 6 months has been one hell of a trip...busy, frustrating, and at times very rewarding. 1d

Current Slot Users (12) and Activity 2

TAD - Technology Applications Department (850) R.K.Whalen 2a

This group (SDP & CAG2) have been active on the Utility since Oct. 1974. They developed several proposals for crisis managment systems which called for a separate slot(s). Currently they are building a data base of Soviet publications with links to the respective user communities. 2a1

* Update: The PORT directory has been removed, since he has become an inactive user. Review of TADs use of NLS by their sponsor is scheduled for the beginning of November and they will notify me as soon as they know. 2a2

Port, Steve D. - SDP
Physicist - Technology Applications Department
L3068 x2516 2a2a

Grimm, Carolyn A. - CAG2
Secretary - Technology Applications Department
L3017 x3147 2a2b

FORM - P. Kruzic of OED (820) 2b

Initially, this effort is focused at providing a fast easy method for producing government required Form 251's which qualify SRI to receive and bid on RFP's. This is currently a manual operation and since the data mainly consist of boiler plate info and project descriptions it has excellent potential to be of benefit to many once the data are on-line and are accessable. Reddy Dively is doing the design work and Pam Kruzic will be supplying the source data. 2b1

* Update : Reddy has since phased off after completing the major design work. Kathy Mabrey is now working with Pam and they are just starting to produce Form 251's with NLS. 2b2

Kruzic, Pamela G. - PGK
Operations Analyst - Operations Evaluation Department
K3086 x4014 or 3402 2b3

PDG - Program Development Group (913) J. Rubenson 2c

The PDG is currently implementing a pilot study which is designed to enhance the effectiveness of the Washington marketing effort. The intent is to provide brief summaries of clients with previous contacts, proposals, and projects made by SRI. This work is well under way and is currently in use. There are however, significant improvements that are in the process of being developed that should streamline and increase PDG's use of the system. 2c1

O'Keefe, Pat Whiting- - PWO
Research Engineer - Information Sciences Laboratory
J1070 x4547 2c1a

Scott, Maria E. - MCS (WDC office)
Research Assistant - Program Development Group
SRI-Washington (703) 524-2053 x273 2c1b

McDaniel, Charleen F. - CFM
Interoffice Assistant - Program Development Group
E201 x2411 2c1c

CIM - Commericial & Industrial Marketing - D, Penning & P, Rice (912) 2d

This group is the commericial compliment of the PDG marketing effort and require the same type of contact summary reports, In addition, they have another data base (Research Opportunities - ROs) which is currently maintained manually and in sore need of some "augmentation". 2d1

A complete user subsystem (CIMROS) has been developed to support the RO data base in NLS and is currently running in parallel with the manual system as a pilot study. 2d2

Independent Users 2e

Goodfellow, Geoff - GSG
Network Liason for SRI-AI Tenex machine
Computer Operator - Artifical Intelligence
K2079 x3550 2e1

Ehardt, Joe - JLE
Assist with development of user subsystems
Research Engineer - Information Science and Engineering
J1058 x4775 2e2

Miller, Steve - SWM
Manager Program Development (ISE)
L1109 x4331 2e3

Hough, Roger - RWH
Teleconferencing and Project work
Senior Engineer - Telecommunications Sciences Center
306B x4479 2e4

SRI Utility Architects 2f

Support of the above,,,also see < 1 ; wy > 2f1

Sherwood, Glenn A, - GAS2 Architect
Programmer - Computer Planning Services
G1003 x2171 2f1a

Mabrey, Kathey L, - KLM Assistant Architect
Secretary - Information Sciences Laboratory
J1046 x2503 2f1b

Method of Approach for applications development 3

When considering potential users there is the initial comparison

of their particular needs with availible system resources. Since our resources are finite (the Utility slot represent a guarranteed 3% of the CPU with a maximum of 3000 pages of disk) answers to the questions below are sought. However, If one is to keep the best interest of all concerned in mind, there are other factors that must be considered as well as the explicit needs...these include such things as the potential users background, experience, attitude and enthusiasm towards computer usage. These subjective types of considerations are developed in conjunction with the following : 3a

Amount of on-line storage (disk) needed ? 3b

The volume of data and its growth rate are especially important since, in addition to slot limitations, files in excess of 100 pages of disk (256,000 characters) are extremely slow to access and have been known to be unreliable. Hence, users with massive data bases are currently discouraged. Provision must be made for workspace as well, but this is rather flexible and can range from 50-300 pages depending upon needs...the main concern here is the user data base size. 3b1

Time and duration of on-line access needs ? 3c

The most frustrating of the current systems limitations has been access reliability and slow response. This is in part because most of the NLS users are on the east coast and the system is usually quite busy from 8-3 PDT. This situation seems to have improve recently and promises to get better with future enhancements (Tenex pie-slice scheduler and direct access equipment). However, we are currently conducting timing test throughout the day to get a better idea of the access reliability and speed (Office-1 does not provide this data). Most of the current users have minimal access needs of 1-2 hours (max.) per day and these vary enough from day to day so that we have yet to face serious problems. To avoid future problems concerning access, users with relatively light and flexible accessing needs (1hr/day) are preferred. 3c1

Functional feasibility ? 3d

The level of support (clerical & professional) that propective users can afford to dedicate as well as their future needs must be determined. This question is also asked because I once talked to a man who wanted to design, code, test, and document different operating systems in a variety of languages on NLS, this is not currently feasible. Most of the people interested in using NLS want to build and maintain small data bases and possibly take advantage of the communication features. This

doesn't require anything beyond the realm of NLS, which has an impressive repertoire of 800 commands. It does however, require specially tailored tools for the users doing a familar task a new way, if the transition from the paper world into the electric is to be smooth and effective. 3d1

Level of application development needed ? 3e

The level of effort required to introduce users to the system can vary from duplicating a current manual process to developing a full blown specialized system. User applications are to be evolutionary in nature and are intended to be initially simple and sound enough so as not to preclude futher development. As stated previouly, most of the demand is for relatively simple data managment....the need here is to make it appear to the USER as a simple and easy thing to do. 3e1

Programming support to provide specifically tailored tools for the users has been non-existent until recently. Again, it is this activity that must be addressed if there is be any real progress in applications development on the Utility and for that matter on NLS as a whole. 3e2

I have just started to develop user tools and still have much to learn in this respect, but what experience I do have certainly confirms the need for this level of user support. Ideally, the tools needed for a particular application would be designed and developed prior to any training of operators - so that a specific subset of the developed commands could be taught - thus, speeding and easing user introduction. 3e3

If there is a good match between a potential users needs and existing resources and the other indications are positive then we design a pilot study. The study must be designed, developed, tested, and reviewed to provide something with which to measure and compare. The users experience gained from the pilot study and the evaluation of that experience at the review should provide sufficient data for the decision wether or not to continue NLS servce. 3f

Telecon - Group Ident for KWAC special interest study 4

Background: KWAC minutes < JJOURNAL, 32280, 4c :g > 4a

Teleconferencing was identified as a topic for special study group at the last KWAC conference, and a vote was taken to form the group SEE < JJOURNAL, 32280, 8f14:w>. 4a1

With the help of Roger Hough and Ra3y Panko , Mike and I sought

to develop and distribute initially a survey discussion of conferencing...especially since no one knew exactly what was meant by "teleconferencing". So we started with Ray's paper of what existed in the way of teleconferencing systems and appended a questionaire for feedback. SEE < GJOURNAL,32360,1:w> This document was sent to TELECON w/ copies to KWAC 4/22/75. 4a2

I have requested comments and suggestions from DCE concerning this effort. He was provided with this background and it is hoped that he will give us some explicit examples of the teleconferencing-like techniques that are currently availible in NLS. 4a3

* Update: see <HJOURNAL, 33076, 1:w> for Doug's response. To be candid this activity has, for me at least, LOW priority since 4a4

1.) It wasn't my idea to coordinate this study, I inherited it from Mike Placko. 4a5

2.) I am in no way qualified, experienced, or very interested. 4a6

3.) The magnitude of effort required and current obstacles ($) seem to put this kind of concern into Fantasyland. 4a7

4.) Out of 19 members of TELECON the only KWAC respondee was MIKE of Bell, RLL, and RA3Y of ARC also responded. T'would appear as though I'm not the only one who sees this as a low priority activity. 4a8

Developments - current and future 5

Current : 5a

* Retrieve subsystem (general) 5a1

* CIMROS subsystem (specialized) 5a2

* Direct access (w/ Vadic modems) 5a3

* B6700 to Office-1 Interface for data transfer 5a4

Future : 5b

* Since most of the current Utility users are involved in some aspect of marketing and enthusiastic support has started to develop at SRI for some kind of consolidation of it's marketing

efforts,,,the intention is to "augment" this with NLS and possibly other systems, 5b1

(J33720) 21-OCT-75 21:13;;;; Title: Author(s): Glenn A.
Sherwood/GAS2; Distribution: /JLE([INFO-ONLY]) KLM([INFO-ONLY])
PWO([INFO-ONLY]) DVN([INFO-ONLY]) ; Sub-Collections: NIC;
Clerk: GAS2; Origin: < SHERWOOD, QUAK,NLS;1, >, 10-OCT-75 19:33
GAS2 ;;;;####;

33720 Distribution
Joseph L. Ehardt, Kathey L. Mabrey, Pat Whiting O'Keefe, Dirk H. Van Nouhuys,

PAW2 22-OCT-75 08:30 33721

test 1

hello from the morning class.... 1

test 1

(J33721) 22-OCT-75 08:30;;;; Title: Author(s): Priscilla A. Wold/PAW2; Distribution: /PAW2([ACTION]) CDH([ACTION]) OLP([ACTION]) GDK([ACTION]) ; Sub-Collections: SRI-ARC; Clerk: PAW2;

33721 Distribution
Priscilla A. Wold, Chuck D. Hall, Opal L. Power, Gene D. Knight,

WNC 20-OCT-75 11:44 33722

test sendmail

this is a test paragraph. 1

this is a cold day. 2

this game has become a chore. 3

i have nothing more to say. 4

test sendmail

(J33722) 20-OCT-75 11:44;;;; Title: Author(s): Willie N. Calcote/WNC; Distribution: /JHC([ACTION]) ; Sub-Collections: NIC; Clerk: WNC; Origin: < CALCOTE, PITTS,NLS;1, >, 20-OCT-75 11:25 WNC ;;;;####;

33722 Distribution
John H. Carson,

RWH 22-OCT-75 08:45 33723

WORK PLAN FOR AREAS 20-35

I HAVE BEEN THINKING FURTHER ABOUT IMPACT AREAS 20-35,
SPECIFICALLY THE ALLOCATION OF TASKS TO PEOPLE. 1

I SUGGEST THAT PETER MILLER BE RESPONSIBLE FOR AREAS 20,21
24,25; PHIL WEINTRAUB BE RSPONSIBLE FOR AREAS 28-31 & 35;
RA3Y PANKO BE RESPONSIBLE FOR 33 AND 34; I BE RESPONSIBLE FOR 23,
26,27,32;RICH HARKNESS BE RESPONSIBLE FOR 22. 2

I WILL NEED ASSISTANCE ON 23 TO GATHER DATA ABOUT TRAVEL VOLUMES
- CAN PHIL (OR SOMEONE ELSE AT BPG) HELP INTERPRET THEIR TRAVEL
DATA?; I WILL NEED SOME INFO ON COSTS OF SERVICES - CAN WE GET
SUPPORT FROM AT&T - BY TE WAY WOULD RA3Y BE INTERESTED IN ASSISTING
WITH THIS AREA I.E. #26? 3

I WOULD LIKE TO TAKE THE DISCUSSION OF THE EFFECTIVENESS OF
NBD WORK CENTRES OUT OF 25 (WHERE RICH DISCUSSES IT) AND PUT IT INTO
AREA 32. 4

COMMENTS FROM RICH, RA3Y, PETER, PHIL? 5

WORK PLAN FOR AREAS 20-35

(J33723) 22-OCT-75 08:45;;;; Title: Author(s): Roger W. Hough/RWH;
Distribution: /RA3Y([ACTION]) RWH([INFO-ONLY]) ;
Sub-Collections: NIC; Clerk: RWH; Origin: < HOUGH,
PYE-COMMENTS,NLS;1, >, 22-OCT-75 08:01 RWH ;;;;####;

33723 Distribution
Raymond R. Panko, Roger W. Hough,

Statement of Purpose 1

The purpose of this thesis is to probe the nature of ordinary language- of human to human verbal communication. However, in this case, the probe will be made by investigating the issues surrounding numerous attempts to improve upon ordinary (natural) language by constructing idealized (artificial) versions, or formal languages, 1a

Asking why these attempts have so far proved inadequate substitutes for ordinary language, often even when applied in the limited domain for which they were designated, will shed some light on identifying properties both unique and essential to ordinary language, 1b

The thesis will address itself to the following questions: 1c

Why have criticisms been raised against the system of natural languages? What are the grounds for these criticisms? 1c1

What attempts have been made by these critics and their followers to eliminate these problems? What theories for ideal languages did they construct? 1c2

What directions are recent attempts now taking at actual construction of artificial laguages? How do their purposes differ from those ofthe ideal language theorists? 1c3

What are the various ways in which these artificial constructs differ from natural language systems, 1c4

The thesis will then develop some hypotheses to explain the vast differences between artificial and natural language systems, 1d

DRAFT of thesis

Introduction 2

However for the sake of comparing the ordinary language structure to the formal language structure, I will limit myself to the written systems of both structures. My present concern is with syntax, the part of grammar that concerns how sentences (for our purposes, in both artificial and natural languages) are constructed. 2a

We will see further in our discussion with formal language systems that here with natural languages we are dealing with an extremely complex mechanism. And we shall see how the processor of natural language - the human mind - (integral to our description of natural language) has never been fully described in purely formal terms (likewise with the processor's (human) language); for if it had, we could conceivably program computers to understand or to process natural language, and to "speak" grammatically. 2b

It is the purpose of this thesis to examine that criticism, to identify those ways in which natural laguages have been deemed inadequate, and to consider the extended capabilities and limitatins imposed by symbol systems designed to substitute in certain cases for natural language. 2c

Description of natural language 3

Let us look first at what we mean by ordinary or natural language. What is a natural language system, (e.g. English): 1) what are its characteristics, and 2) what are its applications, i.e., what does it allow man to do? 3a

General characteristics of natural language 3a1

An adequate description of natural language, its origins,its growth, its impact upon man and his culture,has been the task of philosophers, and linguists, for centuries. More recently it has become a topic of study for anthropologists, psychologists, and sociologists. For as divergent as the pursuits of the social sciences may be, a common pursuit has bound members of these various disciplines together -- a search for those characteristics common to all natural language systems -- a search for an adequate description of the system we so readily use. We have discovered that while there is great diversification of linguistic form in the languages of the world, all languages are alike in certain particular ways. It appears that linguistic universals do exist. Let us look at some of those characteristics generally accepted as common to any natural language system in an attempt to gain a better understanding of the system of natural languages. 3a1a

One must recognize, however, that there is extensve

debate as to precisely what those universals are. (Bach and Harms, 1968). 3a1a1

All natural language systems have at least three principal domains or subsystems: phonological (sound system); syntactical (word-operating rules to manipulate its word stock or lexicon); and semantical (rules of meaning). 3a1b

All languages have a history and a set of relations with each other which have developed over time. For in spite of the uniqueness of each language, through the course of history, they have borrowed from each other. 3a1c

We can observe that all languages, while the tools of humans, are not static systems. Rather, they are organic, evolving, extensions of man. 3a1d

As organic systems, not only do natural languages borrow from each other, but they are open and flexible enough to allow within their own "enclosed" system for the invention of new words, the creation of new spellings and pronunciations of old words, and new applications of existing words. These changes are most apparent as they reflect cultural or subcultural changes. 3a1e

Ordinary languages bend to reflect new states of mind, to provide new frames of reference. A recent example, again in English, is seen from the drug culture of the late 1960's. We have new adjectives such as "bummer", "far-out", and new applications for existing verbs and nouns, "The

movie blew my mind", or "I got good vibrations in that city". Sometimes slang creeps into ordinary language & proves so useful it remains - "O.K." is an example. 3a1f

When there is no word for a new event one is presently invented - "television" and "astronaut" are examples. New words are also invented when needed to label new perceptions or to enable a new means of identity. Ms., Chicano, and Black are examples. 3a1g

Yet while each language is constantly evolving, each has a finite set of symbols from which it generates these new combinations. It is worth emphasizing that a finite morphemic vocabulary is essential to the description of any language or it would be, for one, unlearnable, which is to say, not a language. Even the language of mathematics has a finite set of symbols from which is generated an infinite set of combinations. 3a1h

While all languages have a finite set of symbols (a finite morphemic vocabulary), no language has been found in which these morphemes were not concatenated into complex strings of discourse. No speech community has ever been described where communication is restricted to single word discourse, where the customary utterance would be something like "go", "water". Imagine, for instance, a human giving geographical directions by means of independent words. Everywhere, man talks sentences, or at least phrases. 3a1i

Not only do all languages concatenate morphemes , but they concatemate symbols in a carefully ordered fashion. We can say that ordering is a linguistic universal. Symbols have never been found to occur randomly in any language, such that any word may be followed by any other. 3a1j

And we have found more recently from computational linguists that while language may have similar statistical structures (Miller, 1951), this does not in itself constitute grammars (Chomsky, 1957). For example, while we can program machines to generate symbols with the same statistical properties as languages, we can not program them to speak grammatically-- at least not in so far as generating new sentences. This universal trait of ordering is likewise embedded within each language's complex system of grammar. For while the order of the words and of the grammatical systems may differ from one language to the next, each still has a grammar of its own. 3a1k

This gives evidence to another recognized linguistic universal-- that there must be a finite set of rules that define all operations in the language system. The number of rules must be finite, for the same reason a vocabulary or set of symbols must be finite However, there is no necessity for the number of sentences to be finite. So long as there is no limit to the number of times a rule can be applied (i.e., so long as the rules are recursive) it is perfectly

possible to generate an infinite set of sentences from a finite vocabulary using a finite number of rules. 3a1l

In fact, it is most likely that we rarely repeat the same exact sentence through the course of our usage of language. Yet theoretically we are continually generating grammatical sentences. Likewise, we are continually interpreting new sentecnes, a new ordering of symbols we have never heard before. That thesis possible lends further credence to the belief that all natural languages are defined by a finite set of rules, from which the infinite number of sentences is generated. This process of sentence generation, known as recursion, is another recognized characteristic of all natural languages. 3a1m

Natural language functions 3a2

Having identified some of the universal characteristics of natural languages, let us consider further whatnatural languages allow the human to do. What are the uses or functions of natural language? And what are the range of these functions? 3a2a

On a most concrete level, natural languages quite simply allows individuals to communicate with each other. Through language - even unwritten language - man is able to transmit almost any kind of experience vicariously. 3a2b

An expansive range of functions is possible because natural languages also have tremendous flexibility. Consider

that the same language system that is used for simple classification of the natural world can in turn be used to build immensely complex systems of thought like those found in science or philosophy. 3a2c

Again, the same language can then be used to create a major literary masterpiece. It can be formated into free verse, or a play of Shakespeare. 3a2d

The same language can also be used in roles where its function as an information carrier per se is minimal; yet it still communicates. For example, language can often be "small talk", where the symbol functions perhaps only as a means of keeping our lines of communication open. Language can be used aggressively and perhaps therapeutically for swearing or releasing anger within oneself. Language also has a ritualistic function ; greetings of hello and goodbye are simple examples. When language is used for ritual purpoes, again, its primary role is not as a carrier of information. Chanting may serve only to heighten one's consciousness; and word magic may evoke evil spirits. 3a2e

Language may not only evoke evil spirits, but human emotions as well. Language can be emotive as well as connotive. The language of the poet, for example, often functions to evoke our emotions. Words may also be connotive at the same tim as they are denotive. With words, the writer or speaker may connote imges as unique to each

reader or listener as the individual's memory or set of experiences. As a pragmatic example, though often mundae, this capability can be seen functioning in advertizing where the imagery created wth language is used to persuade masses. 3a2f

Ordinary language, with such power, versatility and flexibility to change and grow, also provides man with a basis for the cumulative development of civilization and culture. And the written symbol system allows man to communicate through time.One should note that the written system or notation is perhaps the only static subsystem of natural language. Invented by man to record communication, it allows man to trasmit messages over distance to extend communiations beyond the present, to record history. 3a2g

Then again, when ordinary language is spoken as opposed to written, it takes on additional richness and subtlety of meaning often denied to writing. Ambiquities often found in the written language are eliminated when the spoken words are qualified by gestures, facial expressions, stress, and pitch. (Trager and Smith). 3a2h

Not only do we use our natural language system to communicate with, but with ourselves as well. It has been argued that our very thought processes and therefore perceptions of reality are governed by our language. (Sapir/Whorf). It is true, that we can visualize, and

thereby think in pictures or patterns, but we don't think in pictures much of the day. 3a21

Conceptualizing with language seems to be at the essence of the human being; man has seemingly unlimited power for making concepts, and his language seems capable of permitting or providing him with that capability. When a new idea comes to mind, its very newness means that it is distinguishable from the others. Linguistically we have identified it, signified or symbolyzed it so that it is communicable through our language - natural language. 3a2j

We can always add to our language and and through it bring in new ideas. There seems to be no limit to the degree of modification and extension of natural languages and thoughts. Emil Post, one of the chief pioneers in the mathematical discussion of the finiteness problem even pointed to the decisive role which ordinary lnguage plays in the "birth of new ideas, their rise aboe the sea of the unconscious, and the subsequent mutation of vaguer, intuitive processes into connections between precise ideas." 3a2k

E.Post, "Absolutely Unsolvable Problems and Relatively Undecidable Propositons", M. Davis (ed.), THE UNDECIDABLE - BASIC PAPERS ON UNDECIDABLE PROPOSITIONS, UNSOLVABL PROBLEMS, AND COMPUTABLE FUNCTIONS, (New York), 1965, p.430. 3a2k1

One may well ask how a system that is so versatile, so

powerful, that has survived and adapted to as many generations as (to our knowledge) the existence of man, could not be beyond the reproach of criticism? 3a21

Discussion of the issues that have been raised against natural language 4

The history of issues and criticisms could probably be traced as far back as when the most primitive numeric symbol systems were first developed to function in specific instances more efficiently than natural language. Then as man's communicative needs grew and changed, his language -- his symbol systems -- have likewise evolved. Even today, man continues to search for new ways to perfect old devices by building new systems. 4a

Early criticisms of natural language have been found even in the first extant treatise on language, Plato's Cratylus. In the Cratylus, Plato perceived the evolving nature of language to be the problem, especially when seeking precision of expression. He clained that it is language's evolving nature that sooner or later leads to the development of homonyms and synonyms, and thus prevents a one to one correspondence between a symbol and a meaning, allowing ambiguities to enter the language. Such ambiguities could be avoided, Plato claims, if we were to construct a precise, conscientiously designed language especially for use by philosophers and scientists. 4b

Many, since the days of Plato, have made similar claims for constructing an "improved" version of natural language, each with varying reasons. The age of scientific inquiry, especially following Galileo, saw an increasing number of individuals questionning the validity of verbal processes. 4c

One of the most repeated complaints is the general ambiguity of natural language. Not only did Plato find this a problem, but present day computational linguists, for example, attempting to use natural language to communicate with the computer likewise voice ambiguity of natural language as a major problem. The human, they claim, can often choose the intended meaning by the context of the sentence; whereas the computer, to date, has no knowledge domain in which to understand "context". 4d

I might add, however, that ambiguity in natural language is not always a detriment. Claims have been made that if language were not ambiguous we would never be able to communicate or at least come to agreement with each other. The language of the law is another area in which ambiguity is essential to communication - to flexibility as it were - to survive through centuries. Legal phraseology is often ambiguously defined to allow for various interpretations. The clever employment of ambiguity is effective for politicians, as well as palm readers, and other bearers of promises for the future. 4e

Mellinkoff, David, The Language of the Law, (Toronto) Little Brown & Co., 1963. See also 4e1

Probert, Walter, Law, Language, and Communication, (Illinois) Charles C. Thomas, 1972. 4e2

Yet, certainly, when one is looking for a means to communicate precision, natural language may simply not be the optimal medium. 4f

What are some of the other claims made against natural language? 4g

Unconscious assumptions abound in natural language. 4h

Critics claim that natural languages contain assumptions that are difficult if not impossible to identify adequately. These assumptions are apparantly the result of a belief that talking is merely a tool which something deeper called "thinking" employs. Thinking, it is assumed, depends on laws of reason and logic that are common to all makind, regardless of the language one speaks; thinking is distinct from language. Languages, it then follows, are simply parallel methods for expressing this universal logic. On this assumption it also follows that any logical idea can be translated unbroken, or even unbent, into any language. Yet any attempt to translate say a sentence from Japanese, for example, into English will quickly illustrate such difficulty. 4h1

Directly related to the unconscious assumptions is a fear on the part of critics that thinking may follow the tracks laid down only in one's own language, that these tracks will converge on certain phases of "reality", and completely bypass phases which might be explored in other languages. While the theory of Sapir and Whorf, that language essentially governs thought, has received must criticism in recent years it is worth citing some examples from their research into the Hopi language, to illustrate their point. In English, for instance,

we say, "look at that wave." Yet a wave in nature never occurs as a single phenomenon. A Hopi will say, "look at that slosh." The Hopi word, whose nearest equivalent in English is "slosh", gives a closer fit to the actual physics of wave motion, connoting movement in a mass. 4h2

Whorf, in particular, outlines a number of assumptions underlying Indo-European languages and thereby Western culture. He claims, for example, that our language imposes upon the universe two grand cosmic forms: space and time. Space in our thinking is static, three-dimensional, and infinite; beyond the last area is always another area. Time is kinetic and one-dimensional, flowing perpetually and smoothly from the past, to the present, into the future. It apparently took the genius of Einstein to correct these cosmic assumptions, which Whorf claims most of us still believe. 4h3

Contrast these assumptions with those underlying the culture of the Hopi. The Hopi language does not raise the question as Westeners might raise, whether things in a distant city, for example exist at the same present moment as things in one's own city. The thoughts of a Hopi about events always include both space and time, for neither is found alone in their world view. Thus their language gets along adequately without tenses for its verbs, and permits the Hopi to think habitually in terms of space-time. For Westerners to really understand relativity, they must abandon their spoken tongue

altogether and take to the special language of calculus. But a Hopi, Whorf implies, has a sort of built-in calculus. The Hopi language imposes two grand cosmic forms upon the universe, but instead of space and time the objective and the subjective. The objective is everything accessible to the human senses, without distinction between past and present. The subjective is the realm of expectancy, of desire and purpose. This subjective realm is intensely real to a Hopi, and exists not only in humans, but animals, plants, and mountains as well. 4h4

The subject - predicate form of Western thought - is likewise the result of another assumption built into natural languages, (in this case in all Indo-European tongues). The hidden assumption is that if there is a verb there must be a noun to make it work; that the verb could not exist in its own right as pure action. For example, Western people today, say "the light flashed", as if something has to be there to make the flash: "light" is the subject; "flash" is the predicate. Yet the whole trend of modern physics with its emphasis on the field, is away from subject-predicate propositions. According to the laws of physics, a Hopi would be more accurate, then, when he says "Reh-pi"-"flash!" - one word for the whole performance, no subject, no predicate, and no time element. An interesting aside is that children tend to do this too. In Western languages we are constantly reading into nature ghostly entities which flash and perform other miracles. The question

is, do we supply these entities, that is, are our belief systems affected, because our language requires verbs to take substantives? 4h5

The influence of language on thought can also be seen by looking at a language that is multivalued. English and Indo-European languages generally are two-valued. As a result we tend to think in terms of "good" or "bad", "right" or "wrong", "black" or "white", "conservative" or "liberal" - thereby ignoring shades of gray (Burke, date). While speakers of Chinese, with their multivalued language may be less inclined to set up dichotomies, they apparently have no difficulty grasping the significance of a variety of shades of gray. Some have claimed the Chinese language as the reason the people have been traditionally tolerant. "Racial, religions, and doctrinal conflicts have been hard to maintain in China, because a Chinese speaker does not possess an unshakable confidence that he is totally right and that you are totally wrong." 4h6

Introduction to Chinese: its Language and Culture, p.10, 4h6a

Insufficient Referents 4i

Another criticism of natural language is that it allows words to be created without sufficient referents. Communication via ordinary (natural) language can too easily be in abstract

terms, where the mind manipulates the words, but loses sight of the space-time events to which the words refer. 4i1

For example, where are the referents for those abstract, vaguer terms which form the common core of discussion in the political arena? Most recently with the Watergate case we heard cited as the reason for the break-in at the Democratic headquarters the term "national interest". But where is the national interest? Where does it exist? What is it? In other phrases such as "Power to the people" a similar problem arises, namely, who are "the people" in reference? Where do they live? What do they look like? 4i2

Such abstract terms stand in marked contrast to terms with direct referents such as 100 degrees F, the key of C # minor, 40 m.p.h., etc. 4i3

Sentences can be created and discussed as meaningful that are not empirically verifiable. 4j

A great many sentences, especially common in traditional philosophy, that are permitted by way of natural language may be cognitively meaningless. Examples would include: "Reality is spiritual"; "Beauty is significant form"; "God created the world for the fulfillment of his purpose". Wittgenstein in the Tractatus, held that most of the statements to be found in traditional philosophy are not necessarily false, but simply nonsensical. 4j1

Natural language allows logical paradoxes - illegitimate totalities are converted in language. 4k

This is a problem with any element, or class, that is not well defined or does not contain a system of rules - that from any ill defined class, we can often derive several conclusions contradicting each other. While natural languages contain intricate systems of rules, neither the rules nor the terms have ever been precisely defined. Since the last years of the nineteenth century the paradoxes found in natural language have exerted a profound influence on the development of logic, linguistics, and philosophy. They still remain a source of concern with their existence regarded as a flaw of natural language. 4k1

The issue is complicated by the fact that there is no one problem of the paradoxes; rather the problems are of different types. According to Van Heijenoort, in a helpful Source Book in Mathematical Logic, they are not due to some infraction of one specific law of logic ("vicious circle"), nor are they simply mistakes to be removed by some ad hoc corrective. The paradoxes actually reveal conflicts in our logical intuitions. Following a path we perceive as logical, we reach a conclusion; following another path that seems equally natural to our logical insight, we reach a contrary conclusion. We then have to scrutinize these intuitions and undertake a systematic reconstruction of logic. (language). 4k2

DRAFT of thesis

In the course of working on The Principles of Mathematics, Bertrand Russell found what he termed "illegitimate totalities" converted in natural language, which resulted in a paradox. Russell's paradox - the name under which The Contradiction later became generally known -- involved one of the most elementary logical relations, that of class membership. By example, all statements in this square are false. (DIAGRAM HERE)If we suppose the proposition inside the square to be true, we must conclude it is false. But if we begin by supposing it false, we have to end by finding it true. The "illegitimate totality" in this logical run-around is the word "all". The "all" must be limited so that a statement about that totality must itself fall outside the totality. 4k3

"This statement is false" is another example of The Contradiction. 4k3a

Confusion in syntactical categories. 41

We have seen how expressions made in ordinary or natural language are often difficult to translate into a formula. This may also occur when there is an apparant difference in categories from where the words originate, for in all natural languages there are strings of (one or more) words which are mutually interchangeable in all well-formed contexts, that is, with well-formedness (grammatically, syntactical correctness) being preserved in the interchange - and that there are innumerable other strings which do not stand in this relation. 411

While the same part of speech, one of two expressions often cannot replace the other without turning the literal meaning of the sentence into an absurdity. To begin with an obvious case, when "the man" in "The man is in bed" is replaced by "Saturday" the result is clearly an absurd sentence if taken literally. Less obvious cases often go undetected by philosophers and remain a source of philosophical confusion. "He scanned the hedgerow carefully" becomes absurd when "saw" replaces "scanned" although the absurdity disappears when the adverb is omitted. Failure to note that "to see" belongs in a category, for example, of "achievement" verbs while "to scan" is a "task" or "search" verb has misled philosophers to posit a mental activity corresponding to seeing that is analogous to the genuine activity of scanning. 412

Confusion Between Words And Things 4m

There is another source of confusion in natural language that is somewhat similar to the syntactical categories problem - that is a confusion between a sign and its referent. For example, consider the following argument: 4m1

Mary is a girl,

Girl ends in l,

Therefore Mary ends in l, 4m1a

This could at first appear to be a confusion of types or categories. That Mary is a subset of the class of all girls

which is why Mary can't equal girl. Yet take an example using two words from the same class. 4m2

A female is a girl.

Girl ends in l.

Therefore female ends in l. 4m2a

The conclusion still does not follow from the premises. It is here quite obvious that the second premise "Girl ends in l" refers not to the object (referent of girl) but to the symbol (the word "girl"). I will here take Korsybski's advice and use quotes to warn when I am speaking of the word. 4m3

The Hopi also avoids the "is of identify" and consequently is probably less likely to confuse words with things. (A confusion later brought out by the logical positivists as a criticism of natural language). For example, where we would say "Mary is a girl", the Hopi would say "we call Mary a girl". 4m4

Indexicals 4n

Another issue has been raised against natural language in relation to problems that arise through the existence (and use) of token reflexive words or indexical signs. 4n1

The term "token reflexive words" or "indexical signs" is a single label for the group demonstratives, pronouns, and tenses. They have been placed under a common label because what each denotes is relative to the speaker; to know the referent of "I," "now," "here," and "you," we must know who utters the word and often we must also know when, where, and to whom it is

uttered. Thus knowledge of the speaker and his context is essential in determining the referent of such words. C.S. Pierce called them indexical signs because their referent is determined by its existential relation to the sign, a sign, for Pierce, being anything which represents or signifies an object, to an interpretant (a mind which understands the sign). An act of pointing is an indexical sign because its object, or referent, is determined by the spatiotemporal relation between the index finger used in the act of pointing and its object. The symbol "this" is a suggogate for an index finger in an act of pointing; its referent is determined by the existential relation between some object and the sign which is uttered or written by the speaker. 4n2

Rather than an indexical sign being used in place of a noun, as is often stated in grammar books, Peirce claimed that it was the other way around, for an indexical sign indicates its object in the most direct way possible and does not rely on any descriptive element, as does a noun. It appears as though Peirce may have overlooked the case when an indexical does not indicate its object directly -- for instance, when the indexical sign refers to an object which has been previously named or described in discourse: "Napoleon was a great general. He shaped history." Also, it would be an oversimplification to say that the pure index "this" can indicate its object directly without the need of any descriptive symbols; the naked use of

"this" is extremely ambiguous, and to cut down this ambiguity, "this" must be accompanied by some descriptive symbol -- "this tree," "this color". 4n3

In his Brown Book, Ludwig Wittgenstein brought out some interesting differences in the "logical grammar" (rules of use) of indexical signs and names. In the sentence frame "--is here" or "Is it now--," we can put into the blank a name for a place or time -- "The equator is here" or "It is now Valentine's Day" -- but it would be nonsense to put "here" or "now" into the blank, since that would result in our saying, "Here is here" or It is now now." Similarly, in the sentence frame "This is called__," we can insert into the blank space a name but not the index "this". Therefore, although it is correct to say that "now," "here," and "this," indicates a time, place or object, it would be incorrect to say that they name a time, place, or object. 4n4

One of the curious features of indexes is that in regard to any index, such as "here" or "this", the referent often changes from one occasion of their utterance to another, yet in spite of this changing reference, each utterance of "here" or "this" means the same thing. 4n5

If we should find a slip of paper in the street on which was written "I am now tired," we would not know the referent of "I" or the time indicated by "now" and therefore would not know what facts would be relevant to the truth or falsity of this

statement. However, we would at least know that whoever wrote this was asserting that he was tired at the time he wrote it. Because of the changing reference of different utterances of the same indexical signs, the inclusion of an indexical sign in a sentence renders this sentence context-dependent in that it is not freely repeateable -- that is, its utterance by different persons at different times, places, and so on could result in entirely diifferent meanings. 4n6

Russell called indexicals (pronouns, tenses, and demonstratives) "egocentric particulars" because what they denote is relative to the speaker. He attempted to reduce all such expressions to the egocentric particular "this," in which "this" is a "logically proper name" for a sense datum experienced by the speaker at the time he makes his utterance. For example, "I" means "the biography to which this belongs;" "now" means "what is compresent with this," "This" is a strange sort of a proper name because it applies to something different -- a different sense datum -- every time it is uttered. And yet on each occasion of its use, it is unambiguous, applying to one and only one particular, though, of course, only the speaker can know its referent since it is a sense datum private to him. 4n7

As was the case with indexical signs, the inclusion of the egocentric particular "this" in a sentence renders the sentence nonfreely repeatable. For instance, if we translate "It was raining" into "An occurrence of rain is (tenselessly) earlier

than this", in which "This" is a logically proper name for a sense datum experienced by the speaker at the time he makes his utterance, the second sentence is as context-bound as the first in that both sentences are subject to the same temporal restrictions in their use -- that is, they can be used to make true statements only if uttered later than the occurrence of rain. Also, in the second statement "this" functions as a temporal, rather than a spatial, indicator, since it makes sense and is natural to say, "the time at which this occurs" but not "the place at which this occurs." Herein "this" has the same logic as "now". However, in the statement "The monument is to the west of this", "This" has the same role as the spatial index "here". 4n8

Because of the numerous complexities observed, several attempts have been made to construct ideal languages in which all token-reflexive words would be eliminated, so that all sentences in such a language would be freely repeatable, an important characteristic also if a computer is ever to be "taught" to understand natural (or an idealized form of) language. (See Winograd, 1972; Bar-hillel, 1964).. The ideal language, however, would have to be such that we could describe every fact about the world through the use of sentences that are not in any way context-bound; it would not matter who uttered them or where, when, or to whom they were uttered. (Chapter -- in Fase has a discussion of just such an attempt.) 4n9

Let us summarize the criticisms as follows: 4o

That there is a general ambiguity or lack of precision inherent in natural languages. 4o1

That there are a number of unconscious assumptions in natural languages. For example, multivalued logic is cardinal in understanding and explaining nature, yet Indo-european languages tend to force us into two-valued thinking, fortified by formal logic. Also, events have unlimited characteristics, while our languages leave many of them out and thus may often distort a judgment. 4o2

On the other hand, there are no abstract qualities outside our heads. But language may create verbal entities which seem to exist out there. 4o3

Also, a word is not a thing but an artificial symbol. This has long been known, but the language structure still objectifies words and encourages confusion between words and things. 4o4

There is further confusion in natural languages due to a lack of clear distincton in syntactical categories. 4o5

The existence of indexicals also increases the ambiguity of natural laguages. 4o6

Language is self-reflexive. It is possible to make statements about a statement about a statement indefinitely. 4o7

As a result of some of these problems, natural languages also allow a variety of logical paradoxes. The paradoxes are

especially apparant when trying to map natural langage into a logical formula .

History of the Attempts to Develope Ideal Languages 5

As we have observed, many criticisms have been raised against natural language. In fact, many critics found that there were so many problems inherent in natural language that it would be unwise even to try to repair it. Several decided, rather, to build new languages, formal or artificial languages. 5a

But, assuming their criticisms of natural language are valid, why did they perceive it necessary to construct an idealized version of that language, or in some cases to simply construct a new language? 5b

The reasons commonly cited by proponents for the use of artificial languages involve various alleged contrasts between artificial and natural languages. They claim that in an artificial language where precise semantical and logical rules would be established, many of the natural language defects could be avoided. 5c

The proponents argued that with an artificial or formal language it could be precisely determined that certain things are logical consequences of a given proposition, and in favorable cases, whether or not a paradox or contradiction resulted from certain assumptions it was believed that a formal language structure could be so contrived as to avoid certain known kinds of paradox or inconsistency which allegedly arise in any natural language. 5c1

It was believed that constructing a formal system would

also help decipher the form from the content - to help avoid confusions of syntactical categories. For example, to analyze various kinds of inference in language it is necessary to analyze the statements which figure in it. It soon becomes clear that the validity or invalidity of an argument largely depends on the forms of the statements in which the argument is formulated. This appears most dramatically in pairs of arguments, one of which is valid, the other invalid, although superficially they look very much alike. Consider the following pair: 5c2

(1) The president of the United States is the commander-in-chief of the armed forces. Mr. Y is the president of the United States. Therefore, Mr. Y is the commander-in-chief of the armed forces. 5c2a

(2) The president of the United States is elected every four years. Mr. Y is the president of the United States. Therefore Mr. Y is elected every four years. 5c2b

The fact that (1) is clearly a valid argument, and (2) is clearly an invalid argument show that there must, despite appearances be some crucial difference in logical form between the first premises of the two arguments. If one aims to construct a complete (or even very extensive) list of forms of valid inference, one will have to explore fully the conditions under which two statements are or are not of the same logical form. This will entail considerable attention to the varieties

of constituents of sentences and the varieties of their interrelation. (In the above example, one needs to distinguish different kinds of force which a phrase of the form "the x of y" has.) 5c3

Not only are natural languages logically imperfect within themselves, but more variations in form occur between languages. Another reason argued by proponents for artificial language development is that even if a natural language could be made logically perfect, its conceptual apparatus would then overlap or be incompatible with that of another natural language. Adjukiewicz, a polish logician and semanticist, found for example when he attempted to specify rules for determining meaning in statements that his rules could be "univocally stated only for artificial languages". He believed that this was because natural languages are actually families of languages in which the combinations of meaning rules vary from one group of users to another. Consequently, we must not try to perfect a natural language, but instead build a new, logically perfect, artificial version. 5c4

Another reason cited for the regimentation of language was one of efficiency - that since the logic of ordinary language is difficult to formulate, it would be more economical to theorize in a language which is ordinary except in its logical parts. Also, in the process, one could seemingly devise a system with fewer kinds of construction and less obscurity than

ordinary language, and thereby, through its application, simplify and clarify our conceptual scheme, (Quine, --). 5c5

It was further believed that if we could determine in outline how the world would be described in an ideal language, we would have, in outline, an account of what the world is like. And that since there are alternative ways of stating the same body of facts, (recall the issues raised in Chapter 1 of language governing thought) it could not be the case that all these ways reflect the real structure of the world. The logical positivists and other critics wanted to escape this "trap" of the natural & (culturally bound) languages defining reality. They saw as a solution speaking about reality or trying to define it in a formal language or system of logic. Therefore the restriction to an "ideal" language would be essential. 5c6

While we can find traces throughout history of efforts to construct a more precise form of natural language, most of the work has occurred in the twentieth century, primarily within the school of logical positivism. Note: see p. 49, vonMises, for description of first attempt - creation of terminology for classification purposes , and p. 51 for definition of a scientific language. 5d

The logical positivists were a school of philosophers who rose to counter traditional philosophical investigation, to critize the discipline of philosophy on the ground that it employed as its primary tool, natural or ordinary language. Ordinary language, they believed, was simply inadequate for philosophical purposes by reason of its vagueness, ambiguity, context dependence, and the untestable statements it allowed. This school numbered among its members, Russell, Wittgenstein, and Carnap who saw as their task the construction, or at least the adumbration, of a language in which these defects would not appear. 5d1

Note: The logical positivists did not consider themselves philosophers. 5d1a

The positivists believed that the formation of an ideal language and consequently fundamental reform of philosophy, was needed. They considered philosophy to be the analysis and clarification of meaning, and they looked to logic and the

sciences as their models for contructing formally perfect languages to meet their analytical needs, 5d2

Rudolph Carnap, a leading member of the Vienna Circle, developed the principles of one such interpreted formal system or formal language structure. It is essentially a methodology, which he calls his constitution (or construction) theory. Carnap's aim was to create a theory of linguistic expressions as a means of bringing greater clarity into the formulation of logical problems. He made a distinction between what he called "object language" and "metalanguage". "Object language", he said, is the language that is the object of a study, and "metalanguage", the language in which the theory of the object language is formulated. In these terms Carnap's goal became the construction of a suitable metalanguage in which to conduct philosophy or the logical analysis of language. The result of his effort can be seen mostly in The Logical Syntax of Language (1934) in which he developes two model languages. 5e

The principle concept in Carnap's theory is that of reducibility. A concept "x" is said to be reducible to a set of concepts "Y" if and only if every sentence concerning "x" can be transformed into sentences concerning concepts belonging to "Y" (with preservation of the truth-value). This transformation is then carried out by means of a rule, or constitutional definition -- somewhat like a primitive transformational grammar concept. 5e1

> For example, "Five is not a thing-word but a number-word" and "Lion is a thing-word" are syntactical sentences. Pseudo object sentences are peculiar to philosophy; they look like object sentences but if rightly understood turn out to be syntactical sentences. To understand them correctly we have to convert them from what Carnap calls the "material mode" to the "formal mode", that is, from sentences which look as if they are about objects into sentences which are obviously about words -- a metalanguage. 5e1a

Carnap, however, did not provide us with a detailed account of how such a conversion process would occur. He simply developed in theory the fundamental principles of such a process. 5e2

Bertrand Russell, another positivist, proposed the notion of constructing atomic sentences. He defined them as sentences that contain a single predicate or relational term, and one or more than one name -- the whole sentence asserting that the entity named has the indicated property ("this is white") or that the entities named stand in the indicated relation ("This is above that"). If a sentence (1) has this form, (2) contains only terms that get their meaning through correlation with experienced items, and (3) has to do with entities that cannot be analyzed into anything simpler, then it is an atomic sentence. It is clear that for Russell the sentences which satisfy these requirements will all state a minimal fact about a momentary content of sense experience. The notion of atomic sentences is a part of the

broader theory of logical atomism, Bertrand Russell constructed the theory of logical atomism partly to answer the issue of the inference problem. However, Russell was well aware that logical atomism in this extreme from was untenable, and later even had doubts about his earlier philosophy. 5f

While the chief exponents of logical atomism were Russell and his student, Wittgenstein, the fundamental principles were spelled out by Russell in "The Philosophy of Logical Atomism". 5f1

To offset the Contradiction in natural language (Russell's paradox of illegitimate totalities), Russell also developed a theory of types. Its cardinal principle, as presented in Principia Mathematica, is that whatever involves all of a collection must not be one of the collection, (the vicious circle principle). 5g

The class of white objects, for example, includes (and hence involves) all white objects, and to say that this class is itself a white object is to violate the principle and to speak nonsense. The set of entities consisting of all white objects and the class of white objects is for Russell an "illegitimate totality," a set that "has no total" in the sense that no significant statement can be made about all its members. For example, 5g1

"X is a member of the class of white objects" is equivalent to "X is white," and the two sentences "The class of white objects is a white object" and "The color white is white"

are equally expressions of a type-mistake or category-mistake and are equally nonsensical. 5g1a

Russell offered in support of his theory the fact that it outlaws not only conditions giving rise to the paradox concerning class membership but also those giving rise to an indefinite number of other paradoxes of self-reference, including the ancient paradox of the liar. 5g2

It accomplishes this by requiring that any given statement of the theory must be in a metalanguage whose expressions are not included in the totality of expressions covered by the statement. While the theory can thus never be applied to the language in which it is itself stated, it can always in principle be restated in a further language (a meta-metalalanguage) so that it applies to the language in which it was originally stated as well as the language to which it originally applies. Universal application of the theory is thus possible in principle by proceeeding up an infinite heirarchy of languages, while the application of the theory to each particular language asserts the existence of an infinite hierarchy of types of syntactical functions within that language. 5g2a

Roughly speaking, that a language contains a type theory seems to mean at least that a hierarchy exists among the entities countenanced in this language, so that a given string of elements of this language -- words, morphemes,

atomic symbols or the like -- will be regarded as well formed only if, among other conditions, certain restrictions are observed as to the kinds of entities that are denoted by some substrings or that fall within the range of the variables occurring in the string. A typical illustration is a membership sentence of the form "... E _____." This will not be well formed unless the expression to the left of "E" denotes an entity (or, if it is a variable, ranges over entities) occupying a position in the hierarchy exactly one step lower than the position occupied by the entity denoted by the expression ot the right of "E". Generally, but by no means always, there are expressions that occur only to the left but never to the right of "E" (or fulfill some parallel condition in other formalisms). Such expressions denote the entities of the lowest type in the hierarchy, the individuals. Entities denoted by expressions of the next-higher type are classes of individuals; then come classes of classes of individuals, etc. ad infinitum. 5g2b

It would have been philosophically significant had it proved possible to establish that all languages worthy of the name must contain a type hierarchy, or at least that no satisfactory foundation of mathematics is possible without one. But nothing of the sort has been shown. There are a large number of constructed languages without type hierarchies, and in some of them satisfactory foundations for mathematics have been

provided, The attempt to impose a type hierarchy upon natural languages seems misguided and linguistically pointless, The concerns of Russell and other authors about how to formulate the theory of types in English (or any other natural language) without violating the theory in its very formulation (e,g,; by speaking of all types) are now no more than interesting curiosities, At one time (1944) Russell was induced by these worries to give up talking about types of extralinguistic entities altogether and to be satisfied with assigning types solely to linguistic entities. 5g3

In an effort to simplify Russell's theory of types, and related problems of category/type confusion, several logicians attempted to develop a theory of syntactical categories, These have included Lesniewski, Ajdukiewicz, Carnap, Bar-Hillel and most recently Chomsky, We have already observed the basis for this development - the linguistic fact that natural languages contain strings of words mutually interchangeable in all well-formed contexts, and other strings of words which are not interchangeable in the same well-formed contexts, Recall the problems illustrated in the examples "the man" versus "Saturday" is in bed. 5h

Carnap, apparently the first logician to use the term "syntactical categories", believed that all logical problems could be treated adequately as syntactical problems, in the broad sense he gave the term. 5i

Carnap took implicit account of the possibility that two strings

might be interchangeable in some contexts but not in all. [1] He coined the term "related" for this relation and used "isogenous" for the relation interchangeability. Languages in which all strings are either pairwise isogenous or unrelated have, in this respect, a particularly simple structure. But there is no reason to assume that natural languages will exhibit this particularly simple structure. In fact, observing the main principle becomes a nuisance even for rich constructed language systems; as Carnap showed, the principle is not observed in some of the better-known calculi (perhaps contrary to the intention of their creators) with no real harm done. 5j

[1] In 1934, in The Logical Syntax of Language. 5j1

The relation "related" is clearly reflexive and symmetrical; hence, it is a similarity relation. The relation "isogenous" is, in addition, transitive; hence, it is an equivalence relation. Starting from these two relations, Bar-Hillel, in 1947, developed a theory of syntactical categories, illustrated by a series of model languages, all of which were, in a certain natural sense, sublanguages of English. In 1954, Chomsky developed a more powerful theory by taking into account, in addition, relations between the linguistic environments of the strings compared. 5k

Recently, primarily owing to the insights of Chomsky and coming as a surprise to most workers in the field, it has become clear that interchangeability in context cannot by itself serve as the basic relation of an adequate grammar for natural languages. It may play

this role for a number of constructed languages, and it does provide a satisfactory basis for what have become kown as "phrase-structure languages". See Chapter for this thesis, "Grammatical Theory". 51

Another theory worth noting that was developed as a requirement for a logically perfect language is the theory of verifiability - or the verifiability principle. The principle maintains that for any sentence to be cognitively meaningful it must express a statement that is either analytic or empirically verifiable. It was allowed that sentences may have "emotive," "imperative," and other kinds of meaning (for example, "What a lovely present!" or "Bring me a glass of water!") even when they have no cognitive meaning, that is, when they do not express anything that could be true or false, or a possible subject of knowledge. But -- leaving aside sentences expressing analytic statements -- for a sentence to have "cognitive," "factual," "descriptive," or "literal" meaning (for example, "The sun is 93 million miles from the earth") it was held that it must express a statement that could, at least in principle, be shown to be true or false, or to some degree probable, by reference to empirical observations. This point was made by Wittengenstein, once a student of Russells, and was understandably, one of the most controversial of the new ideas of logical positivism. It could eliminate from discussion phrases like "national interests". 5m

In Wittgenstein's later philosophy, however, he rejected his

quest for an ideal language; became one of its strongest opponents, and is credited with leading a major counter philosophical movement "ordinary language philosophy". (See Appendix A for brief discussion of ordinary language philosophy.) 5m1

Most of the attempts, however, especially from the logical positivsts, were in the form of theories, and the exact nature of such an "ideal" or logically perfect language has never been completely specified. 5n

While many followed in the later Wittengenstein's footsteps they did so for various reasons. Some gave up their pursuit of an ideal language because they found renewed faith in ordinary language, others because the pursuit was increasingly difficult and others because the pursuit was believed to be in vain. [1] 5o

[1] For example, those that wanted an ideal language as a means of investigating the structure of the world, ultimately found themselves in a vicious circle. For proving that a language is ideal seemed to require comparing its structure with that of reality, which meant having some prior and language independent knowledge of the structure of reality. 5o1

Yet while their attempts for their particular purposes, may have been difficult to accomplish their efforts did increase our understanding of natural language as well as provide us with some clues as to what might be required to solve some of its inadequacies. 5p

These attempts also left behind ideas for further investigation, and in fact new philosophical utility has since been claimed for the study of artificial symbolic languages. 5q

It has been found, for example, that simply constructing a language is not enough. The problem is then to demonstrate that the language, once it is available, is really adequate to describe the world (even a limited world). This problem is also one facing computational linguists today who have accomplished the construction of several artificial languages (ideal for communicating with a computer about a limited domain of knowledge), but their world is so restricted as to be virtually useless. They are so far only useful, again, as theories of what might be required to describe a larger world. 5r

Yet, even these recent attempts have again encountered problems all too familiar to the logical positivists, and again, have through a new approach and for different purposes, tried to solve them. For example, because of the numerous complexities observed, several attempts have been made to construct ideal languages in which all indexicals, or token-reflexive words would be eliminated. The purpose is so that all sentences in such a language would be freely repeatable. This is an important characteristic if a computer is ever to be "taught" to understand an idealized form of natural language. (See Winograd, 1972; Bar-Hillel, 1964). The ideal language would have to be such that we could describe every fact about the world through the use of

sentences that are not in any way context-bound; it would not matter who uttered them or where, when, or to whom they were uttered. 5s

This theory was tested some 35 years later when computational linguists attempted to make natural languages "logically perfect" and found that in fact their conceptual apparatuses were incompatible. See Section 5 for further discussion. 5t

Further applications have been suggested for the construction and investigation of artificial symbolic languages. 5u

Let us look now at some more recent developments and their implications to theoretical linguists - to the understanding of natural language systems. 5v

DRAFT of thesis

a

DRAFT of thesis

(J33724) 22-OCT-75 14:54;;;; Title: Author(s): Gwen C. Edwards/GCE;
Sub-Collections: NIC; Clerk: GCE; Origin: < GEDWARDS,
OUTLINE,NLS;1, >, 17-OCT-75 21:29 GCE ;;;; ####;

Statement of Purpose 1

The purpose of this thesis is to probe the nature of ordinary language- of human to human verbal communication. However, in this case, the probe will be made by investigating the issues surrounding numerous attempts to improve upon ordinary (natural) language by constructing idealized (artificial) versions, or formal languages, 1a

Asking why these attempts have so far proved inadequate substitutes for ordinary language, often even when applied in the limited domain for which they were designated, will shed some light on identifying properties both unique and essential to ordinary language, 1b

The thesis will address itself to the following questions: 1c

Why have criticisms been raised against the system of natural languages? What are the grounds for these criticisms? 1c1

What attempts have been made by these critics and their followers to eliminate these problems? What theories for ideal languages did they construct? 1c2

What directions are recent attempts now taking at actual construction of artificial laguages? How do their purposes differ from those ofthe ideal language theorists? 1c3

What are the various ways in which these artificial constructs differ from natural language systems, 1c4

The thesis will then develop some hypotheses to explain the vast differences between artificial and natural language systems, 1d

DRAFT of thesis

Introduction 2

However for the sake of comparing the ordinary language structure to the formal language structure, I will limit myself to the written systems of both structures. My present concern is with syntax, the part of grammar that concerns how sentences (for our purposes, in both artificial and natural languages) are constructed. 2a

We will see further in our discussion with formal language systems that here with natural languages we are dealing with an extremely complex mechanism. And we shall see how the processor of natural language - the human mind - (integral to our description of natural language) has never been fully described in purely formal terms (likewise with the processor's (human) language); for if it had, we could conceivably program computers to understand or to process natural language, and to "speak" grammatically. 2b

It is the purpose of this thesis to examine that criticism, to identify those ways in which natural laguages have been deemed inadequate, and to consider the extended capabilities and limitatins imposed by symbol systems designed to substitute in certain cases for natural language. 2c

Description of natural language 3

Let us look first at what we mean by ordinary or natural language. What is a natural language system, (e.g. English): 1) what are its characteristics, and 2) what are its applications, i.e., what does it allow man to do? 3a

General characteristics of natural language 3a1

An adequate description of natural language, its origins,its growth, its impact upon man and his culture,has been the task of philosophers, and linguists, for centuries. More recently it has become a topic of study for anthropologists, psychologists, and sociologists. For as divergent as the pursuits of the social sciences may be, a common pursuit has bound members of these various disciplines together -- a search for those characteristics common to all natural language systems -- a search for an adequate description of the system we so readily use. We have discovered that while there is great diversification of linguistic form in the languages of the world, all languages are alike in certain particular ways. It appears that linguistic universals do exist. Let us look at some of those characteristics generally accepted as common to any natural language system in an attempt to gain a better understanding of the system of natural languages. 3a1a

One must recognize, however, that there is extensve

debate as to precisely what those universals are, (Bach and Harms, 1968). 3a1a1

All natural language systems have at least three principal domains or subsystems: phonological (sound system); syntactical (word-operating rules to manipulate its word stock or lexicon); and semantical (rules of meaning). 3a1b

All languages have a history and a set of relations with each other which have developed over time. For in spite of the uniqueness of each language, through the course of history, they have borrowed from each other. 3a1c

We can observe that all languages, while the tools of humans, are not static systems. Rather, they are organic, evolving, extensions of man. 3a1d

As organic systems, not only do natural languages borrow from each other, but they are open and flexible enough to allow within their own "enclosed" system for the invention of new words, the creation of new spellings and pronunciations of old words, and new applications of existing words. These changes are most apparent as they reflect cultural or subcultural changes. 3a1e

Ordinary languages bend to reflect new states of mind, to provide new frames of reference. A recent example, again in English, is seen from the drug culture of the late 1960's. We have new adjectives such as "bummer", "far-out", and new applications for existing verbs and nouns, "The

movie blew my mind", or "I got good vibrations in that city", Sometimes slang creeps into ordinary language & proves so useful it remains - "O.K." is an example. 3a1f

When there is no word for a new event one is presently invented - "television" and "astronaut" are examples. New words are also invented when needed to label new perceptions or to enable a new means of identity. Ms., Chicano, and Black are examples. 3a1g

Yet while each language is constantly evolving, each has a finite set of symbols from which it generates these new combinations. It is worth emphasizing that a finite morphemic vocabulary is essential to the description of any language or it would be, for one, unlearnable, which is to say, not a language. Even the language of mathematics has a finite set of symbols from which is generated an infinite set of combinations. 3a1h

While all languages have a finite set of symbols (a finite morphemic vocabulary), no language has been found in which these morphemes were not concatenated into complex strings of discourse. No speech community has ever been described where communication is restricted to single word discourse, where the customary utterance would be something like "go", "water". Imagine, for instance, a human giving geographical directions by means of independent words. Everywhere, man talks sentences, or at least phrases. 3a1i

Not only do all languages concatenate morphemes , but they concatemate symbols in a carefully ordered fashion. We can say that ordering is a linguistic universal. Symbols have never been found to occur randomly in any language, such that any word may be followed by any other. 3a1j

And we have found more recently from computational linguists that while language may have similar statistical structures (Miller, 1951), this does not in itself constitute grammars (Chomsky, 1957). For example, while we can program machines to generate symbols with the same statistical properties as languages, we can not program them to speak grammatically-- at least not in so far as generating new sentences. This universal trait of ordering is likewise embedded within each language's complex system of grammar. For while the order of the words and of the grammatical systems may differ from one language to the next, each still has a grammar of its own. 3a1k

This gives evidence to another recognized linguistic universal-- that there must be a finite set of rules that define all operations in the language system. The number of rules must be finite, for the same reason a vocabulary or set of symbols must be finite However, there is no necessity for the number of sentences to be finite. So long as there is no limit to the number of times a rule can be applied (i.e., so long as the rules are recursive) it is perfectly

possible to generate an infinite set of sentences from a finite vocabulary using a finite number of rules. 3a11

In fact, it is most likely that we rarely repeat the same exact sentence through the course of our usage of language. Yet theoretically we are continually generating grammatical sentences. Likewise, we are continually interpreting new sentecnes, a new ordering of symbols we have never heard before. That thesis possible lends further credence to the belief that all natural languages are defined by a finite set of rules, from which the infinite number of sentences is generated. This process of sentence generation, known as recursion, is another recognized characteristic of all natural languages. 3a1m

Natural language functions 3a2

Having identified some of the universal characteristics of natural languages, let us consider further whatnatural languages allow the human to do. What are the uses or functions of natural language? And what are the range of these functions? 3a2a

On a most concrete level, natural languages quite simply allows individuals to communicate with each other. Through language - even unwritten language - man is able to transmit almost any kind of experience vicariously. 3a2b

An expansive range of functions is possible because natural languages also have tremendous flexibility. Consider

that the same language system that is used for simple classification of the natural world can in turn be used to build immensely complex systems of thought like those found in science or philosophy. 3a2c

Again, the same language can then be used to create a major literary masterpiece. It can be formated into free verse, or a play of Shakespeare. 3a2d

The same language can also be used in roles where its function as an information carrier per se is minimal; yet it still communicates. For example, language can often be "small talk", where the symbol functions perhaps only as a means of keeping our lines of communication open. Language can be used aggressively and perhaps therapeutically for swearing or releasing anger within oneself. Language also has a ritualistic function ; greetings of hello and goodbye are simple examples. When language is used for ritual purpoes, again, its primary role is not as a carrier of information. Chanting may serve only to heighten one's consciousness; and word magic may evoke evil spirits. 3a2e

Language may not only evoke evil spirits, but human emotions as well. Language can be emotive as well as connotive. The language of the poet, for example, often functions to evoke our emotions. Words may also be connotive at the same tim as they are denotive. With words, the writer or speaker may connote imges as unique to each

reader or listener as the individual's memory or set of experiences. As a pragmatic example, though often mundae, this capability can be seen functioning in advertizing where the imagery created wth language is used to persuade masses. 3a2f

Ordinary language, with such power, versatility and flexibility to change and grow, also provides man with a basis for the cumulative development of civilization and culture. And the written symbol system allows man to communicate through time.One should note that the written system or notation is perhaps the only static subsystem of natural language. Invented by man to record communication, it allows man to trasmit messages over distance to extend communiations beyond the present, to record history. 3a2g

Then again, when ordinary language is spoken as opposed to written, it takes on additional richness and subtlety of meaning often denied to writing. Ambiquities often found in the written language are eliminated when the spoken words are qualified by gestures, facial expressions, stress, and pitch. (Trager and Smith). 3a2h

Not only do we use our natural language system to communicate with, but with ourselves as well. It has been argued that our very thought processes and therefore perceptions of reality are governed by our language. (Sapir/Whorf). It is true, that we can visualize, and

thereby think in pictures or patterns, but we don't think in pictures much of the day. 3a2i

Conceptualizing with language seems to be at the essence of the human being; man has seemingly unlimited power for making concepts, and his language seems capable of permitting or providing him with that capability. When a new idea comes to mind, its very newness means that it is distinguishable from the others. Linguistically we have identified it, signified or symbolyzed it so that it is communicable through our language - natural language. 3a2j

We can always add to our language and and through it bring in new ideas. There seems to be no limit to the degree of modification and extension of natural languages and thoughts. Emil Post, one of the chief pioneers in the mathematical discussion of the finiteness problem even pointed to the decisive role which ordinary lnguage plays in the "birth of new ideas, their rise aboe the sea of the unconscious, and the subsequent mutation of vaguer, intuitive processes into connections between precise ideas," 3a2k

E.Post, "Absolutely Unsolvable Problems and Relatively Undecidable Propositons", M. Davis (ed.), THE UNDECIDABLE - BASIC PAPERS ON UNDECIDABLE PROPOSITIONS, UNSOLVABL PROBLEMS, AND COMPUTABLE FUNCTIONS, (New York), 1965, p.430. 3a2k1

One may well ask how a system that is so versatile, so

powerful, that has survived and adapted to as many generations as (to our knowledge) the existence of man, could not be beyond the reproach of criticism? 3a21

DRAFT of thesis

Discussion of the issues that have been raised against natural language 4

The history of issues and criticisms could probably be traced as far back as when the most primitive numeric symbol systems were first developed to function in specific instances more efficiently than natural language. Then as man's communicative needs grew and changed, his language -- his symbol systems -- have likewise evolved. Even today, man continues to search for new ways to perfect old devices by building new systems. 4a

Early criticisms of natural language have been found even in the first extant treatise on language, Plato's Cratylus. In the Cratylus, Plato perceived the evolving nature of language to be the problem, especially when seeking precision of expression. He claimed that it is language's evolving nature that sooner or later leads to the development of homonyms and synonyms, and thus prevents a one to one correspondence between a symbol and a meaning, allowing ambiguities to enter the language. Such ambiguities could be avoided, Plato claims, if we were to construct a precise, conscientiously designed language especially for use by philosophers and scientists. 4b

Many, since the days of Plato, have made similar claims for constructing an "improved" version of natural language, each with varying reasons. The age of scientific inquiry, especially following Galileo, saw an increasing number of individuals questionning the validity of verbal processes. 4c

One of the most repeated complaints is the general ambiguity of natural language. Not only did Plato find this a problem, but present day computational linguists, for example, attempting to use natural language to communicate with the computer likewise voice ambiguity of natural language as a major problem. The human, they claim, can often choose the intended meaning by the context of the sentence; whereas the computer, to date, has no knowledge domain in which to understand "context". 4d

I might add, however, that ambiguity in natural language is not always a detriment. Claims have been made that if language were not ambiguous we would never be able to communicate or at least come to agreement with each other. The language of the law is another area in which ambiguity is essential to communication - to flexibility as it were - to survive through centuries. Legal phraseology is often ambiguously defined to allow for various interpretations. The clever employment of ambiguity is effective for politicians, as well as palm readers, and other bearers of promises for the future. 4e

Mellinkoff, David, The Language of the Law, (Toronto) Little Brown & Co., 1963. See also 4e1

Probert, Walter, Law, Language, and Communication, (Illinois) Charles C. Thomas, 1972. 4e2

Yet, certainly, when one is looking for a means to communicate precision, natural language may simply not be the optimal medium. 4f

What are some of the other claims made against natural language? 4g

Unconscious assumptions abound in natural language. 4h

Critics claim that natural languages contain assumptions that are difficult if not impossible to identify adequately. These assumptions are apparantly the result of a belief that talking is merely a tool which something deeper called "thinking" employs. Thinking, it is assumed, depends on laws of reason and logic that are common to all makind, regardless of the language one speaks; thinking is distinct from language. Languages, it then follows, are simply parallel methods for expressing this universal logic. On this assumption it also follows that any logical idea can be translated unbroken, or even unbent, into any language. Yet any attempt to translate say a sentence from Japanese, for example, into English will quickly illustrate such difficulty. 4h1

Directly related to the unconscious assumptions is a fear on the part of critics that thinking may follow the tracks laid down only in one's own language, that these tracks will converge on certain phases of "reality", and completely bypass phases which might be explored in other languages. While the theory of Sapir and Whorf, that language essentially governs thought, has received must criticism in recent years it is worth citing some examples from their research into the Hopi language, to illustrate their point. In English, for instance,

we say, "look at that wave." Yet a wave in nature never occurs as a single phenomenon. A Hopi will say, "look at that slosh." The Hopi word, whose nearest equivalent in English is "slosh", gives a closer fit to the actual physics of wave motion, connoting movement in a mass. 4h2

Whorf, in particular, outlines a number of assumptions underlying Indo-European languages and thereby Western culture. He claims, for example, that our language imposes upon the universe two grand cosmic forms: space and time. Space in our thinking is static, three-dimensional, and infinite; beyond the last area is always another area. Time is kinetic and one-dimensional, flowing perpetually and smoothly from the past, to the present, into the future. It apparently took the genius of Einstein to correct these cosmic assumptions, which Whorf claims most of us still believe. 4h3

Contrast these assumptions with those underlying the culture of the Hopi. The Hopi language does not raise the question as Westeners might raise, whether things in a distant city, for example exist at the same present moment as things in one's own city. The thoughts of a Hopi about events always include both space and time, for neither is found alone in their world view. Thus their language gets along adequately without tenses for its verbs, and permits the Hopi to think habitually in terms of space-time. For Westerners to really understand relativity, they must abandon their spoken tongue

altogether and take to the special language of calculus. But a Hopi, Whorf implies, has a sort of built-in calculus. The Hopi language imposes two grand cosmic forms upon the universe, but instead of space and time the objective and the subjective. The objective is everything accessible to the human senses, without distinction between past and present. The subjective is the realm of expectancy, of desire and purpose. This subjective realm is intensely real to a Hopi, and exists not only in humans, but animals, plants, and mountains as well. 4h4

The subject - predicate form of Western thought - is likewise the result of another assumption built into natural languages, (in this case in all Indo-European tongues). The hidden assumption is that if there is a verb there must be a noun to make it work; that the verb could not exist in its own right as pure action. For example, Western people today, say "the light flashed", as if something has to be there to make the flash: "light" is the subject; "flash" is the predicate. Yet the whole trend of modern physics with its emphasis on the field, is away from subject-predicate propositions. According to the laws of physics, a Hopi would be more accurate, then, when he says "Reh-pi"-"flash!" - one word for the whole performance, no subject, no predicate, and no time element. An interesting aside is that children tend to do this too. In Western languages we are constantly reading into nature ghostly entities which flash and perform other miracles. The question

is, do we supply these entities, that is, are our belief systems affected, because our language requires verbs to take substantives? 4h5

The influence of language on thought can also be seen by looking at a language that is multivalued, English and Indo-European languages generally are two-valued, As a result we tend to think in terms of "good" or "bad", "right" or "wrong", "black" or "white", "conservative" or "liberal" - thereby ignoring shades of gray (Burke, date), While speakers of Chinese, with their multivalued language may be less inclined to set up dichotomies, they apparently have no difficulty grasping the significance of a variety of shades of gray, Some have claimed the Chinese language as the reason the people have been traditionally tolerant, "Racial, religions, and doctrinal conflicts have been hard to maintain in China, because a Chinese speaker does not possess an unshakable confidence that he is totally right and that you are totally wrong," 4h6

Introduction to Chinese: its Language and Culture, p,10, 4h6a

Insufficient Referents 4i

Another criticism of natural language is that it allows words to be created without sufficient referents, Communication via ordinary (natural) language can too easily be in abstract

terms, where the mind manipulates the words, but loses sight of the space-time events to which the words refer. 411

For example, where are the referents for those abstract, vaguer terms which form the common core of discussion in the political arena? Most recently with the Watergate case we heard cited as the reason for the break-in at the Democratic headquarters the term "national interest". But where is the national interest? Where does it exist? What is it? In other phrases such as "Power to the people" a similar problem arises, namely, who are "the people" in reference? Where do they live? What do they look like? 412

Such abstract terms stand in marked contrast to terms with direct referents such as 100 degrees F, the key of C # minor, 40 m.p.h., etc. 413

Sentences can be created and discussed as meaningful that are not empirically verifiable. 4j

A great many sentences, especially common in traditional philosophy, that are permitted by way of natural language may be cognitively meaningless. Examples would include: "Reality is spiritual"; "Beauty is significant form"; "God created the world for the fulfillment of his purpose". Wittgenstein in the Tractatus, held that most of the statements to be found in traditional philosophy are not necessarily false, but simply nonsensical. 4j1

Natural language allows logical paradoxes - illegitimate totalities are converted in language. 4k

This is a problem with any element, or class, that is not well defined or does not contain a system of rules - that from any ill defined class, we can often derive several conclusions contradicting each other. While natural languages contain intricate systems of rules, neither the rules nor the terms have ever been precisely defined. Since the last years of the nineteenth century the paradoxes found in natural language have exerted a profound influence on the development of logic, linguistics, and philosophy. They still remain a source of concern with their existence regarded as a flaw of natural language. 4k1

The issue is complicated by the fact that there is no one problem of the paradoxes; rather the problems are of different types. According to Van Heijenoort, in a helpful Source Book in Mathematical Logic, they are not due to some infraction of one specific law of logic ("vicious circle"), nor are they simply mistakes to be removed by some ad hoc corrective. The paradoxes actually reveal conflicts in our logical intuitions. Following a path we perceive as logical, we reach a conclusion; following another path that seems equally natural to our logical insight, we reach a contrary conclusion. We then have to scrutinize these intuitions and undertake a systematic reconstruction of logic. (language). 4k2

DRAFT of thesis

In the course of working on The Principles of Mathematics, Bertrand Russell found what he termed "illegitimate totalities" converted in natural language, which resulted in a paradox. Russell's paradox - the name under which The Contradiction later became generally known -- involved one of the most elementary logical relations, that of class membership. By example, all statements in this square are false. (DIAGRAM HERE)If we suppose the proposition inside the square to be true, we must conclude it is false. But if we begin by supposing it false, we have to end by finding it true. The "illegitimate totality" in this logical run-around is the word "all". The "all" must be limited so that a statement about that totality must itself fall outside the totality. 4k3

"This statement is false" is another example of The Contradiction. 4k3a

Confusion in syntactical categories. 41

We have seen how expressions made in ordinary or natural language are often difficult to translate into a formula. This may also occur when there is an apparant difference in categories from where the words originate, for in all natural languages there are strings of (one or more) words which are mutually interchangeable in all well-formed contexts, that is, with well-formedness (grammatically, syntactical correctness) being preserved in the interchange - and that there are innumerable other strings which do not stand in this relation. 411

While the same part of speech, one of two expressions often cannot replace the other without turning the literal meaning of the sentence into an absurdity. To begin with an obvious case, when "the man" in "The man is in bed" is replaced by "Saturday" the result is clearly an absurd sentence if taken literally. Less obvious cases often go undetected by philosophers and remain a source of philosophical confusion. "He scanned the hedgerow carefully" becomes absurd when "saw" replaces "scanned" although the absurdity disappears when the adverb is omitted. Failure to note that "to see" belongs in a category, for example, of "achievement" verbs while "to scan" is a "task" or "search" verb has misled philosophers to posit a mental activity corresponding to seeing that is analogous to the genuine activity of scanning. 412

Confusion Between Words And Things 4m

There is another source of confusion in natural language that is somewhat similar to the syntactical categories problem - that is a confusion between a sign and its referent. For example, consider the following argument: 4m1

Mary is a girl,

Girl ends in l,

Therefore Mary ends in l. 4m1a

This could at first appear to be a confusion of types or categories. That Mary is a subset of the class of all girls

which is why Mary can't equal girl. Yet take an example using two words from the same class. 4m2

A female is a girl.

Girl ends in l.

Therefore female ends in l. 4m2a

The conclusion still does not follow from the premises. It is here quite obvious that the second premise "Girl ends in l" refers not to the object (referent of girl) but to the symbol (the word "girl"). I will here take Korsybski's advice and use quotes to warn when I am speaking of the word. 4m3

The Hopi also avoids the "is of identify" and consequently is probably less likely to confuse words with things. (A confusion later brought out by the logical positivists as a criticism of natural language). For example, where we would say "Mary is a girl", the Hopi would say "we call Mary a girl". 4m4

Indexicals 4n

Another issue has been raised against natural language in relation to problems that arise through the existence (and use) of token reflexive words or indexical signs. 4n1

The term "token reflexive words" or "indexical signs" is a single label for the group demonstratives, pronouns, and tenses. They have been placed under a common label because what each denotes is relative to the speaker: to know the referent of "I," "now," "here," and "you," we must know who utters the word and often we must also know when, where, and to whom it is

uttered. Thus knowledge of the speaker and his context is essential in determining the referent of such words. C.S. Pierce called them indexical signs because their referent is determined by its existential relation to the sign, a sign, for Pierce, being anything which represents or signifies an object, to an interpretant (a mind which understands the sign). An act of pointing is an indexical sign because its object, or referent, is determined by the spatiotemporal relation between the index finger used in the act of pointing and its object. The symbol "this" is a suggogate for an index finger in an act of pointing; its referent is determined by the existential relation between some object and the sign which is uttered or written by the speaker. 4n2

Rather than an indexical sign being used in place of a noun, as is often stated in grammar books, Peirce claimed that it was the other way around, for an indexical sign indicates its object in the most direct way possible and does not rely on any descriptive element, as does a noun. It appears as though Peirce may have overlooked the case when an indexical does not indicate its object directly -- for instance, when the indexical sign refers to an object which has been previously named or described in discourse: "Napoleon was a great general. He shaped history." Also, it would be an oversimplification to say that the pure index "this" can indicate its object directly without the need of any descriptive symbols; the naked use of

"this" is extremely ambiguous, and to cut down this ambiguity, "this" must be accompanied by some descriptive symbol -- "this tree," "this color". 4n3

In his Brown Book, Ludwig Wittgenstein brought out some interesting differences in the "logical grammar" (rules of use) of indexical signs and names. In the sentence frame "--is here" or "Is it now--," we can put into the blank a name for a place or time -- "The equator is here" or "It is now Valentine's Day" -- but it would be nonsense to put "here" or "now" into the blank, since that would result in our saying, "Here is here" or It is now now." Similarly, in the sentence frame "This is called__," we can insert into the blank space a name but not the index "this". Therefore, although it is correct to say that "now," "here," and "this," indicates a time, place or object, it would be incorrect to say that they name a time, place, or object. 4n4

One of the curious features of indexes is that in regard to any index, such as "here" or "this", the referent often changes from one occasion of their utterance to another, yet in spite of this changing reference, each utterance of "here" or "this" means the same thing. 4n5

If we should find a slip of paper in the street on which was written "I am now tired," we would not know the referent of "I" or the time indicated by "now" and therefore would not know what facts would be relevant to the truth or falsity of this

statement. However, we would at least know that whoever wrote this was asserting that he was tired at the time he wrote it. Because of the changing reference of different utterances of the same indexical signs, the inclusion of an indexical sign in a sentence renders this sentence context-dependent in that it is not freely repeateable -- that is, its utterance by different persons at different times, places, and so on could result in entirely diifferent meanings. 4n6

Russell called indexicals (pronouns, tenses, and demonstratives) "egocentric particulars" because what they denote is relative to the speaker. He attempted to reduce all such expressions to the egocentric particular "this," in which "this" is a "logically proper name" for a sense datum experienced by the speaker at the time he makes his utterance. For example, "I" means "the biography to which this belongs;" "now" means "what is compresent with this," "This" is a strange sort of a proper name because it applies to something different -- a different sense datum -- every time it is uttered. And yet on each occasion of its use, it is unambiguous, applying to one and only one particular, though, of course, only the speaker can know its referent since it is a sense datum private to him. 4n7

As was the case with indexical signs, the inclusion of the egocentric particular "this" in a sentence renders the sentence nonfreely repeatable. For instance, if we translate "It was raining" into "An occurrence of rain is (tenselessly) earlier

than this", in which "This" is a logically proper name for a sense datum experienced by the speaker at the time he makes his utterance, the second sentence is as context-bound as the first in that both sentences are subject to the same temporal restrictions in their use -- that is, they can be used to make true statements only if uttered later than the occurrence of rain. Also, in the second statement "this" functions as a temporal, rather than a spatial, indicator, since it makes sense and is natural to say, "the time at which this occurs" but not "the place at which this occurs." Herein "this" has the same logic as "now". However, in the statement "The monument is to the west of this", "This" has the same role as the spatial index "here". 4n8

Because of the numerous complexities observed, several attempts have been made to construct ideal languages in which all token-reflexive words would be eliminated, so that all sentences in such a language would be freely repeatable, an important characteristic also if a computer is ever to be "taught" to understand natural (or an idealized form of) language. (See Winograd, 1972; Bar-hillel, 1964).. The ideal language, however, would have to be such that we could describe every fact about the world through the use of sentences that are not in any way context-bound; it would not matter who uttered them or where, when, or to whom they were uttered. (Chapter -- in Fase has a discussion of just such an attempt.) 4n9

Let us summarize the criticisms as follows: 4o

That there is a general ambiguity or lack of precision inherent in natural languages. 4o1

That there are a number of unconscious assumptions in natural languages. For example, multivalued logic is cardinal in understanding and explaining nature, yet Indo-european languages tend to force us into two-valued thinking, fortified by formal logic. Also, events have unlimited characteristics, while our languages leave many of them out and thus may often distort a judgment. 4o2

On the other hand, there are no abstract qualities outside our heads. But language may create verbal entities which seem to exist out there. 4o3

Also, a word is not a thing but an artificial symbol. This has long been known, but the language structure still objectifies words and encourages confusion between words and things. 4o4

There is further confusion in natural languages due to a lack of clear distincton in syntactical categories. 4o5

The existence of indexicals also increases the ambiguity of natural laguages. 4o6

Language is self-reflexive. It is possible to make statements about a statement about a statement indefinitely. 4o7

As a result of some of these problems, natural languages also allow a variety of logical paradoxes. The paradoxes are

especially apparant when trying to map natural langage into a logical formula .

History of the Attempts to Develope Ideal Languages 5

As we have observed, many criticisms have been raised against natural language. In fact, many critics found that there were so many problems inherent in natural language that it would be unwise even to try to repair it. Several decided, rather, to build new languages, formal or artificial languages. 5a

But, assuming their criticisms of natural language are valid, why did they perceive it necessary to construct an idealized version of that language, or in some cases to simply construct a new language? 5b

The reasons commonly cited by proponents for the use of artificial languages involve various alleged contrasts between artificial and natural languages. They claim that in an artificial language where precise semantical and logical rules would be established, many of the natural language defects could be avoided. 5c

The proponents argued that with an artificial or formal language it could be precisely determined that certain things are logical consequences of a given proposition, and in favorable cases, whether or not a paradox or contradiction resulted from certain assumptions it was believed that a formal language structure could be so contrived as to avoid certain known kinds of paradox or inconsistency which allegedly arise in any natural language. 5c1

It was believed that constructing a formal system would

also help decipher the form from the content - to help avoid confusions of syntactical categories. For example, to analyze various kinds of inference in language it is necessary to analyze the statements which figure in it. It soon becomes clear that the validity or invalidity of an argument largely depends on the forms of the statements in which the argument is formulated. This appears most dramatically in pairs of arguments, one of which is valid, the other invalid, although superficially they look very much alike. Consider the following pair: 5c2

(1) The president of the United States is the commander-in-chief of the armed forces. Mr. Y is the president of the United States. Therefore, Mr. Y is the commander-in-chief of the armed forces. 5c2a

(2) The president of the United States is elected every four years. Mr. Y is the president of the United States. Therefore Mr. Y is elected every four years. 5c2b

The fact that (1) is clearly a valid argument, and (2) is clearly an invalid argument show that there must, despite appearances be some crucial difference in logical form between the first premises of the two arguments. If one aims to construct a complete (or even very extensive) list of forms of valid inference, one will have to explore fully the conditions under which two statements are or are not of the same logical form. This will entail considerable attention to the varieties

of constituents of sentences and the varieties of their interrelation. (In the above example, one needs to distinguish different kinds of force which a phrase of the form "the x of y" has.) 5c3

Not only are natural languages logically imperfect within themselves, but more variations in form occur between languages. Another reason argued by proponents for artificial language development is that even if a natural language could be made logically perfect, its conceptual apparatus would then overlap or be incompatible with that of another natural language. Adjukiewicz, a polish logician and semanticist, found for example when he attempted to specify rules for determining meaning in statements that his rules could be "univocally stated only for artificial languages". He believed that this was because natural languages are actually families of languages in which the combinations of meaning rules vary from one group of users to another. Consequently, we must not try to perfect a natural language, but instead build a new, logically perfect, artificial version. 5c4

Another reason cited for the regimentation of language was one of efficiency - that since the logic of ordinary language is difficult to formulate, it would be more economical to theorize in a language which is ordinary except in its logical parts. Also, in the process, one could seemingly devise a system with fewer kinds of construction and less obscurity than

ordinary language, and thereby, through its application, simplify and clarify our conceptual scheme, (Quine, --). 5c5

It was further believed that if we could determine in outline how the world would be described in an ideal language, we would have, in outline, an account of what the world is like. And that since there are alternative ways of stating the same body of facts, (recall the issues raised in Chapter 1 of language governing thought) it could not be the case that all these ways reflect the real structure of the world. The logical positivists and other critics wanted to escape this "trap" of the natural & (culturally bound) languages defining reality. They saw as a solution speaking about reality or trying to define it in a formal language or system of logic. Therefore the restriction to an "ideal" language would be essential. 5c6

While we can find traces throughout history of efforts to construct a more precise form of natural language, most of the work has occurred in the twentieth century, primarily within the school of logical positivism. Note: see p. 49, vonMises, for description of first attempt - creation of terminology for classification purposes . and p. 51 for definition of a scientific language. 5d

The logical positivists were a school of philosophers who rose to counter traditional philosophical investigation, to critize the discipline of philosophy on the ground that it employed as its primary tool, natural or ordinary language. Ordinary language, they believed, was simply inadequate for philosophical purposes by reason of its vagueness, ambiguity, context dependence, and the untestable statements it allowed. This school numbered among its members, Russell, Wittgenstein, and Carnap who saw as their task the construction, or at least the adumbration, of a language in which these defects would not appear. 5d1

Note: The logical positivists did not consider themselves philosophers. 5d1a

The positivists believed that the formation of an ideal language and consequently fundamental reform of philosophy, was needed. They considered philosophy to be the analysis and clarification of meaning, and they looked to logic and the

sciences as their models for contructing formally perfect languages to meet their analytical needs, 5d2

Rudolph Carnap, a leading member of the Vienna Circle, developed the principles of one such interpreted formal system or formal language structure. It is essentially a methodology, which he calls his constitution (or construction) theory. Carnap's aim was to create a theory of linguistic expressions as a means of bringing greater clarity into the formulation of logical problems. He made a distinction between what he called "object language" and "metalanguage". "Object language", he said, is the language that is the object of a study, and "metalanguage", the language in which the theory of the object language is formulated. In these terms Carnap's goal became the construction of a suitable metalanguage in which to conduct philosophy or the logical analysis of language. The result of his effort can be seen mostly in The Logical Syntax of Language (1934) in which he developes two model languages. 5e

The principle concept in Carnap's theory is that of reducibility. A concept "x" is said to be reducible to a set of concepts "Y" if and only if every sentence concerning "x" can be transformed into sentences concerning concepts belonging to "Y" (with preservation of the truth-value). This transformation is then carried out by means of a rule, or constitutional definition -- somewhat like a primitive transformational grammar concept. 5e1

> For example, "Five is not a thing-word but a number-word" and "Lion is a thing-word" are syntactical sentences. Pseudo object sentences are peculiar to philosophy; they look like object sentences but if rightly understood turn out to be syntactical sentences. To understand them correctly we have to convert them from what Carnap calls the "material mode" to the "formal mode", that is, from sentences which look as if they are about objects into sentences which are obviously about words -- a metalanguage. 5e1a

Carnap, however, did not provide us with a detailed account of how such a conversion process would occur. He simply developed in theory the fundamental principles of such a process. 5e2

Bertrand Russell, another positivist, proposed the notion of constructing atomic sentences. He defined them as sentences that contain a single predicate or relational term, and one or more than one name -- the whole sentence asserting that the entity named has the indicated property ("this is white") or that the entities named stand in the indicated relation ("This is above that"). If a sentence (1) has this form, (2) contains only terms that get their meaning through correlation with experienced items, and (3) has to do with entities that cannot be analyzed into anything simpler, then it is an atomic sentence. It is clear that for Russell the sentences which satisfy these requirements will all state a minimal fact about a momentary content of sense experience. The notion of atomic sentences is a part of the

broader theory of logical atomism, Bertrand Russell constructed the theory of logical atomism partly to answer the issue of the inference problem. However, Russell was well aware that logical atomism in this extreme from was untenable, and later even had doubts about his earlier philosophy. 5f

While the chief exponents of logical atomism were Russell and his student, Wittgenstein, the fundamental principles were spelled out by Russell in "The Philosophy of Logical Atomism". 5f1

To offset the Contradiction in natural language (Russell's paradox of illegitimate totalities), Russell also developed a theory of types. Its cardinal principle, as presented in Principia Mathematica, is that whatever involves all of a collection must not be one of the collection, (the vicious circle principle), 5g

The class of white objects, for example, includes (and hence involves) all white objects, and to say that this class is itself a white object is to violate the principle and to speak nonsense. The set of entities consisting of all white objects and the class of white objects is for Russell an "illegitimate totality," a set that "has no total" in the sense that no significant statement can be made about all its members. For example, 5g1

"X is a member of the class of white objects" is equivalent to "X is white," and the two sentences "The class of white objects is a white object" and "The color White is white"

are equally expressions of a type-mistake or category-mistake and are equally nonsensical. 5g1a

Russell offered in support of his theory the fact that it outlaws not only conditions giving rise to the paradox concerning class membership but also those giving rise to an indefinite number of other paradoxes of self-reference, including the ancient paradox of the liar. 5g2

It accomplishes this by requiring that any given statement of the theory must be in a metalanguage whose expressions are not included in the totality of expressions covered by the statement. While the theory can thus never be applied to the language in which it is itself stated, it can always in principle be restated in a further language (a meta-metalalanguage) so that it applies to the language in which it was originally stated as well as the language to which it originally applies. Universal application of the theory is thus possible in principle by proceeeding up an infinite heirarchy of languages, while the application of the theory to each particular language asserts the existence of an infinite hierarchy of types of syntactical functions within that language. 5g2a

Roughly speaking, that a language contains a type theory seems to mean at least that a hierarchy exists among the entities countenanced in this language, so that a given string of elements of this language -- words, morphemes,

atomic symbols or the like -- will be regarded as well formed only if, among other conditions, certain restrictions are observed as to the kinds of entities that are denoted by some substrings or that fall within the range of the variables occurring in the string. A typical illustration is a membership sentence of the form "... E _____." This will not be well formed unless the expression to the left of "E" denotes an entity (or, if it is a variable, ranges over entities) occupying a position in the hierarchy exactly one step lower than the position occupied by the entity denoted by the expression ot the right of "E". Generally, but by no means always, there are expressions that occur only to the left but never to the right of "E" (or fulfill some parallel condition in other formalisms). Such expressions denote the entities of the lowest type in the hierarchy, the individuals. Entities denoted by expressions of the next-higher type are classes of individuals; then come classes of classes of individuals, etc. ad infinitum. 5g2b

It would have been philosophically significant had it proved possible to establish that all languages worthy of the name must contain a type hierarchy, or at least that no satisfactory foundation of mathematics is possible without one. But nothing of the sort has been shown. There are a large number of constructed languages without type hierarchies, and in some of them satisfactory foundations for mathematics have been

provided. The attempt to impose a type hierarchy upon natural languages seems misguided and linguistically pointless. The concerns of Russell and other authors about how to formulate the theory of types in English (or any other natural language) without violating the theory in its very formulation (e.g.; by speaking of all types) are now no more than interesting curiosities. At one time (1944) Russell was induced by these worries to give up talking about types of extralinguistic entities altogether and to be satisfied with assigning types solely to linguistic entities. 5g3

In an effort to simplify Russell's theory of types, and related problems of category/type confusion, several logicians attempted to develop a theory of syntactical categories. These have included Lesniewski, Ajdukiewicz, Carnap, Bar-Hillel and most recently Chomsky. We have already observed the basis for this development - the linguistic fact that natural languages contain strings of words mutually interchangeable in all well-formed contexts, and other strings of words which are not interchangeable in the same well-formed contexts. Recall the problems illustrated in the examples "the man" versus "Saturday" is in bed. 5h

Carnap, apparently the first logician to use the term "syntactical categories", believed that all logical problems could be treated adequately as syntactical problems, in the broad sense he gave the term. 5i

Carnap took implicit account of the possibility that two strings

might be interchangeable in some contexts but not in all. [1] He coined the term "related" for this relation and used "isogenous" for the relation interchangeability. Languages in which all strings are either pairwise isogenous or unrelated have, in this respect, a particularly simple structure. But there is no reason to assume that natural languages will exhibit this particularly simple structure. In fact, observing the main principle becomes a nuisance even for rich constructed language systems; as Carnap showed, the principle is not observed in some of the better-known calculi (perhaps contrary to the intention of their creators) with no real harm done. 5j

[1] In 1934, in The Logical Syntax of Language. 5j1

The relation "related" is clearly reflexive and symmetrical; hence, it is a similarity relation. The relation "isogenous" is, in addition, transitive; hence, it is an equivalence relation. Starting from these two relations, Bar-Hillel, in 1947, developed a theory of syntactical categories, illustrated by a series of model languages, all of which were, in a certain natural sense, sublanguages of English. In 1954, Chomsky developed a more powerful theory by taking into account, in addition, relations between the linguistic environments of the strings compared. 5k Recently, primarily owing to the insights of Chomsky and coming as a surprise to most workers in the field, it has become clear that interchangeability in context cannot by itself serve as the basic relation of an adequate grammar for natural languages. It may play

this role for a number of constructed languages, and it does provide a satisfactory basis for what have become kown as "phrase-structure languages". See Chapter for this thesis, "Grammatical Theory". 51

Another theory worth noting that was developed as a requirement for a logically perfect language is the theory of verifiability - or the verifiability principle. The principle maintains that for any sentence to be cognitively meaningful it must express a statement that is either analytic or empirically verifiable. It was allowed that sentences may have "emotive," "imperative," and other kinds of meaning (for example, "What a lovely present!" or "Bring me a glass of water!") even when they have no cognitive meaning, that is, when they do not express anything that could be true or false, or a possible subject of knowledge. But -- leaving aside sentences expressing analytic statements -- for a sentence to have "cognitive," "factual," "descriptive," or "literal" meaning (for example, "The sun is 93 million miles from the earth") it was held that it must express a statement that could, at least in principle, be shown to be true or false, or to some degree probable, by reference to empirical observations. This point was made by Wittengenstein, once a student of Russells, and was understandably, one of the most controversial of the new ideas of logical positivism. It could eliminate from discussion phrases like "national interests". 5m

In Wittgenstein's later philosophy, however, he rejected his

quest for an ideal language; became one of its strongest opponents, and is credited with leading a major counter philosophical movement "ordinary language philosophy". (See Appendix A for brief discussion of ordinary language philosophy.) 5m1

Most of the attempts, however, especially from the logical positivsts, were in the form of theories, and the exact nature of such an "ideal" or logically perfect language has never been completely specified. 5n

While many followed in the later Wittengenstein's footsteps they did so for various reasons. Some gave up their pursuit of an ideal language because they found renewed faith in ordinary language, others because the pursuit was increasingly difficult and others because the pursuit was believed to be in vain. [1] 5o

[1] For example, those that wanted an ideal language as a means of investigating the structure of the world, ultimately found themselves in a vicious circle. For proving that a language is ideal seemed to require comparing its structure with that of reality, which meant having some prior and language independent knowledge of the structure of reality. 5o1

Yet while their attempts for their particular purposes, may have been difficult to accomplish their efforts did increase our understanding of natural language as well as provide us with some clues as to what might be required to solve some of its inadequacies. 5p

These attempts also left behind ideas for further investigation, and in fact new philosophical utility has since been claimed for the study of artificial symbolic languages. 5q

It has been found, for example, that simply constructing a language is not enough. The problem is then to demonstrate that the language, once it is available, is really adequate to describe the world (even a limited world). This problem is also one facing computational linguists today who have accomplished the construction of several artificial languages (ideal for communicating with a computer about a limited domain of knowledge), but their world is so restricted as to be virtually useless. They are so far only useful, again, as theories of what might be required to describe a larger world. 5r

Yet, even these recent attempts have again encountered problems all too familiar to the logical positivists, and again, have through a new approach and for different purposes, tried to solve them. For example, because of the numerous complexities observed, several attempts have been made to construct ideal languages in which all indexicals, or token-reflexive words would be eliminated. The purpose is so that all sentences in such a language would be freely repeatable. This is an important characteristic if a computer is ever to be "taught" to understand an idealized form of natural language. (See Winograd, 1972; Bar-Hillel, 1964). The ideal language would have to be such that we could describe every fact about the world through the use of

sentences that are not in any way context-bound; it would not matter who uttered them or where, when, or to whom they were uttered. 5s

This theory was tested some 35 years later when computational linguists attempted to make natural languages "logically perfect" and found that in fact their conceptual apparatuses were incompatible. See Section 5 for further discussion. 5t

Further applications have been suggested for the construction and investigation of artificial symbolic languages. 5u

Let us look now at some more recent developments and their implications to theoretical linguists - to the understanding of natural language systems. 5v

DRAFT of thesis

(J33725) 22-OCT-75 14:56;;;; Title: Author(s): Gwen C. Edwards/GCE;
Distribution: /RWH([ACTION]) ; Sub-Collections: NIC; Clerk: GCE;
Origin: < GEDWARDS, OUTLINE,NLS;1, >, 17-OCT-75 21:29 GCE ;;;; ####;

33725 Distribution
Roger W. Hough,

FIRST DRAFT of MINUTES of KWAC meeting - Oct 16-17 1975

The following minutes have been edited for typos but not for accuracy of content. Please check for important points that were omitted or places where people were inaccurately quoted, and send the additions or corrections to Susan Roetter at ARC (SGR; ROETTER@BBNB) by November 7, and we will then distribute a corrected draft.

FIRST DRAFT of MINUTES of KWAC meeting - Oct 16-17 1975
The following minutes have been edited for typos but not for accuracy of content. Please check for important points that were omitted or places where people were inaccurately quoted, and send the additions or corrections to Susan Roetter at ARC (SGR; ROETTER@BBNB) by November 7, and we will then distribute a corrected draft. 1

Monday Morning 2

RMS2 - Welcome to Boston: maps, lunch, room layout, terminal layout; how to print files - how to format for xeroxing 2a

FGB - Only concrete suggestions about changing the agenda are to cut short the introductory remarks, do some of Tuesday's stuff on Monday and Wednesday and also Tuesday etc. 2b

DCE - agreed 2c

RMS2 - site presentation earlier 2d

General agreement 2e

CKM - Let's wait until Ron Uhlig gets here tomorrow before we discuss some stuff. 2f

ESV - He would want us to wait 2g

SMT - I won't be here Tuesday or Wednesday. 2h

DAP - Let's cancel Monday and have Tuesday both days. 2i

FGB - We can do some both days - any objection to site reports today? 2j

CKM - Yes - We have heard them before 2k

DCE - I would like to hear them now 2l

JCN - just quick descriptions with more later? 2m

FGB - yes, more later 2n

SMT - RLL kept notes last time - I would like to see more of this. 2o

Discussion on whether to have site reports - some want them today, others don't 2p

RMS2 - 2 minute summary of each site 2q

FGB - Follow agenda for awhile and see how it goes 2r

RMS2 - Accidently sent file describing what was going on - Use NLS as record information system to keep track of milestones in hardware-software system around the world in 10 locations (seismometer) - use Datacomputer at CCA. When data is finally generated at sites there will be a data base describing how to access data, processing techniques, to cut down on time spent finding data. There are users on east coast and universities on westcoast - They will be making files,making text files and then naive users can print- if knows NLS can get scenario on how to use them - just small aspect of lab
ESV - You provide instructions?
RMS2 - Yes just print branch and setting viewspecs - use process branch that does setting of prompts etc, and gives a paragraph to tell how to do some things (print branch etc.) - This is not a finished product yet.
JCN - any test users?
RMS2 - No but should by the first of next year - problem is getting data from sites not NLS. We hope to have it together by spring. We will have a report to be presented at a meeting of seismologists We will turn the system over to group that will maintain it
JCN - any manuals or descriptions on how to access it?
RMS2 - Yes, some and also have to deal with universities that don't have access to the ARPANET 2s

LAC - Using for documentation efforts - 1000,000 pages of documentation - 80% change/year - 3 automatic typewriters and the rest electric - 66-1 maintenance manual done in conjunction with Pentagon. Every couple of weeks representatives of major commands and the design center redo a volume using NLS and output through a formatting system and through Proof system. Then through George Lithograph published through hardcopy - other is directorate of Programs and Resources (PR) is doing a couple of manuals - lead directorate for place - put NLS into production environment - have a management data base STALOG - simple and small project milestones, schedule office of primary responsibility - used to manage 66-1 - maintain 24 hr a day 360 day field assistance branch - putting difficulty reports into NLS hopefully will distribute reports with NLS around the center forgetting answers - other little things 2t

JCN - Are you working against a 2 year plan? 2u

LAC - By 1 1/2 yrs, we hope to have all 100,000 data base into NLS and publish all via COM with Fiche output to eliminate mailing costs - Air Force in labor intensive - pen and ink things done 2v

DAP - What kinds of things are you doing about assessing effectiveness? 2w

LAC - Problem is people don't know how much secretaries cost them - especially since easy to get bodies - no feel for cost effect of bodies and would like any inputs on data others have 2x

JCN - Do you have complete retypes of each volume? 2y

LAC - Right, It is all done on manual typewriters, Microfilm has to be very high quality - entire page retyped for one or two words - obvious that that's expensive but not clear how to compare 2z

DLS - Will you get a COBOL programmer to do source code in NLS? 2a@

LAC - Yes, we will be getting someone, The problem is that people react in extremes - either it won't work or they are wildly enthusiastic, We are trying to get cautious enthusiasm to avoid disasters, 2aa

ESV - Will you continue to do document preparation centrally or disperse it? 2ab

LAC - We will continue centrally, 135 air force groups get object code and documentation (system and user) sent on block release cycle monthly - 2ac

ESV - Access on line? 2ad

LAC - between me and you would like to see this eventually, but not yet, Will pass out document- site survey - describes NSW - software factory - release doc and source code by Autodin II - but several years away 2ae

SMT - lots of luck with A II 2af

LAC - having trouble getting documentation on A ii 2ag

CKM - any trouble getting to use NLS witnhout justifying it as a word processing center? 2ah

LAC - getting around it using NSW 2ai

CKM - I don't see how it how that can be justified just for doc production 2aj

LAC - I think it can be justified because of graphics and bulk - nice thing about online system is that it will handle large docs 2ak

CKM - No flexibility is there but difficult to justify 2al

LAC - It is partof NSW so no need to justify separately - justify based on integration with rest of program 2am

CKM - I was forgetting NSW 2an

LAC other advantage is ability to communicate with Pentagon which they have to do 2ao

LAC - can't justify for less than 50 pages 2ap

JCN - people were pulled in from all over who reworked chapters redone by typists daily - speed of turn around was good with online system - no one has been able to even in a vague way estimate before after costs - tired of saying I don't know 2aq

DAP - Will be beginning a study of WP and looking at what is done at ETS looking at tools available - trying to match tools with activities - will be stabbing at getting answers - has pushed it and now is getting nervous 2ar

LAC - I don't like NLS for doing initial entry. I would like to see DEX work 2as

RMS2 - I don't believe you need DEX. If they have TI with recorder can prepare documents up to 183,000 (?) characters - simple editing allowed put transmission rate at 10 ch per second go to sndmsg and transmit the message send to yourself and suck into NLS with messsage program with CR LF between each line that can be deleted 2at

LAC - This is not a valid alternative 2au

LAC - It will hang elf job if goes fast 2av

RMS2 can't transmit directly because 30 cps is too fast 2aw

DCE how is copying a file different than a message? 2ax

RMS2 no difference so long as you do 10 cps 2ay

LAC - too much chance for trouble. There should be some way for remote host to say when to transmit data 2az

FGB - want to explore more later 2b0

CKM - time for coffee break 2ba

RLR - introduced himself - has incrementally funded project which isn't funded currently - Have a project with 2 phases - substantive activity looking at projections of country futures storage retrieval developed by substantive part of project for the purpose of record keeping and distributed access to interested parties and other DOD policy sites using TNLS and DNLS via leased line to Rutgers tip. We finally got clean line now that money is gone. Files are not large but are hierarchal so country profile can be read and expanded via an outline. Give users instant briefing and ability to browse rather than minimal use of the system. We have used linking and message sending. havn't used output processor. We have ideas on what we would like to do but will have to wait for money 2bb

JCN graphics will be useful 2bc

RLR - projections on Cartesian coordinates - map that has Iran with outlines alphanumeric#d,)JCN that's what coming 2bd

RLR - paced by funding not technology - trying to find common ground between Hudson and ARPA 2be

RMS2 - lab is DOD contractor - don't have money to support coffee etc. would like to charge registration of a dollar or two to cover incidentals 2bf

FGB - what kind of donuts? 2bg

RMS2 - We just have coffee today. We would have liked to have luncheon at faculty club, but conditions were too stringent. We will get one together maybe at legal Seafoods 2bh

FGB - We work at NSRDC with 10 other labs hooking mainframes to ARPANET, using a Very Distant Host (VDH)to connect PDP-11. We're doing Host Frontend Protocal - NCP in mini 2bi

Jack Gillikin from NSA introduced who is doing same thing 2bj

FGB - Have taken NSA documentation and will use it relatively untouched have distributed community They'd like to see cooperation by using NLS through communicating - not much further along than 6 months ago - getting hardware for sites - located in Washington, San Diego, China Lake, New London, Panama City - want to get into the study of NLS and attempt to justify it - thought it was great when ETS was starting up the experiment - I would like to talk about documentation production later. 2bk

SMT - At the BRL use text editor for scientific users - problem is getting them started and running process on other network hosts to

pull info in for writing a report - 2 are writing reports now jointly - don't see each other for weeks so find it effective - Efforts to get new computer system have been successful will relieve pressure from SMT to work on other things (NLS) - intend to put it on the network - have been involved in setting up the AMC community - are starting to involve members of the AMC Scientific and Computer Council for dialogue and messages and hope to involve AMC Scientific and Computer Council Steering Committee in the same way - includes director of BRL - began using Word Processing a long time ago with paper tape - have evolved to Wang and IBM mag tapes - 17 Wangs and 6 IBMs got before there was an army regulation - experience for production tasks represent 50-100% more output from each secretary since they'd rather not spend personnel spaces for a secretary - 2bl

SMT - had a DNLS terminal for awhile but can't get lineprinter to work use ANTS but will convert to ELF momentarily - 10 people some unfaithful use NLS - 4-6 faithful - want to use for program management files 2bm

IMM - do research in future communications service - use mainly for communicating among each other - people always take portable terminal to keep in touch and used at homes - sndmsg mostly - send problems to IMM and feedback - want to analyze feedback from their group - used mainly for doc prep - reports memo papers are done online either by author or secretary - have 3 secretaries trained through OP and one can do COM - everything has to be done online because COM is the final output - have had problems but a lot of success - "that's the way to go" - will leave COM till later - use it for building a data base from abstracts - have programmer who wrote a calendar subsystem which they use for inputting travel plans etc, used for planning meetings - eliminates lots of phone calls - will be used more starting next week 2bn

DAP - sounds like a MIS 2bo

IMM - sort of - Will go on trial next week. Will be interesting to see it. 2bp

IMM - working on evaluation of NLS - designing questionnaire to send are asking for volunteers - long about 2 hours - want attitudes of people using NLS - 2bq

JCN - how long a study? 2br

IMM - they've been working 4 months and it will be about a year before finished 2bs

JCN - will you tell more later? Is it evaluting what you see or does it look at other alternatives? 2bt

IMM - might come out of questions - are asked what other things you've used - haven't really read it thoroughly - 15 users - 2bu

FGB - Will you have pre and post questionnaires? 2bv

IMM - No, just one in two parts - for users and nonusers - mainly for user attitudes 2bw

DAP - is it online - will get ETS users to do if data is shared 2bx

IMM - being input and they have to justify NLS and that's the purpose - made a audiovisual presentation of NLS - demo and slide presentation - talking part done professionally - JCN saw it at the ATT Long Lines Executive meeting - hard sell on NLS - tells how Bell uses it and shows them in various stages of using it 2by

FGB - taking lineprocess apart... 2bz

IMM - made for Bell management to take around for demos and just on NLS - use DNLS a lot secretaries don't use TNLS unless they have to - trying to use all aspects of the system 2c@

JCN - does DEX work for you? 2ca

IMM I don't know - Martin called last week and wondered if it was working but the secretary didn't type in right with CR LF's but will try it again - couldn't check before coming because of line problems - 2cb

RLR - most of secretaries want to use DNLS? - had DNLS terminals in other building - used TNLS for raw input 2cc

IMM - oh we do too - DNLS mostly for editing - not used for input because of bad keyboard - 2cd

Jack - Our development has been different we are bringing ARPANET inside building to tie computers together - people want to know why ARPANET - also have internally develpoped STARNET - people disagree which is best - have created NIC inside of NSA - consists of 3 data systems analysts, secretary and research analyst so bounced around and prepared presentation which got classified - took off for 2 weeks to Montana - Jack took over the work and didn't expect to come their group has never travelled - Mill Jernigan is consultant and said NLS would solve all our problems - this is the 11th info mgt system there is also a 12th put out by Burroughs - Candy so are waiting to get things done inside - about

20 users who use NLS off and on - about 10 who know it well - are concerned about its limitations - have started to write L10 sloppily but recently got a person trained so hope that will work better plan to use it for abstracting - have a computer resources notebook - have dinky NLS - KA10 from other project so it is limited anticipate it will handle 5 slots - is oversubscribed and wonder what will happen when it comes up next month - network managers want to use it for networking have one project getting a lot of terminals that has a very heavy editing job 2ce

Jack - now want 6 10's - Congress wants to know what they are doing on ARPANET - think it has great promise - have gone out with a contract with Logitron - problem of many languages is recognized and looking forward to frontend backend concept 2cf

ESV - AMC geographically dispursed - 13 separate sites represent 21 directories - 3 of which are organization directories - those are divisions within headquarters - main use is business communications - hopefully will extend futher than MSG which is predominate use of system - knows it will - have a big need for authorized record as could be done with the journal - most users are quite new so havn't gotten much into NLS - doesn't know extent now - talking about business environment - have to tread lightly on word processing- organizationally belongs to another organization - talking about unstructured business dialogue - includes short docment and anything where managers have to talk to their managers 2cg

JCN - hard to stay out of WP with long documents 2ch

ESV - hoping to use ignorance of users - have had meetings wth others and they have said they would like to communicate wth other WP units - would like to do bigger documents - regulations in NLS? - think they will win the battle 2ci

SMT - policy paper for steering was creating on NLS 2cj

ESV - lot of overlap between AMC and BRL - he is more interested in typing processors together - our big interest is how does the augmentation fit into a real live office environment 2ck

ESV - very similar situation as at Gunter as far as organization goes 2cl

DCE - Want to join NSW? 2cm

Stan - no mechanism for doing that 2cn

CKM - do you have R &D funds 2co

ESV - no stricltly operational - each user has financially commitment - at moment still experimental project and was justified 2cp

ESV - we're not operatng that way 2cq

CKM - they will find you 2cr

DAP - may have to find out something else to call it 2cs

CKM - won't go over details talked before -implementing all R&D things funded - don't have data processing support - use systems on ARPANET - have used communications stuff for 2 yrs now - all offices try to get contractors on line for communication - message stuff done at ISI - Office1 is primarily used for NLS - started 1 1/2 yrs ago and now have fairly sophisticated usage - 4 DNLS terminals one in Director's office - being used mainly for reports and sending them to contractors - used for internal reports - have learned to put letterhead into terminals - have learned that people can't be left alone with NLS - have several applications that have been set up to help people step through projects eg. MRAO (memorandum for Request of Arpa Order) - has examples that can be looked at later - proven to be helpful has probably become cost effective - done same thing with Arpa Order and are using Terminette for that - recently the ARPA director reviews the budget - programs submit proposed budget and it gets slashed etc. - put office submissions online writeen by NDM - system queries for questions - went through usual changes - learned that they need L10 suppirt when applications come up whole thing went 100% faster than without the program 2ct

CKM - Also used for long reports - 75 pg in directors office - not using COM - getting more cnfidence in system - designing technical information system online - NLS may be used for some part - were no classified data - will use with Data Management System too 2cu

DAP - does it involve calculating? 2cv

CKM - we use calculator - wanted to see several different ways - couldn't handle real well - used sort command and calculator mainly in DNLS - had 3 workstations 2cw

RH - used xtable for typing in tables - program written by RLL - sorted by a particular table 2cx

DAP - had trouble with it in TNLS? 2cy

RH - no trouble in DNLS 2cz

JCN - did you make your deadlines? 2d@

CKM - yes but is was artifical and had people working overtme - one worked 5-6 nights to get it out 2da

JCN - how would you have done it otherwise 2db

CKM - typed it - people can't read it though because don't use NLS 2dc

RH - did get them all to look alike 2dd

CKM - kept telling them it wasn't a very good application - people have a funny idea about systems 2de

Rita - data was in another system that text couldn't be added to 2df

Bob - have reservation - time to quit 2dg

uf 2dh

Monday Afternoon 3

Glen - 12 users - built user subsystem which contains 6 commands -prompts for data entry and does formatting - designed to type in marketing contacts - was a manual system - gave Glen an introduction to L10 and CML, All our users are involved in marketing, We have completed the interface to the B6700, We take our files to the B6700, work on them there and then take them back, There is a dial out port on the 6700, We give the phone number to the 6700, go to TENEX, go to the NLS file and hit the B6700 intercept character and do a Print File, We use Candyeditor on the 6700 on our NLS files, 3a

Frank - Are the other text editors in competition with NLS? 3b

Glen - Glen has stayed out of that while writing the subsystem and helping users - developed a small MIS syntem on the 6700 and wants to combine both of them using Lulu - will use Lulu for small volume things - evolving to having a systematic approach to SRI's marketing - centralizing it and it's premature to say they have a good system but are trying to get together the essential ingredients - has users guide for system - Cimros (?) - should be getting direct access to office-1 for DNLS - hoping to get more direct access later 3c

Frank - People have access to other text editors? 3d

Glen - the May system is a separate system on the PDP 11 that is in competition - Candy on Burroughs is not competitive - but it

is cheaper and faster and has a DMS system -- One of the weak points is the inability to batch jobs at office-1 - also there is no room for massive storage - no limitation on file size - will transfer files 1200 and someday 9600 baud - same interfacY will work CDC 6400 - we're opening up options 3e

Potter - Is there such a thing as full-time architect? SRI says 50% of the time should be spent architecting - didn't know it was something to do for a living,,, thought it was nice of ETS to let me have a hobby 3f

Duane - Have used NLS for 3 1/2 yrs, - been bottom up struggle - over the hump 3g

Potter- You're sliding down the hill? 3h

Duane - Hoping to spend less time in salesmanship - have 15 hard core users - on every day - another 12 who send messages - at last meeting had just set up PSO - felt NLS use wouldn't get far without place to take work to be typed and and if manager's had to learn rules of form for documents etc, - surprised to see HS students learn it fast - general trend away from TNLS, can't keep DNLS away from secretaries - immediate feedback good - thinks nice feeling from feedback - they like it even initial text entry- not sure DEX will be as acceptable to users 3i

Doug- There is a difference between what people like to do and what is more effective, 3j

Frank- How do they work? 3k

Duane - engineer types generally get it online and secretary cleans it up - alot of documentation for procurement - alot of inhouse technical reports, tend to be formal - nothing through COM yet but we use Selectric typewriters to type finished draft - still putting formal 800 page Jovial manual - keep changing it before it gets finished - hired a guy from U, of Belfast and worked on manual from over there - arranged for it in a couple of days - just got 5 1/2 new LP's - generated a lot of interest around Rome - mgt now is solidly behind it - are thinking of putting in service machine - last couple of weeks Duane has been moved to networking group will give more visibility internally There are a couple of subsystems under development,One Duane wrote to learn about L10 and CML - was surprised how easy I was called formatter to result in their format sets up to be printed on 2741 - introduced it in a session and it's starting to be used - always faced with the interface with the outside world - NDM's been working on a subsystem to help with the mgt of $ and manpower - AF planning for projects is done under one system of accounting 3l

Duane - tech guys don't talk to project managers - need to know how much money is left - pretty much finished, expect to demonstrate next week, have heard of 3 other people this morning who would be interested in this - Burroughs systems are typically 6 weeks later - applications programs remain to be done - had a system before using process branches and content patterns but too baroque 3m

Doug - Does the Colonel think a full time architect could be justified 3n

Duane - probably smetime soon - but not yet - maybe in 6 mos to a year 3o

Dave - Passed out texts in microfiche and an updated version of the NLS appplication description 3p

Jeane - is it online? 3q

Dave - it's in my directory - main difference is that sample items are by the Journal also oriented for internal purposes - I came to my 1st architect's meeting in Feb, - was only user then - now have 11 dirs - 5--6 active - forgot to count how many have been trained, 11-12 secondary users - now has 3 vice presidents putting money in it - getting no money from ARPA so is also a corporate client - yellow book is product of one group - ETS represents expertise in test and measurement - has collections of tests - publish info about what is in that collection - first pass at doing it through NLS 3r

IMM - done through COM? 3s

DAP - done on Anderson Jacobson, hadn't expertise in COM at that time and were under time pressures, - have sent a documentation through COM since this - This was done by others than myself - This represents the first move away from pure documentation prod - represents - 118 items typed in NLS - online searchable data base - each had subject area codes on the end - author subject and title are generated automatically using L10 programs and process branches and combinations - entire documentation can be proceded with small person investment - are ready to start next pass - estimates 50% savings in time - We have one guy on leave in Virginia who is writing a paper from there which will be reviewed by ERIC We also had a person from Berkeley type in some stuff at SRI - beginnings of geographical dispersion -We have made tremendous strides forward but not reaching potential - Our regional offices could be greatly augmented 3t

Frank- How did you get columns without COM? 3u

Dave- Print with narrow pages, cut and paste, and then reduce, I used this same procedure for a data base on teacher behaviors. It is described in the white paper I handed out to you. 3v

JCN - I don't see you on the system any more? How is it at BBNB 3w

Dave - When it's up it's good - can log in more than 2 users at a time - advantage over Office-1 - can handle up to 3 people even at peak loads 3x

Glen - do you have a display? 3y

Dave - no, scared of displays - everyone will want one and can't be afforded - am trying to control growth - If ETS management agrees that it should be supported then we will push for DNLS - I just managed to scrounge money for next year but I am raising the level of awareness - The VP's are putting overhead and project money into system - I have hopes the study will show NLS extremely valuable.- Now I can give testimonials from satisfied users but not good enough - Management only sees the $40,000 price tag. Many people still go outside of ETS and we do own our own computer, a 360. 3z

CKM- How did your money arrangement change when you moved to BBN? 3a@

JCN - costs the same 3aa

DAP - has Fortran compiler that can be used and Basic 3ab

CKM - Will you directly contract through BBN or through SRI in Jan? 3ac

DAp - SRI , havn't been able to do anything different - would like to change cost structure - if all of today's users were using system then it will be overloaded - We will need to be able to expand without adding $40,000 slots 3ad

Larry - It's easier the second time 3ae

Doug - what happened to the CBI community? 3af

Dave and CKM - the main ARPA guy isn't aware of potentials - The ETS guy isn't convinced it's better 3ag

BREAK 3ah

I thought it would be important for Jim to get a cahnce to talk about Applications tomorrow. 3ai

DCE - want 10 mins to characterize what I would like to see come out of the meeting, There is Organization x, y, z etc, - our goal is to try to make work more effective in an AKW, Org X has one version of that - people who have stakes in it include users, people concered with internal evolution: architect, managers, system builders; executive level mgt are charged with whole orgs objectives, they have to be concerned with the payoff,, Interface between org and outside world; Community of organizations; evolutionary support (another group); Org XX charged with R & D with a mandate to improve Org X - separate from operational org; community of R & R sponsors - lots of stakeholders -If it grows large enough, we will need a group in evolutionary support doing development coordination and one doing service coordination, Other contractors in evolutionary support will be available for support services, The community of R and D sponsors would give money, ARC does the evolutionary support, and to make it come about service is necessary, Eventually we will have a commuinity take over alot of responsibility by developing interface between evolutionary support and organization, 3aj

JCN- What if the model does not work that way? 3ak

DCE - missed it; NSW - changes with contractors, changes in time schedules Larry Crain and Jim Norton can give details, The frontend is more efficient and will run at a lower cost - working on stand along front ends on minis- 2 NSF and Editorial ,,, want to support that - GE wants a doc prod system that sounds like it was specified for us, NSA is giving a study contract to study support of their efforts, Cmr Hollister from ARPA is pushing a C3 project - next year have $ to reach through NLS to a DBMS - showed sample of encryption 3al

Duane - what happened to open shared system 3am

JCN - that's the default 3an

Dave - has a lot of users that are concerned about test security 3ao

JCN - is this supposed to be a summary - news stuff 3ap

Frank - yes bring up topics 3aq

JCN - Since our last meeting lots has happened but organization of Applications is about the same - BJP is new and responsible for service of system; now 6 people in user services, rare that we're all together, App, Dev, has worked hard at doc; Strategy is to get large enough user community to cut the cost of computer service with more information exchange; working hard at increasing size of user community - too new to be at this meeting; made investment

last spring to hire people has caused much trouble with spending energy justifying budget- lots of distractions; satisfying that it looks like it's working, wants help on how to deal with what are the ways the service can be priced during this next round, how can we price it to provide flexibility 3ar

DCE - breaking up the product 3as

JCN - load conditions and uptime, how that situation is now; how the pie slice game works, what you get for the $40K, how different jobs are treated; for big users - when should we get our own machine, and what kind; easy to be defensive but don't feel that way because seems to be working from our standpoint, want to know different feelings; last meeting no one available for L10 training - now 1 1/2 mos) got a dev guy to work full time doing applications and a person to do training; have to close on pricing algorithm within next 4 weeks and it's tight - also how do we provide service - BBNB becoming Office-2: DMA, Wright Patterson, IBM, ETS, and RADC. KI-10 is possibility - need to know level of support 3at

Dave - can't tell how much support without hearing pricing structure 3au

JCN - $10 K goes to ARC and half of that goes to JCH, the other half to feedback and training, other 30K goes to Tymshare, 10K of that is people power so half of that is equipment - until the front-end back-end split takes place there will be no change in equipment costs - we have allowed more than one person per slot with pie slicer and have changed scheduler - am not sure whether it's better to have more users - if more computer power is being delivered, then the price is driven down - price is related to load - if smaller units are desirable would like to talk more about it 3av

Dave Stan - how do you get one more directory 3aw

Dave - would like to buy half a slot for 3 weeks to take care of big projects. 3ax

DCE - what about risk of time unused 3ay

Dave - look at usage data and it should be fairly even 3az

DCE - still risky 3b@

Dave - what does Bowne do so they don't have unused time? 3ba

JCN - Tymsharing companies charge 2-3 times what we do. 3bb

Dave - looks about even 3bc

LAC - not using slot more than 9 hrs a day - batching would help, DEX 3bd

JCN - are working on that - should be 4-6 weeks conservatively 3be

Dave - If ARC had good lineprinter and support for mailing - difficult to get users to come in 3bf

DCE - time is involved in making up a file not copying to file 3bg

Dave - right 3bh

IMM - Heavy stuff only affects one slice? 3bi

Bud - works pretty well shouldn't bother people 3bj

Dave - doesn't understand BBNB scheduler - good only in morning 3bk

IMM - worked 2 mos, nights and weekends to get outputting and coming - can't keep that going 3bl

JCN - You can do a comtest in a batch, 3bm

IMM - no maybe for printouts but not com test 3bn

BUD- One of the changes they are considering using is to start using the left over time from the group, 3bo

Dave - doesn't understand why inefficient user is rewarded 3bp

Ron - should be able to set the priorities for your users 3bq

Dave - would be nice - am interested in training users in more efficient use habits, architects should get best response time 3br

LAC - would like to divy up time among users 3bs

Dave - what happened to get operator status for architects, 3bt

JCN - you didn't like 1 person/slot? We ahve spent alot of time getting it together to be per slot - at some point we will talk more about nls-9 - graphics: have graphics terminal and some new people who built graphics system with proof subsystem allowing one to look at a page before sending it off; cost is 70-100 K for that - will make COM process cheaper - 3bu

Duane - cost model is missing 3bv

Duane - would have to have that 3bw

DCE - most R&D sponsors are oriented towards one big project 3bx

Bob - could Architects get together for L10 training for a week? 3by

JCN - yes after checking training needs for rest of year 3bz

IMM - would it be the architect? 3c@

Bob - different for different people - will work to find who is interested 3ca

Duane - Mario Grignetti is looking for users to try BBNB Scholar who don't know NLS - have 6 classes - should only be done early in the morning or late at night 3cb

DCE - got phone call and told about new 10 to be released by DEC which is about half the cost 3cc

JCN - another way to reduce costs is to get several machines together and save time on operators 3cd

Tuesday Morning 4

Frank - will follow agenda today 4a

Ron - Presentation from Washington KWAC's meeting - Would like presentation to be interactive, not monologue; came out of discussions with CKM and FGB; got together and included Jack, each had areas where they weren't completely satisfied, found feelings were pretty much same - spent whole day talking - want to check to see if what they think they're buying is what ARC thinks they're buying then want to talk about what they think they'd like to buy; doesn't represent all architects; may be talked about more in executive session. 4b

Ron - 4c

What We Like 4c1

Overall concept 4c1a

Journal 4c1a1

Text Processing Features 4c1b

Feedback Mechanism (Only place among BBN and isi that is good) 4c1c

Ron - Beginning to understand that there is a conflict between being part of a research project and trying to do something operational, AMC pays for use out of operating funds not research funds, Impacts heavily - a show of hands showed that 7 clients pay out of research funds 2 out of operational - most couldn't get money out of operational funds 4c1d

Bob - list above is based on what you know - may be more there 4c1e

Ron - like concepts don't like operational things - we do know about these 4c1f

What We Don't Like 4c2

Performance 4c2a

Uptime 4c2a1

Ron - heard that Office-1 had 78% uptime contrasted with 2 other machines that run 90% up 4c2a1a

JCN - That's wrong - up 97-98% 4c2a1b

Bud - worst month was September when it was down for one day - about 3% down 4c2a1c

Bud - July & August often ran with bank of memory out - last week ran without drum - degraded performance is probably 78% 4c2a1d

DCE - Those statistics are because of scheduled downtime not taken into account when those statistics were collected 4c2a1e

CKM - really 97%? 4c2a1f

Bud - during prime time yes 4c2a1g

CKM - thought sept was bad month 4c2a1h

Rita - there were parts of 2 days that Office-1 was down 4c2a1i

CKM - thought it was up and down all day for a week 4c2a1j

LAC - was it the TIP 4c2a1k

JCN - I have data we can look at for past 2 months - where did you get the 78% figure? 4c2a1l

Uhlig - Steve Walker - If it is a midunderstanding it is leaving you at a disadvantage 4c2a1m

Ron - what we need is some kind of agreement on what kind of performance we need 4c2a1n

JCN - let's look at the statistics from Tymshare 4c2a1o

Ron - that would be useful 4c2a1p

Potter - you believed the statistic? 4c2a1q

Ron - it agrees subjectively with my impressions - I use ISI when Office-1 is down - it's always up when office-1 is down 4c2a1r

Potter - same with bbnb and office-1 4c2a1s

CKM - statistics should be provided with reasons for downtime 4c2a1t

JCN - I'd be glad to send them to you - about 1 page 4c2a1u

Potter - would be nice if they noted when the host will be back 4c2a1v

Ron - a lot of the problems are not big but left attended they become serious 4c2a1w

JCN - who's leaving office-1 4c2a1x

Ron - ARPA and a slot or two from amc 4c2a1y

CKM - we're going because we own the machine and computer time will be half as cheap and all our contractors are there 4c2a1z

Response 4c2a2

Ron - was surprised to see 41 users - response was not bad; last week we had a demo and SRI fixed office-1 so we had very good response - how often does that happen 4c2a2a

JCN - once every 2 months for about a half hour 4c2a2b

Bud - more than that - once or twice a week for a half hour - doesn't affect response 4c2a2c

Ron - would be good if we knew there was some limit to that - my boss would like to hear things like that 4c2a2d

Frank - how do you that? 4c2a2e

JCN - set the % of the system she can get - set it 25% she probably used 5 4c2a2f

Bud - we basically do it for demos not training sessions 4c2a2g

Glen - sure nice for a demo 4c2a2h

Ron - sure is 4c2a2i

JCN - one thing that would help us is how you would like us to play the game 4c2a2j

Ron - think as architect's we should act as board of governors - say we want it this way then we can criticize when office-1 can't do it 4c2a2k

Ron - would like subjective ideas about response time from all architects - will establish policy on giving % time during executive session, When I say response time I mean when I type nls and wait for a long time that's unacceptable - rarely use nls any more because it takes too long to get in - discussed with Ray Panko and got journal delivery changed because didn't read mail for 2 months 4c2a2l

JCN - is it always slow - is it universal 4c2a2m

DCE - maybe someone could look at startup 4c2a2n

JCN - should look for subsystems attached that aren't needed 4c2a2o

DCE - scheduler may not be set to get that going well - we should save status from prior jobs to make that initial setup shorter 4c2a2p

JCN - we don't have good stats about response to the user - irritant to wait to get in but if faster? 4c2a2q

RON - I find XED faster to get into and use - I

compared 1 1/2 page jobs in NLS vs. XED; XED input faster; editing much faster in NLS because of power not response (TNLS) - system response about the same - not significant that inputting was slower 4c2a2r

DCE - surprised thought it would be the other way around 4c2a2s

RON - job went faster in NLS but response was better for XED 4c2a2t

JCN - it would help us to know what you consider meaningful measures of response 4c2a2u

RON - We have defined different queries and had someone collect statistics at different times of the day 4c2a2v

JHB - any data on what response should be? There is some around 4c2a2w

DCE - what you'D really like is a measure of your working effectiveness 4c2a2x

(Beginning of subjective feelings about response) 4c2a2y

Bob - Hard to say - I'm on and off for a small percentage of the day - 8 mos was really bad - network wide - load level not bad till 9 - not bad enough to get frustrating - don't use other editors - use elf and do have some buffering problems - work in 2 hr sesssions with output processing - had poor response 2 weeks ago - 30 mins for 40 page document 4c2a2z

JCN - changes to scheduler should help that 4c2a2a@

BOB - has programmer that is working on a program to let us send files to magtape on a socket - DNLS screen refresh - no one is happy about that - when word or something is replaced sometimes screen is refreshed sometimes line - can't seem to duplicate the situation - why?? 4c2a2aa

JCN - we should describe exactly how it works - we don't understand it well enough 4c2a2ab

DCE - I use viewspec v a lot from the bottom up - would like to specify several editing things on the screen and batch them on command 4c2a2ac

LAC - has noticed improvements recently - single major complaint is that secretaries can't type as fast as they want - sometimes TIP - doesn't keep up with them - TNLS on a CRT - sometimes a line and a half behind - doesn't happen all the time but doens't have to - partially net problem 4c2a2ad

Ron - new TIP will only transmit on space or CR - will be interesting to see what happens to the commands in NLS - suppposed to be 6 mos to a year 4c2a2ae

LAC - putting line from MITRE to GUNTER - should make things better - will knock out 2 nodes - isic seems better - tend to think it is a hop problem - because can do cassettes at 30 cps at isic but not to office-1 4c2a2af

Ron - As of FY76 ARPA will pay for Tymshare TIP but not Tymshare IMP - will be paid for only if DOD contractors want it - if we pay for it we should have some input 4c2a2ag

BREAK 4c2a2ah

Ruddy - doesn't have much to add - screen refresh slow 4c2a2ai

Frank - Response time is time between completing command specification and execution - after 5 and early in the morning it's acceptable - otherwise too slow - will discourage novice user - response from 9-4 is not good for either TNLS or DNLS - Western users response acceptable in afternoon their problems are tip related - not upset with response 4c2a2aj

IMM - response after 9 bad - can't tell whether response is bad or whether we are just heavy users since output processor used heavily and programming going on - mainly TNLS - more than 1 logged in 90% of time, usually 3-4 on if load isn't high 4c2a2ak

Bud - they get 6% of system instead of the 3 they've paid for 4c2a2al

IMM - because of weekends and nights 4c2a2am

Frank - Doesn't seem to make any difference how many people - if it's bad doesn't make any difference whether 1 or 3 people on 4c2a2an

IMM - use BNR computer for some text editing 4c2a2ao

Jack - does all work early in morning - have 1 NLS expert and he uses terminal at home - seems like a typical system so doesn't appreciate problem - all timesharing is like that so is used to staying off - don't have to use system during peak hours - will make NLS work when it's in-house 4c2a2ap

Ed - Don't have people whose business it is to use the system - has a bunch of novice users - a pause to a novice user can be bad because it has a domino effect - novice implies he doesn't know what's coming next - doesn't know what to attribute the pause to - response is to logout 4c2a2aq

CKM - Try to work at night - recent project done at night - work around it - negative effect to expose new people to NLS with bad response - have a lot of trouble with spurious characters appearing - strange things happen that can't be recreated - Rita usually gets them out of it - Data Medias 4c2a2ar

Bob - problem with keyboard - press key not hard enough get another character - sometimes transmits ctrl characters 4c2a2as

Ron - Beehive keyboard bad and especially bad because of humidity? 4c2a2at

JCN - any difference over last 2 months 4c2a2au

CKM - no havn't used much over that period - based mostly on comments from other people - so happy things improved since Feb that I don't think about it much 4c2a2av

JCN - Important to know how you feel because of changes during last 2 weeks 4c2a2aw

Ron - have been able to use system during afternoon and that is unusual 4c2a2ax

Rita - work any time and don't find it all that bad - except when drum out - maybe I've been using it too long - took a guy 10 mins to load a file at isic friday... 4c2a2ay

Duane - don't like to hear bad things with LP's since just got 5 - Imlac's crashed 3 times a day so am glad to have reset capability with LP - agrees with Jack about Timesharing systems - have only been a few

instances of people walking away because of unbearable - those were programming types trying to do compiles and they are trying to shift their hours - good to talk about response times but in our case at RADC the organization is so committed to working this way that we are very comfortable with it - no important due dates have been missed - no strong negative reports - use it anytime of the day 4c2a2az

Bud - RADC does have a 15% slot 4c2a2b@

Duane - I'm never the only one logged on usually 6-7 on - get 16 1/2% of system 4c2a2ba

Dave - at bbnb now (3 mos) have same problem there - good in morning - bad time is between 2 and 4 - no one has called me about being so frustrated as to quit working - we talk about service compared to what we think it COULD be - it does irritate sometimes - we need to talk about it compared to what the alternatives are - I can point to instances where we met deadlines that we wouldn't otherwise have met - new users have come in desperation saying can't make deadlines and have heard about and want to try using NLS - yellow handout fromm yesterday went out before deadline even with an L10 program written in the meantime - wouldn't consider abandoning unless better alternative - do use network at Rutgers for statistical computing - 4c2a2bb

Ron - also have done things couldn't have done ordinarily but could have done same at ISI with XED 4c2a2bc

DCE - how much do you pay at ISI? 4c2a2bd

RON -- nothing now - ARPA pays - 4c2a2be

Glen - Introduces NLS to a lot of users but has to be careful to pick right users i.e, peope with small data bases that don't need to use system much - doesn't like to tell people to wait till 3 p.m. - dex and batch scheduler would be big help 4c2a2bf

Ron - Have done comparison and as a result will be using BBN and OFFICE-1 beginning January 4c2a2bg

What we get for our 40K 4c3

OFFICE-1 4c3a

slot - $40K - 3000 pages and 3% of users time 4c3a1

BBN 4c3b

Demand 4c3b1

Bulk - $6000/yr - 600 pages and 1% of machine 4c3b2

Ron - will cut back on OFFICE-1 and buy 10% of BBN 4c3c

JCN - prices seem to be the same as we look at it 4c3d

DCE - at bbn if you buy 10% it shows up as 8 4c3e

Ron - by next KWAC meeting we will have some stats - we will be using a machine without NLS 4c3f

JCN - have to be sure you're getting what you've bought from the scheduler 4c3g

Bev - would like some clarification - is response problem because of timesharing? - 4c3h

Ron - we feel biggest problem is office-1 4c3i

LAC CKM - Moves are suggested because costs are less 4c3j

Ron - we have decided not to cut back totally from OFFICE-1 because we want to be part of the research 4c3k

DAP - there is no system that can deal with peak workloads without being underutilized 4c3l

Bud - Pie slicer slices CPU but doesn't affect other important things (disk,) - real pie slice has to allocate all resources - that ability doesn't exist - 15 people in a 3% slot will dramatically effect other users - during peaks lately there have been 30 users and it has been bad because unrationed resources have been clogging everything up - looks like you'd like to unbundle 40K slot 4c3m

Ron - want more than raw machine support but not the training 4c3n

Bud - Tymshare has timesharing resource units rate, depends on problem, whether you're editing or compiling 4c3o

DAP - can't understand why a non-NLS user would want to be part of OFFICE-1 4c3p

Ron - NLS is more than a text editor - want to have other things available 4c3q

Interface with other machines (hosts) 4c4

(a) message systems 4c4a

Ron - Major improvement was fix of message subsystem so it's compatible with MSG - are supposed to be able to send messages to non-Tenex systems - problems are that cc: capability not in message subsystem and inability to address messages to sequential files 4c4a1

Duane - have trouble moving messages into NLS 4c4a2

Dce - would be good to have message standards about paragraphs 4c4a3

Ron - BBN is being funded to develop a message system - a version of msg will be the standard - all sites will be required to have xed and msg online - ISI is to maintain documentation, 4c4a4

(b) terminology 4c4b

Ron - Terminology - problem has been "oh that's what it is why don't they call it that!" - some people feel we are hiding behind he augmented knowledge workshop terminology 4c4b1

CKM - we don't use that terminology at ARPA because it bothers people - aren't interested in the philosophy 4c4b2

DAP - You're buying a tool not a philosophy - I learned it's better not to give anything to people than the AKW paper and Coordinated Paper 4c4b3

LAC - Problem is in describing why we're paying 40K for a text editor 4c4b4

DAP - that's easy to explain - answer needs to be explained simply without calling it an AKW 4c4b5

Ron - will defer discussion till executive session 4c4b6

JCN - note terms you talk in 4c4b7

Tuesday Afternoon 5

LUNCH BREAK 5a

Ron, More what architects don't like, Documentation, Hard for architect group to agree what everyone wants, Glossary a major step forward, Not all architects have received copies of the Glossary, (You can get them through Feedback, Jim B, pointed out,) 5b

Bob Sheppard, Organizations other than SRI have put out documentation, Each organization should help others by making sure everyone knows about it, Would help to be able to get ahold of it, 5c

Jack G, Mil Jernigan's doc, available, You can get it online, Covers... ...very thick, 5d

Jim N, A good chance that some of the non-Arc doc, may not be accurate, Has any thought been given to quality control? 5e

Frank, Bob Sh, Architects can browse through doc,, use what they want, choose things, 5f

Doug, Would you like Arc to check this (non-Arc documentation) out for accuracy? 5g

Several responses--no, you shouldn't have to be responsible, etc, 5h

Frank, We have a small, 50 page doc, Based on short, application-oriented scenarios, How to do small tasks, Application scenarios, and longer, ...I'd like to see some kind of program instruction manual, 5i

Jim B, Susan and I looked over Mil's document, It was too long for a real careful look, but we did find some errors that made it such that we didn't feel we could use it in training, We've been working on documentation, especially on reference doc, I'd like to introduce as a future discussion topic a proposal for a user manual-type document, 5j

[Reference made to Frank B,'s new document] 5k

Susan, As part of new documentation effort you are proposing Jim, we should try to coordinate more with what architects are writing, For instance, the Secretarial Functions Guide seems very similar to Frank's new document,
..... 5l

Ron, Picture of what we get: Nls factory; factory manuals,,and "retail services",,which are not applicable to all users, SRI

shouldn't worry about each individual application-documentation, You (SRI) should be more responsible for "factory manual" type stuff, 5m

Jim N, Some question as to what that "factory type" manual is, 5n

Ron, (I don't mean to be insulting by using these terms factory, retail,,, We use them commonly when talking about our facilities,) ,,, Help, Particularly bad problem is time it takes to use Help, This comes back to responsiveness issue, I say this carefully because it is the way I learned to use the system,,, so I know it works, 5o

Susan, One problem is that people don't know about using the uparrow and backarrow, This eliminates a lot of repetition,,, 5p

Jim N, Forgetting the responsiveness of the system for a minute, do you have other objections about the Help system? 5q

Rita, The Glossary is fine if you can guarantee people will carry it around with them, 5r

Jim N, We have to face whether Help is really worth keeping, developing, It is very expensive to keep up, 5s

Doug, Help seems to be valuable for new users, but more sophisticated users can probably use hardcopy more effetively, 5t

Ron I think more money would probably be better spent on an online feedbaack person, 5u

Dave P, I use that kind of assistance all the time--just link to someone online, 5v

..... 5w

Ron, I'm going to skip last subject ,,,Systems Performance,,, 5x

Bud, I think you're chickening out, 5y

Ron, We really don't have time now, What I think we should talk about now is what we're indifferent about, I assume that the first item, Journal, would have caught your attention, You noticed journal under this category--what we're indifferent about, We're talking about the operational journal rather than its concept, It really isn't useful, I am not using it as a means of communication,,, We aren't,,,the group in Wash, 5z

Frank, I'd have to dispute that some... We use it...(missed the rest). 5a@

Ron, We use MSG for communication normally. First you have to take an extra step to go to nls. Also delivery is not as frequent. And some less sophisticated users are scared away. It looks too complicated. 5aa

Larry, What bothers me the most is the time it takes to get there (i.e., delivery time). 5ab

Doug, I have very accurate records on how long it takes... This has bothered us too, but most of the software was implemented in 1969-70. 5ac

Ron, I can argue the other side of this too. I participate in the message group--a conference of about 50 people. An interesting thing has happened...sometimes we send out very long messages--50 pp.--so we now maintain large messages in a file at Isic. But no one is going and getting them now. Just ignoring the citations, not reading them. So our conclusion is that you must have a relatively transparent method of going to retrieve these messages...like the Journal. 5ad

Doug, The design we have to deal with a Journal at many hosts--a multifile Journal--is sitting there. (more...couldn't hear it) 5ae

Bud, Two observations about the Journal. Sendmessage runs in the user mode. Same structure not in Journal. We have mechanism for speeding up delivery, but performance has been relatively poor on system, so we're reluctant to use resources to go in and send Journal more often. 5af

Ron, Let's go to another issue. Training. The problem we have found is that it is not specialized enough for our environment. Our solution is to do our own training. Ultimately we will have to train 500-1500 people in the future--mostly in message generating messages. 5ag

Doug, Our initial concept was that it would be great when subscribers could do their own training. 5ah

Connie, We are probably going to sub-contract with SRI for some L-10 training, and other training. We pretty much need a full-time person. Part of training problem is that trainer has to be act as system-designer. Methodology and approach important. We really need help for that. We are not typical in that. We need someone more or less trained in the ARPA environment. Very applications oriented. 5ai

Dave P, I tell my users never to assume that there is something the system can't do,,, 5aj

Ron, Another problem is that there is a big mix of people in the training sessions--some who are very sophisticated, some very new, 5ak

Doug, The service we ,,,(can't hear him) 5al

Ron, We have two inhouse training agencies, Responsible for training throughout our command, we'd look to you for training them, 5am

..... 5an

Jim N, I guess I'm not sure what you meant by indifferent,,,(about training), 5ao

Ron, I guess I mean we're not sure we want training, 5ap

Jim N, There is some period where your trainers get trained, 5aq

Ron, Right, but you're not training trainers now, 5ar

Doug, We always assumed that when someone was ready to buy on a large scale they would do their own training, ,,,One plan early in Nic was to have someone available online all the time, 5as

Dave P, We've used the Tenex Advise command fairly effectively, 5at

Inez, The only problem in using that is that you have to go in and out of Advise to stay connected to it, 5au

Dave, No, this is a different way of using it, I don't really do it for them, I do it, then they do it, 5av

Frank, There is a need for some training from SRI, I'd like to negociate that separately, 5aw

Jim N, We've put a lot of effort into training at Gunter, ,,,what do you think of it Larry? 5ax

Larry, (Couldn't hear very well, Gist of what he said: I see a need for something like Scholar,) 5ay

Jim B, Very expensive to work, 5az

Larry, Like to have BASIC available sometimes,,,so thay can play games to keep them interested, I still see need for training,,,especially for training trainers, I am sure that it

would pay to supoort our own expert in something like L-10. I find the ...(can't hear) (Gist of what he said: easier to help people over phone than with linking. Must have phone there by terminal so people can use it to call for help.) 5b@

Jim B. Still two phones at Rome for every terminal? 5ba

Duane. Yes, basically. Our problem is an antiquated switchboard. 5bb

Duane. I was thinking about xeroxing ablurb on Scholar, but we could put it on board. How to use it, site number...etc. 5bc

Ron. Let's now talk about what we think we should get for our 40K. 5bd

I'm not going to talk about all of these subjects. Connie and Frank have things to say, too. But I'm taking the first one. One of the things discussed yesterday is that we really want to unbundle services. Time to broaden definition of product. Some probably want it the way it is now, some architects would like to have it other ways. Let me comment about message services. (An aside on international use of the ARPANET. Ron said that Japan doesn't like people using the ARPANET in Japan. Bob Sh. That's true. We find only a couple of countries that don't mind. Ron. It's because phone and postal services are tied together.) 5be

Jim N. Are you thinking about what you should get or would like to get? 5bf

Ron. Areas where we might contribute is in messages. (??Not sure about that first sentence--transcription not clear.) We have 28 directories, 30 by the end of the year. New people want to use message services more than text-editing, etc. (Speaking for AMC), We're going to develop an internal message system for AMC. Implement on 5-6 minicomputers. PDP-11 distribution system or Pluribus. Separate out message function. Ability to link to NLS for more sophisticated service. Not sure how many people that will be. We need spectrum of message services, from very simple thru fairly complicated messages. We want something that will look very much to the user like combination of message/QED. Doug suggested using something like message and NLS. I would like to check for performance, response. 5bg

Doug. The thing that bothered me is that if you want to start evolving your own kinds of commands, the CML is very good way of doing it. Other possibilites of making MSG/XED combination compatible with NLS. Lots of potential for making much better interface. (Transcription incomplete--hard to hear.) 5bh

Ron, Interface between the too awkward now, I'd like a way to invoke NLS --have sequential file taken care of automatically, ...what we need to discuss is what we're getting for our $40K, Consulting,,, What services can we buy? 5bi

Doug, One reason we haven't been able to offer wider services is the scale we have to operate on, Not sure how big a scale we'd have to operate on to provide wider services, Our scale has a lot to do with how flexible we can be, Also, exploratory applications,,,(Transcription incomplete--can't hear,) Our main target is the support we can give while going thru this evolutionary stage, How big we have to get in our applications, sales, is a question, All the struggles we're going thru is what you will have to go through eventually, So there will be a time when we can transfer our knowledge to you, During the transition period you can't expect to be operating with the same kind of pay-offs, I'd like you to think about this when you're kicking around ideas, 5bj

Wednesday 6

DCE describes the NLS service, parts of ARC, staff, the money loops, etc, 6a

DCE describes what he needs as far as commitments and relationships among the parts of the organization, Effects of reconfigurations of service and investments impinge on these money relationships and staff considerations, 6b

DCE - DO these points help to clarify some of yesterday's points? 6c

RPU thinks it's a good place to start but needs more specifics, 6d

JCN lists: 6e

- resources 6e1
  - computer 6e1a
  - people 6e1b
  - materials 6e1c
- services 6e2
- allocation 6e3
- pricing 6e4

JCN - How these elements fit together: 22 people in Applications, 15 different roles, people are resources, 2 service computers. They all cost money. You are all consuming those things. 6f

JCN - contracting basis from 2 yrs ago, here is a picture of how we started pricing. Why is it 40K. How many users could live with the K we had or could afford. had to buy more capacity. first six months the users didn't use too much capacity. Just stayed ahead of the demand for first year. 23 slots. Add more memory. Couldn't handle it if all users demanded what they could get. 2nd year added drum, sold two more slots, not enough capacity. users started to demand more by the kinds of things they were doing. Can't get more memory. Add third drum. pie-slice scheduler. 6g

JCN - Office-1 can support 25 users in reasonable fashion. Options: add more slots, get more money, etc. Costs: $250K to ARC people, and $ 750 K for Tymshare, travel and materials = 1000K. Staff 6-7 people. 6h

JCN - Second year - 25 slots. Service at bbnb, Now 22 people in APP, less three = 19 people. What we're getting supports only 9 people. 50-55 percent sold, need higher sold. 6i

JCN - SRI expects 75 percent sold. We run at low sold rate. We bargain with SRI to get fired up this year with enough people, then get more users when people are experienced. we are hiring to get ready. 6j

RPU - Those 22 people--only Applications, doesn't include Watson's group? JCN's answer - Yes, Applications only. 6k

RPU asks how he gets 9 people total. 6l

JCN explains details. RPU asks if 25 percent is going to people, 75 percent to service? 6m

JCN - The rest of the 22 people, other than the nine, are charging overhead, except for 3 who are charging NIC, another project. 6n

JCN describes SRI's charging system, for overhead, project, administration, etc. 75% sold time is expected. He explains how everything adds up to total overhead, excluding labor, travel, equipment, etc. 6o

JCN explains how SRI cuts down overhead. They average out sold time. Groups have good years and bad years. Other projects at SRI are subsidizing ARC Applications this year. 6p

DCE - JCN used to be on SRI Administration dealing with overhead, etc, 6q

JCN - The main point is that the Institute is paying for Applications labor to a great expent this year--next year we have to have higher sold rate. Which people is SRI subsidizing? Overhead projects are charged with the new training people, training the trainers, their experience in field, computer services for them. After paying what it costs to run the service, there isn't money left over for training. Most training costs are paid by overhead. Client projects are charged only when trainers are actually at site training, except for their first time for experience, 6r

JCN - The service system manager is Bud Pine. Dave Hopper, systems programmer, fixes bugs; Karolyn Martin is now starting L10 training. Jeff Peters is TENEX programmer and operator. Feedback--Sandy, Martin Hardy & Rodney for hardware, Jim Bair - Applications development, documentation. ...more people...Rob Lieberman, Ray Panko. A secretary and a half. This gets to eat up funding. Susan Roetter and training staff. If everything was running according to costs, the 40K wouldn't do it. Pressures driving prices up. The utility was first priced 2 yrs ago...inflation, 6s

JCN - This is the context for thinking about pricing. 6t

JCN - clients to go to 32, 6u

DCE - what target number to sell for 40 K each to come out right--45 or 50 slots a year and a half later. How to get ready for that. It's a little loose. Get tightened up. We can't keep up if everyone is starting up new users at the same time. We need our clients to do some of the lower level starting up, we give you higher level training, 6v

JCN - Now, computer service. Are you doing editing or OP output processing or what--different kinds of service. Service backed up by Tymshare and core group of Applications people. You're getting training and advising service. COM service - DDSI, George Lithograph - they bill directly to users. How about some different basis for the $40 K "slot"? What resources does it take to do all this? 6w

JCN - allocation of computer resources. Pricing, what you get for the amount of dollars, has to do with how you get it - login control, pie slice scheduler determining how you get your service. One job login per slot til last spring. How do you keep track of disk space use? Everyone started to get uneasy. Wanted to have

two jobs per slot...then we went to the pie slice scheduler. It wasn't really solving the problem so we fixed it so it would really do the job. How is the pie slice game set up? That next. 6x

Coffee break. 6y

JCN - Two new elements to consider this morning - starting 2 new contracts - one to keep NLS current and to keep it running at ISI where ARPA will be using NLS - that helps support the core people. Other contract is to help NSA set up and tune their Tenex - will help make budget and will extend into next year - same arrangement could be set up with other organization if they wanted to have own machine and get updated versions of NLS. 6z

FGB - how much? 6a0

JCN - $40K - we're not talking about adding graphics or other new things like minis. 6aa

DCE - Want to comment on top view - there are a lot of fixed costs not related to the number of subscribers, others related to characteristics of subscribers; if scale of subscriber service increases 3 or 4 times will make whole activity more efficient and will help cut costs. We have to estimate costs 1 1/2 yrs ahead of time - need to budget for next year - each 6 mos have to go through year ahead projection so President can watch and see how things are going - different than getting allocation from above - we're aware of that system since that's where we get our revenue - so now you get to see our picture - are also now in the process of replacing temporary buildings at SRI - or would like to be. There are 6 other labs our size in a division and each lab has to produce a budget with no. of people and costs for next year - that goes to division then divisions get together with a vice president - lots of negotiation. 6ab

DCE - President getting much tougher than before - because of the times ways of operating that were safe in the past are no longer safe - money doesn't come in when it needs to etc. - in our group Larry Roberts wasn't able to come up with dollars for NIC so people were let go and our budget was over-run; will have trouble with auditors if pricing becomes too flexible; are committed to getting operations up to a certain size - guessing it will take 70-100 slots to achieve a steady and efficient operation. 6ac

DCE - Institute let us produce less this year in the form of a loan - pressure was put on RWW to keep his sold rate up to balance ARC's sold rate; till July Applications was saturated with NSW work so had to expand to meet their needs and help us too. 6ad

RPU - As we get into the situation where more people are using NLS outside of Office-1, for example on ISIC and NSA it seems that by necessity steering the development of NLS is separated from the issues of running the utility - what happens then to the Architect's group which has a strong interest - AMC will want to run it on own machines and will want to be part of the development and will put money into it but I think the issues are separate - maybe architect's need to worry about it in two separate sessions 6ae

DCE - one thing needed will be differentiation between issues that the subscriber needs to work on with us - features of NLS, economy of NLS, transfer of NLS - lots of issues that have some independence - you're right, If you draw a graph that has how widely I am going to apply the system and the degree of sophistication of the application - one scenario is low level of sophistication and lots of people with hope of upgrading service; another scenario: small group and very sophisticated then expand no, of users; third scenario: small group sophisticated and larger group with lots little service and smooth out the curve, Assume most organizations will follow third scenario - have been waiting for small highly sophisticated groups - part of our strategy is based on how we think you will evolve which we assume will be the third case, 6af

BJP - Will be going through things fast because have a lot to cover, Would like to show what it would cost to use Tymshare - charge $10/hr and have resource units - $13 per hr for CPU resource units or $23/hr with 3% slot = $4048/month - disc space - 300 pages is ,50/month/1000 characters for the first 2 million =$2400/month for 3000 pages or $77,000 per year, The above is based on 176 hours/month - they charge for CPU time, IO access to the disc and memory occupancy and is approximately = to 1 sec of processor time, These are based on typical NLS hour with one user, 6ag

RPU - we don't use it 8 hrs a day 6ah

BJP - Bell is up to 2 or 3 times that per slot 6ai

RPU - It depends on the usage 6aj

DCE - $77,000 is equivalent to core cost - doesn't include training = $30,000 plus a little more of office-1 - comparisons could be made about utilization and price 6ak

JCN - ARPA is underutilizing it - ETS RADC BELL etc are overutilizing it 6al

RPU - if you overutilize you come out ahead 6am

JCN - if you underutilize it by a half then you still come out even 6an

JCN - Tymshare charges double what we do 6ao

BJP - Office-1 configuration is a KA 10, 256K words core, drum controller and 3 drums and a disc controller and 4 drives, magnetic tape unit and 2 tape units, lineprinter, paper tape reader, local line scanner and 6? lines, BBN pager and a TIP - maximum configuration KA - quality of service - down 16 unscheduled hrs in August - scheduled down 4 hrs/day = 97% uptime - one of those days was 8 hrs 6ap

BJP - 90% up in prime time that month (this is PDT). That one day we lost the files and rather than bring up 3 day old file system we decided that customers would prefer we take time to get files back--and TENEX is not easy for this. That was worst month; in September we were down an hour unscheduled. One problem with these statistics is that they record when whole system is down (processor or disc); this doesn't account for losing a box of core - don't have adequate statistics to describe that - with that included we ran with degraded performance for sizable amounts of time in August and September. 6aq

CKM - when was the power shortage? 6ar

RH - that was the 8th and it was down 3-5 hrs. 6as

JCN - It says here that on 9/8 the power was down due to "interruption in uninterruptable power source". 6at

CKM - same thing happened last spring. 6au

JCN - started 8:07 PDT 6av

LAC - does that count TIP time? 6aw

BJP - doesn't include TIP downtime. We at ARC don't connect directly either--we use the TIP also. 6ax

DCE - those are Tymshare's figures covering what they are responsible for - doesn't include TIP and that's not our responsibility either. 6ay

JCN - I would (would, wouldn't ?) be surprised if it happens a lot. 6az

RMS2 - If you throw in scheduled maintenance do you get 78% downtime? 6b@

BJP - scheduled down between 3:30 and 6:30 EDT. Individuals can see performance and during periods of 30-32 jobs or more logged in the interference is directly a result of policy of allowing more than 1 job per slot. 6ba

JMB - one set of users can effect users of other slots? 6bb

BJP - yes 6bc

IMM - only 25 allowed? 6bd

BJP - No, 50 6be

RPU - Have you ever looked at how that works on other TENEXs? - I don't see that much trouble at ISI with 50 users logged on. 6bf

BJP - depends on what they do 6bg

RPU - could NLS be better modularized so it isn't so slow? 6bh

FGB - who is responsible for net problems? 6bi

BJP - DCA is responsible with maintenance - starts with Martinez 6bj

DCE - Number of hops along network also has a big effect - especially for DNLS. 6bk

RPU - Office-1 users can go to DCA and ask for different configuration of network. 6bl

BJP - Graph of % load vs. waiting time; graph 2 - 3% of machine = 1.8 sec or 1800 ms (milliseconds) or 18 100-ms chunks (called pie slice) but divides out 100-ms chunks - ratio of response time to work to be done in ms., i.e. with 3% slot one person 100% full machine takes 33 times the CPU needed to do a job. 6bm

RPU - Create File seems to take a long time - any estimate on time? 6bn

BJP - don't have that data - would like to give more than 33% given to a job depending on its nature but can't. Processes are IO bound and can't allocate more than 25% to any one job. BBN uses a 1 minute average to say what % you're getting with a 30 sec. half life - changes are made if % is different than 3%. Atrocious delays are sometimes caused by "thrashing" - throwing pages around in and out of core to make room for more. 6bo

BJP - there are 3 queues: 0 - interactive; 1 behind allocation; 2 ahead allocation. The quantum (= 100 ms) is used to execute in

one of these queues - start at 0 and then moves to another - you are ahead if utilization divided by share times no. of active processes = ?. With 4 people in 3% slot the no. of active processes is usually 1 so it gets 3%. It may appear that they all get 3% all the time - in fact they do; We have started measuring via job users instead of fork utilization. 6bp

[Questions on any of this should go to BJP because not many details are adequately recorded here.] 6bq

BJP - we are now working with 63 queues - queue 20 says you are getting twice your share; most people in queue 5 or 6 will be getting ahead of person with higher utilization; person in OP gets dregs. 6br

JCN - when did you make that change? 6bs

BJP - about 3 weeks ago - doesn't have solution to busy disk channel - only 20 pages/sec 6bt

JCN - how can users tell it works the way you say? 6bu

BJP - One problem is the faster we make the system the faster the user can go so the slower the system is. 6bv

RPU - have used the system more over last few weeks because response time has improved dramatically - only serious degradation has been 5-6 people in 3 AMC slots - last Friday 6 people on and using system between 2 and 4 EDT and it was useable - problem is getting turned off users to come back and try it - I personally think there's dramatic improvement - I agree that to get better service buy more slots - we want definition of algorithm to define exactly what we're buying. 6bw

LAC - any way to get BBN to make these changes? 6bx

JCN - we're beginning to talk with BBN to see what can be done 6by

BJP - we're not quite done anyway - sounds like everyone likes to be able to dial in as many users as they want 6bz

DAP - can have 1 user per slot if we want 6c@

BJP - will get nicked if you do - load average never meant anything anyway - just tells you how many people are in queue 6ca

JCN - would like to take CTRL-T's load average number away and put something meaningful there 6cb

BJP - appropriate stats would be number of people on and utilization of processor 6cc

FGB - easy figure to get at? 6cd

BJP - yes they're all there 6ce

DCE - how about load just among my guys 6cf

BJP - ISI's experiences with 512K core have been dramatic - is expensive and lengthy to implement. Batch should help and will allow you to be away from terminal - won't tie up terminals. Windfall - took it away a couple of weeks ago for a while just for a look - ARC is down to one slot but needs to use more - this seems reasonable for documentation etc. I am pushing for ARC only to use windfall; there was no response to my taking windfall away; Presently half of windfall (slots with no users logged in, not spare cycles) ... - windfall is sort of like offquota. 6cg

JMB - who gets windfall? 6ch

BJP - half goes to slot with lowest cost-effectiveness and with users presently logged in. It never seems to be BELL or ETS--usually ARPA, MIT and a few others, if logged in, get their bought % plus half of anyone else's - effect is they can't use that much; they bounce between queues 1 and 2. 6ci

JCN - We can't tell by looking at records who is getting more during peak hrs - need to be able to do that 6cj

BJP - what does cost effectiveness mean - overall look at what that user got - loosely translates to how you're utilizing what you're paying for 6ck

DAP - I keep thinking we are using the system in a cost-effective manner 6cl

BJP - For fast response you want the number to be .7 or so 6cm

RPU - didn't realize that stuff was saved from one day to the next. With this other system in St. Louis we lose any we had after 24 hrs 6cn

FGB - we will do pricing tomorrow morning 6co

BJP - I'm nervous about lots of people doing L10 and compiles - 3% of a KA and core and disk may not be right for that type usage - would like definition of service that eliminates constraints that keep us from buying more core. 6cp

JEG - we're on a budget cycle; if you might get more at the end of the year is it going to cost more? 6cq

DCE - graph of dollars put into system against users in the system - hard to estimate when it doesn't help to add add more users - BJP would like freedom to explore and see if more users can be added, 6cr

JEG - if you say we need more money we don't have it, 6cs

DCE - we're saying rather than giving more money get less of the machine 6ct

JEG - would rather pay more if already saturated service 6cu

DAP - doesn't want to pay more to keep service from degrading 6cv

JCN - would only add users if end result (buying more core) would be better response for all (though same cost per client and less share of machine) 6cw

ESV - any way of measuring it without trying it? 6cx

DCE - ask everybody we know 6cy

BJP - yes you can look at statistics of machine and make estimates 6cz

JCN - somewhat intuitive thing 6d0

ESV - you'd be offering a smaller percentage of a bigger machine, 6da

DCE - BJP is saying if we sell you 3% then we can't do that. If you are sold units instead, then that gives us freedom to make changes over the year, 6db

JCN - will not be easy to talk Tymshare into buying more memory on faith 6dc

JEG - why not get your own machine instead of using Tymshare? 6dd

DCE - We started that way but later felt in the long run we'd be better off not running our own machine. We need to learn to be the broker, 6de

Thursday 7

Frank. Several architects won't be here tomorrow, so it is suggested that we cut this meeting short by a day, and have another two-day Architect's meeting in a few weeks. One day would

be architects alone, the other the architects with at least Jim and Doug.
Connie. We could have it in Wash., at ARPA.
Frank. This certainly affects what we would want to cover today. (...) 7a

Frank. There are a lot of issues that both the architects and Arc need to get away and think about a while. In my view staying here another day wouldn't be that productive. Also SRI has to clarify its position on some issues such as pricing. 7b

Connie. The product of the meeting will be a paper listing those things that... --the direction we want to go in. 7c

Jim N. If architects can't be here tomorrow I certainly won't push for it. But on the other hand there are some issues we do need to discuss, such as documentation. 7d

Frank. If you look at the agenda you'll see that those things are on here--and we can skip some of the other things such as evolution... 7e

Doug. There should be some discussion about the role of the architects. 7f

Frank. I agree, but we can discuss that today. 7g

Larry. What I really wanted to do tomorrow was talk about applications. 7h

Larry (cont.) ...I'd like to talk about this informally rather than formally. Sort of a workshop. 7i

Doug. Frankly I'm disappointed that there isn't more of this at these meetings. I think this is really important. 7j

(Discussion followed about issue of exchanging information among architects. Point was made that this can be done thru Journal.) 7k

Jim N. I thought there were going to be a lot of executive sessions where you guys got together and discussed some issues, and presented your views. 7l

Frank. Well we now all have to go home and do our homework. We're a diverse group, and need some time to go over some of these points. 7m

(Part of discussion missed here. Mostly just continuation of discussion about if the meeting will continue thru Friday, when

applications are to be discussed, whether or not people are satuarated.) 7n

(Decision was made to meet half day on Friday to discuss applications.) 7o

Jim N. When you have a meeting there are several things you could do to help us. It is hard for us to tell what you want. 7p

Bob S. We're going to try to have it down in black and white. We don't really know what we want either. 7q

(General discussion about how architects can present what they want, so that ARC can respond.) 7r

Frank. The first thing we should discuss now is pricing. 7s

Jim N. OK. We've had ideas of our own formulating about pricing structures. Some of those are like those we've discussed here. But I really don't want to draw a picture because that implies we know what it will be like, and we don't. There will be the element of some kind of minimum committment that everyone will will have to buy. But we don't want to talk about slots anymore, we want to talk about service units. You should plan that the minimum will be somewhere around $40K as it is now. All gov't contracts thru RADC--those are funded incrementally. I don't imagine changing the way you sell your managements. 7t

Jim N. (cont.) Some of things we have been discussing this a.m. are kinds of things you get for the minimum: computer facility, user services (training, etc.), applications development. There's something else we have to deal with--our sold time. There has to be some kind of minimum amount of user services--I think. We can talk about it more. Another element that already looks like a concensus is that instead of optional increments we'll have service units, user services, applications devel.opment You're very interested in what minimum user services, app. dev. we build into minimum price.
Doug. We couldn't go below a certain level of minimum user services--for answering phones, KWAC meetings, etc. 7u

Jim N. There's a question of how we could have optional units that are not year long. You are also interested in buying minimum user services and applications development, but more service units. There's also the option for you to pay more--say $80K--and limit it to 15 users, for very fast response. 7v

Stan. Is there some way to spend our money faster (i.e., use up

big bulks of computer time for a peak problem, then not using it later)? 7w

(Discussion of ways of providing options for users--not selling some resources, but taking chance of selling it on an hourly basis, in smaller units. Also whether or not people want to buy extra, limit of resources, etc.) 7x

Ed. Right now you're giving away windfall. It makes sense for you to sell it. 7y

Stan. The basic thing is whether or not the architects, with SRI, want to underwrite this joint service. 7z

Connie. You're just talking about Office-1, arent you. 7a@

Jim N. No, in my mind we can talk to BBN about this. Nobody's going to be sure til it's up and running, but it could be done. 7aa

(Discussion about sale of windfall, whether it would hurt users, scheduler, if it could be done at BBN, keeping back resources for windfall, etc.) 7ab

Jim N. It would be better for all of us if we could flatten out our busy hour curves. 7ac

Glenn. Batch. You run it on non-peak hours. 7ad

Jim N. Well, does this have implications for pricing? 7ae

Ed. But the implication is that of off-hours sold elsewhere. 7af

(More discussion of off-hours time, giving away windfall, working at non-peak hours.) 7ag

(System crash. Some discussion missed here.) 7ah

DLS - How about if I buy 100K for doubling the core - would I get the additional service units? 7ai

JEG - Would be interested in when that would change. 7aj

DLS - We wouldn't be able to double our user community anyway. 7ak

DLS - There are pressures to bring the cost down and more core seems the only way to do it in a reasonable time period. 7al

DAP - Was there a concensus about adding more core? 7am

JCN - Wasn't sure but thought concensus was there. 7an

DAP - I think that so long as we get what we pay for we'll be happy. 7ao

JCN - What do you need to know after you have bought service to be sure you're getting what you bought? It would be good for you to talk about that some. 7ap

ESV - The percentage of downtime may not be meaningful when it's down long enough to turn a person away from the system. 7aq

DCE - There should be a way to calculate negative service units. 7ar

DAP - What protection do we have if we don't get what we bought? I've been checking with our people. 7as

JCN - reeiterated question about what you think you need in the way of statistics - would like a feeling by next architect's meeting. 7at

SMT - Does the system have the capacity to keep such records - right now we get it in a consolidated form? 7au

JCN - What you get with Tenex is unreliable and crude - with more money we could do a better accounting job - also we are just now starting to believe that groupstat is believable. 7av

JEG - We've gone away from using acccounting tools at NSA because we save so much time and money without them. 7aw

JCN - I could send each of you a signed letter each month saying you got what you bought...(It's called a bill) 7ax

ESV - As an architect I would like to know who isn't using the system very much. 7ay

JCN - There should be a tool for architects to check on their own user community. 7az

DAP - It's probably too late by the time you get them. 7b0

DLS - It would be ok if we could get them earlier, but you're always 3 months behind. 7ba

BJP - I would like to see the Architects specify what kind and what frequency they'd like to see data - whatever data you'd like to see to help you manage your users. 7bb

CKM - There's another accounting system at ISI. 7bc

FGB - When will you have a definition of a unit in various categories? 7bd

JCN - 2 weeks.
Terminal maintenance and delivery has been pushed under the rug in the past - needs to be looked at. 7be

FGB - How about leasing equipment? 7bf

DLS - Our Procurement really balked about leasing, what with different starting times for years, etc. 7bg

DCE - We could start being a broker for the user community; if rates are high enough to cover getting nicked by leasing, then we could add that to our service - potential benefit to everybody. 7bh

DAP - Would you get lower prices for the quantity of equipment leased because of bulk? 7bi

DCE - Yes - might even be less for you. 7bj

DLS - Is leasing brokerage included in the minimum service you're proposing? 7bk

JCN - No 7bl

FGB - Time frame is a problem in our world; it takes so long to get a terminal if it's for ADP. 7bm

DLS - It shouldn't be that long. 7bn

FGB - like 6-9 mos. 7bo

IMM - In 3 weeks you're going to try giving us costs? 7bp

JCN - Yes 7bq

SMT - We could maintain our own lineprocessors if we could buy equipment. 7br

LAC - It'll cost more than just buying them. 7bs

JCN - We could work something out. I want to know if there are any other key ideas and where you are now. 7bt

FGB - It looks like a good direction - We will just wait for details. 7bu

DAP - It will be tremendously helpful if I can get the breakdown from you - by next year I would have to do this even if I had to make up figures. 7bv

ESV - I would like breakout of other areas - like documentation and user services - in documentation we're interested in the factory manual - not so much in training manuals, that is, in an individual thing that gets tailored to the organization - would like prices for different kinds of documentation. 7bw

JCN - I don't know if we can do that. 7bx

ESV - factory manual isn't available; want to pick up initial user training 7by

LAC - I would like to see having additional disk broken out. 7bz

BJP - That would be part of it. 7c@

JCN - When we stopped this morning ESV had just introduced the question of user services - I said there would be some minimum level with minimum service. I wanted to make sure that got answered. 7ca

ESV - I can't remember. 7cb

JEG - User Services and Applications Development are rather nebulous - how much are we entitled to? 7cc

JCN - I don't want to mix past arrangement with future - it will be much more clear in the future. 7cd

JEG - Will they be discrete units - so training is different from APP DEV? 7ce

JCN - My objective is to make clear what is in basic package - at beginning of year - want to make optional things clear and have some idea what you think you want in the way of optional things - was fuzzy in past because of funniness of who was paying for what. 7cf

DCE - Having no venture capital and small market results in not the kind of business conditions we'd all like to have - unknown market and service conditions add to that - no denying those things should be there in well-marketed thing - when scale is bigger we'll do better - no way we could have done much better over last 2 years. 7cg

JCN - I think we will bill COM services the way we do now - bill

for what is used directly to customer - that's about it for me - anything else? 7ch

JMB - What about seminars? 7ci

JCN - In order to gain interest and potential clients we bring potential architects in for a week - held one about 1 1/2 months ago - 2 people: one from Herman Miller and one from CIA - we have a brochure we put together - if you run into people that would be interested you should steer them towards us - in one of FGB's groups there might be someone, for example, 7cj

RMS2 - Why should he do that when as part of his slot he's entitled to training? 7ck

FGB - What he's talking about is in my best interest - gives me ability to get more slots sold and more interested users, 7cl

DLS - We did sell a slot to DMA and IBM, 7cm

FGB - Should provide some incentive for that kind of grass-roots activity, 7cn

FGB - What is cost? 7co

FGB - It's down from 1000 to 700? 7cp

JCN nods, 7cq

DCE - Not far off from what others charge for conferences, 7cr

RMS2 - How is that different from a sales pitch? 7cs

JCN - Some need a lot of exposure to be convinced, 7ct

DAP - I think it's good if people will pay for it, 7cu

JCN - We'll know at the next meeting how it works the next time, 7cv

RMS2 - At least if an organization pays $1000 they will expect a report and so there may be some action, 7cw

FGB - When is next one? 7cx

JCN - Nov. 17-24 7cy

DAP - What about having someone do Proof as a service? 7cz

JCN - We don't have an organized way to do that but will at some point - it isn't that hard to do yourself, 7d@

DCE - I would think most places wouldn't want to be experts at typography - this is an example of the scale thing, 7da

DAP - Documentation Production through COM is not a big enough part of your service, 7db

BJP - Clarify what you wanted, 7dc

DAP - Just to have you look at it and see if it looks right 7dd

JCN - It's not that hard to learn COMtest - Inez did in a day and a half - also Ann Weinberg who does all that work for Larry, 7de

DAP - Can you run Proof with DNLS? 7df

DCE - probably with some work 7dg

JHB - Does everyone have the 2-page handout on Documentation? - Larry noticed that it started with 3 and ended with 2 - branch 1 is a discussion of the issues - not clear enough to print up now - things like online vs. offline documentation - training vs. documentation - look at 2g - this is where we are - what we have now - additions are L10 Guide which will be done shortly, Brief Guide to User Programs, which reflects programs available that are Class I and supported in Help; tutorial docs and courses are pretty well done, 7dh

ESV - On user programs - should process branches be included there? - seem to serve same purpose 7di

JCN - It would be nice to have them organized somewhere - although it does cost something, 7dj

ESV - What do you mean? 7dk

JCN - Collecting them and organizing them - thinking of the future 7dl

JHB - They need to be documented, 7dm

DCE - The journal is very handy for that - people can keep own collections that way - maybe have a directory just for architects that can be used for storing collections of user programs and process branches, 7dn

JHB - They could be in <userguides> - CKM has a directory that she calls macros and there's another one at Gunter. Another scenario

is on letter production - haven't had feedback except from Duane - his comment was basically that the Letter isn't very useful to most people, 7do

DAP - You should see Duane's process branch that does it all automatically, 7dp

JHB - The other thing is the L10 course given by Karolyn Martin for the first time at ARC - won't be any more courses - seems you don't want them - seems higher levels can be covered by documentation on other page and sample sessions that can be pulled together by trainer for each particular site - would also be stand-alone documents - also lot of people want to do own courses, 7dq

DAP - What about Secretarial Functions Guide? 7dr

JHB - We've decided to modularize them - you received one set that accompanies the second course - the Primer covers the first 2 and there will be another set for the 3rd course - Application descriptions are also part of the plan for documentation in the future - have heard that reference docs are factory type docs and those listed here represent all of them that are up to date - all except DEX which will be done shortly, Is that what you meant by factory doc, Ed? 7ds

ESV - Yes 7dt

JHB - That's the extent of present doc - There's a course coming out of the last seminar but oriented to non-users - This list of proposed doc is what comes to mind when I hear your inputs and this is the outcome, Four application tutorials - designed to be very complete, I think about 6 man mos, of 3 people will do it - that's a rough guess because it also depends on computer resources, 7du

DCE - 6 mos, from each of 3 people? 7dv

JHB - yes 7dw

JEG - Can you associate a probability that you can do this? 7dx

JCN - Other factors are that some pieces should be done anyway and others are special requests by you - we shouldn't do what you don't want - we should know how much depth you want, 7dy

JHB - The Letter Tutorial is example of the depth that would be encompassed, 7dz

JCN - I think we should have your inputs before going ahead so we don't end up with stuff you don't want, 7e@

JEG - Each architect could say what they'd like out of that list, 7ea

JEG - Maybe we should say what we'd like given $10,000 to spend and look at priorities, 7eb

JCN - Seems like something good to look at during your next meeting, 7ec

DCE - It has to do with how we cut up our products in sub-bundles and how we do our planning and committments, 7ed

JHB - Another category is to replace advanced courses with the list of Procedural Tutorials, These and Text Book on NLS are not included in 6 mos, estimate, 7ee

DAP - I would like to see the seminar stuff for use with non-users, 7ef

JHB - Investments in Tomorrow can also be reprinted, 7eg

DAP - That's the best single thing we have, 7eh

JHB - We have also a collection of articles about us published in journals - I sent a msg to KWAC listing these, 7ei

DAP - Are they online? 7ej

JHB - Xeroxed 7ek

JMB - 3b ("List of Procedural Tutorials") wasn't included in the 6 mos estimate? 7el

JHB - It should be a fall out of previous things, 7em

ESV - Fallout from 3c ("Text Book on Using NLS")? 7en

JHB - No, 3a ("Application Tutorials") 7eo

JHB - Application tutorials are big ones that can be divided up, 7ep

JCN - Is there anything obviously missing in this thing? 7eq

DAP - Architect's manual on how to get money 7er

DCE - valid thing that could be used I'm sure 7es

JCN - We sometimes hear pleas for a complete reference guide - I don't see one on this list - should it be added? 7et

FGB - How about textbook? 7eu

JHB - There's an effort in that direction - but it's a ways away. 7ev

JCN - If that's the most important thing missing we need to know it. 7ew

FGB - The architects look at this and prioritize. 7ex

JHB - I am unsure about reference documentation coming from Development for new software, graphics, etc. 7ey

JHB - How do you keep this updated - keeping them small and modular to help in updating of site notebooks. 7ez

JCN - We have an NLS applications programmer that is available - for next 3 mos. At the last meeting there were lots of suggestions about things... 7f@

FGB - Hope Bob will include that in his paper. 7fa

JCN - The period will be one-third over by then so we will use him as we deem best. 7fb

SGR - I have a few things to say about training but I want to hear what you all have to say about it. 7fc

SGR - First, a memo was recently sent to KWAC. We are at the point where we can do a few more things. Less formal training, more applications assistance. Mainly, keeping in touch with various clients - included is the possibility of having some on-line sessions. Use this not only for problems but also what is new and going on. 7fd

FGB - Tell us about the trainers. 7fe

SGR - We have 5 trainers. Names, etc. 7ff

SGR - We have going by the assumption that 2 1/2 days a month of training were allotted. 7fg

JCN - JCN's assumption, that there's never been an extra charge. 7fh

SGR - I have precise records of training given. 7fi

DAP - I would be interested in seeing them. 7fj

LAC - I'd like the boss to see them. 7fk

JCN - (Re Susan's proposal for additional assistance) We are moving in that direction anyway. 7fl

SGR - Our role should be one of information gathering, and making sure the information goes to the right person. 7fm

DAP - Send one Architect's request aound to all of KWAC since more than one organizaton might be interested in the same special applications. 7fn

SGR - Splitting up the trainer among the various sites. Focus on particular clients. 7fo

DAP - One person who would be your main contact. 7fp

SGR - That person though would not neccessarily be the one who might come and give courses. 7fq

FGB - Just course, couldn't hear. 7fr

SGR - We would help in special applications. Mail handling etc. 7fs

FGB -- How do you train trainers? 7ft

SGR - Learning NLS very well first of all. 7fu

FGB - How do you pick trainers?. 7fv

SGR - We hired Pam and Priscilla 5 or 6 months ago. Trained them and gave them typical users tasks to do. Given them more problem-solving things to do and train new people at ARC and SRI. Trainers would sit in on these sessions and advise and watch. Also a trainer accompanied them on their first training trip. Took us (& JCN speaking) 6 months in our own environment. It's hard to guess how long it would take. 7fw

DCE - Tell us about that Word-Processing conference and what you learned. 7fx

SGR - Spent time talking to people who were trainers in different systems. Gave and allowed very short time for training. 1/2 day for their whole systems. We say you can get thru the Basic Course in half a day. 7fy

FBG - Simple systems are different. 7fz

DCE - Didn't they say that it took 6 months to stabilize. 7g0

SGR - Yes, 7ga

BEV - Missed 7gb

JMB - There was a more complex system. They gave an intensive course for 3 days 9 hours a day, 7gc

SGR - There were other intensive and long courses. I think we picked up a few things from this, 7gd

FBG - Did you notice if many of these W-P systems have communications gear? 7ge

SGR - A few of them did. Word One was the only one I noted, 7gf

SMT - There are only a couple but they don't all have communications capabilities, 7gg

SGR - Questions? 7gh

DCE - You mentioned the time for some tools to stabilize. This is an evolutionary stage. And our service really helps while this stabilizing process is going on. A process has to evolve, 7gi

DLS - Some places struggle and take them out because they didn't serve, 7gj

FGB - W-P stays in a central place where NLS goes out of a particular office, 7gk

BJP - How long did it take for you to get to the point of proficiency and stabilizing? 7gl

IMM - Doug asked us to participate in this experiment. Once we did that we all had to do it. It wasn't to replace anything, and in the beginning it was hard. Took us a year to get over the humps. We had problems not only with NLS but we had equipment problems also, 7gm

ESV - How many managers do you have? 7gn

IMM - Twelve. We have 3 secretaries using it full time, 7go

JCN - Not everyone uses it but that is the final result of their work, (one VP for example,) Still have different users in different modes. Larry Day all the time. Other is pencil and paper mode, 7gp

IMM - I use it 90% of the time. I'm pretty much in COM but one

of the secretaries will be able to take that over, We want to know all the capabilities and use them. 7gq

DAP - Do you have to reclassify the secretaries? 7gr

IMM - This person is a temporary, Takes off the summer. 7gs

CKM - With the other director, people were forced to use the system but now with a new director it is more natural, We have new people who are recently expanding into systems. It is much better without all the overall commitment. If you want to do it, if not don't. This problem with secretaries - We have looked at it with Civil Service. There is not a category for it. People think this will help them. I put what they know in job-descriptions but so far it hasn't done any good. We have a big turnover problem. 7gt

JCN - We happened to hit the offices with turnover. People leave when it's time for their re-classifying. 7gu

DCE - Do you consider it an increase or decrease in status? 7gv

CKM - IMM - Increase in status. 7gw

CKM - It is drudgery in one sense but they like it. 7gx

ESV - Everyone who is using the system is doing it differently, different depths. Some are enthusiastic,..some not. One instance is someone writes things out for the secretary. Resent putting something in the system when he could hand-write and walk it down the hall. 7gy

SMT - Ron first asked his secretary to put a document out and she didn't like it so he dictated it to her complete with commands and she had no problems. 7gz

Missed comments here with Elf problems. 7h@

JCN - Got into things we wanted to get into but hadn't really planned. We weren't surprised with anything you all said. Lack of understanding due to a lack of communications. There is a difference between dealing with problems, policy issues, documents, pricing, etc. Another thing is a technical standpoint... what we all do. It was on the agenda to combine all these things and spread them out over the week. Get the Architects to focus on talking. I'm disappointed that we didn't get into the part about sharing. One way to get into things is to have an applications description like ETS has. 7ha

DAP - I will try to keep that up-to-date. 7hb

JCN - At any rate I'm disappointed that we didn't get that far. It turned into more of a business meeting. Another thing that bothered me, I don't mean to be negative, but I wanted to get a better feeling of what you Architects feel. It is obvious that there is a day and a half here where we could have done this. It may be that going for 5 days isn't practical. The next meeting will be on how we share the system. How do you want to work it, March, 3 days? 7hc

FGB - From the last two meetings we are obviously doing something wrong. 7hd

JCN - You should consider that in March. There will be new Architects. Did you have a feeling that compared to the last 2 meetings that it went differently? 7he

FGB - We were more direct and less loose. 7hf

RMS2 - I disagree. We have gone through the steps but we will have to see what will happen. We didn't succeed because we are going through the same things this time as last. KWAC was not understanding the position of ARC and ARC is not understanding the problems we face with the system like DEX and response time. We have expressed our feelings before, Documentation, on-line help. We still have these same problems. Some of our help assistance on-line is tedious. 7hg

JCN - You are saying that ARC is not responsive to your needs. 7hh

RMS2 - We are sitting back, trying to pull things together from the minutes. Trying to draw to the service the problems we want to address and circulate it among ourselves and give it to you to respond to our requests and feelings. 7hi

JCN - That is how we want to go about it. It leaves me with the feeling, first you have problems with DEX, the documentation has not been responsive. 7hj

Somebody - Wait a minute, how can you say? 7hk

RMS2 - That is true, the documentation and training have been good. However for training on L10 you have not been responsive. 7hl

JCN - As a matter of fact this recent activity is our response. 7hm

DAP - Help is not that bad. You have to keep something like it.

To keep the Glossary going you want to keep HELP going, and that's a good way to do it. 7hn

RMS2 - You said yourself it was tedious. 7ho

BJP - A few comments, it is very easy to criticize. It is very easy to say I want something and you are not giving it to me. The desires and criticisms aren't complete. You want us to fix DEX without saying what it is you want it to do. 7hp

Everyone - That's not so. 7hq

RMS2 - We have to work closer than we have in the past. 7hr

BJP - Get it specific. 7hs

RMS2 - That is difficult, we don't know the whole system, we don't know how things work so how can we be specific about things we don't know. Your presentation the other day was very enlightening. 7ht

DCE - It took 3 man-months to do it and we had to hire him. So we have been responsive. I don't mind showing you that we don't have enough resources, but I don't like what you say that we haven't been responsive. 7hu

IMM - What Bob is trying to say is that you haven't told us that you have done these things. We suddenly find out that you have these things but we don't know it. 7hv

JCN - But we have just started in some of these things. RADC L10. 7hw

RMS2 - Show us an article that you announced an L10 person available for training. 7hx

DAP - I think it would have helped if we had seen a response to these things. Now we know you have done these things but the discontent does not go away. 7hy

RMS2 - We have to take it slower. Another KWAC meeting in 6 weeks would be helpful and help us to keep a hand on things. 7hz

DCE - We have given you things and areas we have made progress on. How can you say that this meeting is like the last one? 7i0

RMS2 - We are in more detail than before. When you have a diversified community using tools you have to get the users together to discuss things. 7ia

JCN - What you need is interim reports on what is going on. We will change that. 7ib

ESV - When there are requests for one user to develop something the opportunity should be given for all to share if possible. 7ic

JCN - It is a very fair trade for us to tell you what we do and for you to say what you think. 7id

BJP - Give us your priorities. 7ie

RMS2 - We will try to do that. 7if

Friday 8

GAS2 - The last KWAC meeting was my first. I work with the Office of Computer Planning at SRI and have programming background. My professional objective has been the creative use of computers - doing more with less. Was ripe for NLS - have been having a ball. It has been frustrating but it's getting better. There is plenty of diversity among users at SRI. I don't have trouble finding users - I have to be careful because the original design was a little different. There is the capability of being a full blown working medium. There were a lot of users back in March. SRI had slot for 6 months, but not much was happening. I figured I had to show some payoff. Most were casual users. There havn't been provisions to make it easy or simple to learn subsystems. It takes a long time to be comfortable using NLS - I think 6 months. 8a

JHB - I'd like to differ with that time 8b

GAS2 - I just wanted to teach them a small subset. I see my job as architect as being the interface between NLS and people. We want to build specialized systems. We are doing a familiar job in a new way - developed CIMROS. Do you all have copies? It isn't completed, a pilot study. In User Development (UD) documentation I outlined my method of approach. There are 3 things that I think might be of interest to other users - CIMROS, Retrieve - a general retrieval that uses content and structured filter. There is some documentation. We need to get together on needs and requirements. I'm in a unique position at SRI. I have good contacts with system programmers. For example, Jack is interested in Burroughs NLS interface and there are people looking at that and I've done some looking at that. 8c

GAS2 - If I know your needs sent via AID or KWAC - also ARC needs to tell us of new developments - as soon as that ident is updated I'm sending my UD paper to that ident - I will be sending stuff on UD, retrieve, CIMROS and B6700/NLS. The intent in writing

CIMROS was for me to write my own system - has worked pretty well, RWW went out of his way to give me a hand - was surprised - won't be journalized till finished. There are more commands I'd like to add. 8d

RMS2 - How many users are on that? 8e

GAS2 - It was designed for one user at a time. The primary objective was to manage the information flow within the institute about contracts - currently a manual system. They can't keep up - lost one secretary who is handling the RO's (Research Opportunities). This group is a commercial complement of the Commercial develpment group. ORO (Office of Research Operations) is the parent group. CIM and PDG groups are under that. CIM group had RO data base that was stand alone thing. CIMROS provides controlled formatted entry, editing, retrieval, - have action codes from 0-8. Have never had data in computer to come up with marketing strategies - want to give them some additional aids 8f

RMS2 - You have an RO in one division - can you put them togehter with RO's from another division? 8g

JHB - What kind of flexibility is there for data entry? 8h

GAS2 - We were used to typing it in a rigid way - don't need much flexibility. Thought about giving them options only 2 people use the system - operator plus backup. Were used to typing RO's this way. Not a flexible system. 8i

JHB - So it will barf if you type the wrong thing? 8j

GAS2 - No, it will just let you type it in. 8k

DCE - Does she recognize that later searches depend on accuracy of input? 8l

GAS2 - I'd like to see them catch up on '75 backup and get ahead. Some work coming up pulling these together - isn't a contact file - more of a log - more it's used better they like it. Was such a mess that it's easy to do trivial things that make a big difference - easy to generate reports - have Diablo printer. I would like some VP's using it, but they are a little intimidated. CIMROS gal's desk is right in front of VP's offices 8m

RH - Does case matter? 8n

GAS2 - Yes - don't check case - it's just known and used that way 8o

RH - What if VP's mess up because can't type? 8p

GAS2 - I'm not going to teach the VP - his secretary will 8q

RH - We had trouble with Multics because weren't flexible 8r

DCE - Would run more slowly if any case was ok 8s

SMT - Isn't it natural to type names in upper and lower? 8t

RH - If they've used other systems 8u

DCE - Havn't seen any other systems 8v

RMS2 - When you say show and a researcher's name - how do you implement it? 8w

GAS2 - Show command has two levels - 8x

Show 8x1

RO 8x1a

DIV 8x1b

ALL 8x1c

WITH 8x1c1

DUE 8x1c2

GAS2 - Any text can go after with - eg RO 8y

RMS2 - You set up a content pattern? 8z

GAS2 - You do a slicker thing using lookup procedure 8a@

RMS2 - That's in L10? 8aa

GAS2 - Yes 8ab

DCE - L10 has a zillion procedures that you can call - like a huge vocabulary 8ac

DAP - Are those things in Xprocedures? 8ad

GAS2 - That's some of them - the rest are in sysgd, not kept up 8ae

DCE - Will have to maintained 8af

Much conversation back and forth... 8ag

Stuff about sysgd and other documentation about procedures 8ah

JHB - Comparing structure of journal indexes with your thing, sounds like a lot of work is done instead of looking at string positions. 8ai

GAS2 - I start lookup at the right place 8aj

GAS2 - It is meant to be a simple thing 8ak

JHB - You want it to grow 8al

GAS2 - I want other people in ORO to be able to do what was described earlier - this was simple enough I could do 8am

DAP - You regard this as simple? 8an

GAS2 - Relatively yes 8ao

DCE - He had a lot of work to learn conventions 8ap

JHB - You can't build systems that are obsolete when the file gets bigger than 300 pages. It would be wasting time because there are mgt info systems that can do the job. 8aq

GAS2 - Only upward compatible in limited extent - will do for SRI needs. Other developments require something a lot foxier - at least got this far 8ar

DCE - Wouldn't it be easier to do in DMS on Burroughs? 8as

GAS2 - Could have done it in 2 days on Lulu. The slot was paid for. 8at

DCE - You can say Print Branch NLS,sysge,lookup,1 <CA> and that will take you to the source code - or Jump Name External lookup; file xprocs is an attempt to try to isolate procedures that make good interface on frontend. It is categorized with procedures on second level - can get through locator. We stopped maintaining that but want to get it started up again for users doing user programming. When something in xprocs points to a procedure it points to files in directories with limited access. Haven't opened them up because NLS privacy is so vulnerable - so don't try to break it... When they recompile and load a lot depends on how procedures are organized - can't be messed up. It's hard to explain why it takes a long time to change and fix things. We have remodularized often. 8au

DAP - Is TENEX and NLS protection independent of each other - so can I limit files? 8av

DThere iscussion about protection and copying NLS files in TENEX - copying worked - ssgf - too many conversations going on to get 8aw

GAS2 - How about a directory to keep up interactions like that? 8ax

RMS2 - Couldn't get a newsletter going, 8ay

GAS2 - We could have a simple index to filenames. I have a bunch of loose things that might be handy. Could share info there - not only what is developed but also what is needed, 8az

RMS2 - Have process branches there with a paragraph description 8b@

DAP - My process branches wouldn't be useful to anyone else - firmly attached to files 8ba

RMS2 - Like Duane's letter - I'd like to know how to get a loop in a process commands branch, 8bb

DCE - We'll get you a directory. There needs to be some control, 8bc

DAP - Have idents validated for that directory 8bd

DCE - Jim runs utility and I don't tell him what to do 8be

SMT - We need to do the same thing as CIMROS 8bf

GAS2 - JHB mentioned something important - I know how big the file will get - it will probably not get bigger than 78 pages. With high volume you'd want to do some steamlining, 8bg

RMS2 - Would like to talk to trainer about how do get started - come to East Coast to help Arcnitects 8bh

RH - I have 3 terminals that could be used for that 8bi

RMS2 - Could we get a trainer in a couple of months? 8bj

DCE - Talk to Jim about that, 8bk

DAP - Would like to be able to write L10 programs - would like a 3 day class 8bl

RMS2 - I can't get help from Help on writing Content Patterns - square brackets are not mentioned in there, 8bm

DAP - It was really difficult to learn from Help 8bn

RMS2 - I tried to get help on content analyzers from Help and didn't make it. 8bo

3 conversations going - JHB and JEG on documentaton - Glen, Stan, Doug, Bob, Dave, and Duane on misc. 8bp

DLS - What's the policy of turning over use to ARC to maintain? 8bq

DCE - Help always treats users the same 8br

DLS - My observation is that novices don't use it, apprentices do 8bs

DAP - You have to know enough to ask questions - NCSS 8bt

DCE - I'd like to propose that the Help that we are responsible for maintaining is a subset to help novices and put the rest in a form to printed out 8bu

DAP - I moved from Help to using Locator. I am nervous about Help being made smaller 8bv

DCE - There's lots of energy to maintain parallel documentaion - 8bw

DAP - I just think it's a tremendously useful thing 8bx

DCE - We need to know that kind of thing 8by

DAP - I use Help more than Format - can you tell me where and why you use help 8bz

DAP - With the Glossary probably don't need Help 8c@

DLS - I would like to have 40 copies 8ca

DAP - The advantage of Help is you can keep it up to date 8cb

DCE - Also doesn't have journal numbers or statements numbers - bowled me over 8cc

DCE - You can't tell how to refer to it 8cd

DAP - NCSS has a set of user sophistication cmmands. It gives more depth as the user expands, would be nice if it were in useroptions. 8ce

DCE - Do we want to continue with separate discussions? 8cf

RMS2 - How about you talking DLS 8cg

DLS - 8ch

JEG - I feel this morning was the best part. I hope this kind of thing will be higher on the priorities. 8ci

JHB - Jack and I were discussing Mil's documemt. We agreed that it was not useful in it's present form. 8cj

DLS - I just roamed around in <FMS> and there are some design docs that are useful - Finances, in the government there is problem with funds being allocated on a yearly basis and have to come out even by the end of the year. Contracts etc, run across fiscal years. Problem for a manager with several projects and several million dollars. An adminstrative assistant keeps records which have standard output. 8ck

DCE - Provided by Larry? 8cl

DLS - I'm not sure. There is PMS (Procurement Mgt System) CMS (takes it after it's on contract); comes out of 3500 and data is captured from forms submitted by engineers and accounting people - month old by the time comes back to local manager. This is fine at the beginning of the fiscal year but as it nears the end that data is not good. FMS tries to provide more up-to-date records. We had manual FMS using special file structure and content analyzer patterns but got too baroque. No one new could come in and use it. Last spring Joe Cavano sat down with DLS and others and talked about what was needed to know about L10. Some L10 manuals were being produced - final design was done about 3-4 months ago. NDM was principal coder because our people were still learning. The intent is for NDM to fade out and our guys to fade in - cost one of the programers - should talk to Joe about details - system is designed to work without knowledge of NLS - administrators will update data base - ignores a lot of NLS things - same words used to decribe other functions - a lot of effort was put into making it hard to mess up. 8cm

DLS - File structure reflects the way technical efforts are managed - TPO (Technical Planning Objective) under that 6 tech areas under them job order #'s - basic no, used for time charges - mostly contractual but also in-house - can do queries - effort has been to build data entry subsystem and file protections - outputs are straightforward - is 90% coded - can't get someone back there to demonstrate and inout hasn't really started - intend to have graphics - can do projections on monthly basis - tabular data available now - eventually want to have elementary graphics or plotting capability - doesn't have to be very sophisticated 8cn

JHB - will this continue to live comfortably in NLS? Will files get too big? 8co

DLS - No, not for our size organization with the number of projects we have. It'll be large and it's hard to say there is a delete command that can be used to get room. There is a ledger system that backs this up. It was done because one guy keeps asking how did we get here?. Now can go back in time. There is another NLS file online - entries look like main file - most of the basic data is done during planning cycle - will soon be working 77 budget - get prioritized list of things a person wants to do 8cp

GAS2 - Has JCN talked about generalizing your system? 8cq

DLS - Yes - discussed procurement cycle; will know next spring if this system will pay off 8cr

JHB - How many forms are in the procurement cycle? 8cs

DLS - Has shown a lot of inconsistencies and errors in the current system 8ct

DLS - Yes - has been build with view of making generalizable 8cu

DLS - There has been talk of showing this to the commander to see if there would be interest in having one of these in every division around the center. Then we would want to think if it would be better to have the backend. It all fits in with NSW. 8cv

DCE - when is it useful to have the capabilities of NLS? 8cw

DLS - Front end ability is very important 8cx

GAS2 - ability to it very transparent with tailored commands is neat 8cy

GAS2 - Beautiful executive that things can be hung under 8cz

DLS - One of the fields would be link field off to a more text description of what this whole thing meant - have tried to get Effort Writeups going but is standard document description of purpose of effort, objectives, background, requirements 8d@

SMT - You don't do that now? 8da

DLS - We do it in many different ways 8db

SMT - There is a standard DOD format for that and we do that now 8dc

DLS - I was saying we are trying to get an online process going - we have the paper process going 8dd

SMT - They are incompatible now 8de

DLS - wrote format subsystem for generating memos 8df

DCE - want a lot of options set 8dg

RMS2 - Would be nice to write directives like user programs 8dh

RMS2 - Next meeting should be 2 days on policies and 2 days on applications -can't have 4 days on policies - I wanted to get into OP directives - would like 2 columns on a page 8di

DAP - Me too, DVN sent out a paper with a bunch of suggestions in it 8dj

DCE - no way you could generate a list of things that we have 8dk

RMS2 - Is OP one pass? 8dl

DCE - Yes and line at a time - want it to be a page compiler - no better would be a document compiler - but better would be a whole volume compiler - 8dm

DAP - could do footnoting if were a page compiler? 8dn

DCE - Yes but document compiler is what is really needed, 8do

RMS2 - TOC program doesn't come back looking very well - seems it should be easy to substitute page numbers, 8dp

DCE - Yes but takes compiler - talked about outputting - content filter is optionally in the path before anything gets to the output processor - the program in content analyzer can allow you to add directives - I wrote one where I made a list of SID's and added directives at those points - could have another file with program that initializes stuff in content analyzer - can go further too 8dq

GAS2 - I got the impression that the OP code is ancient - doing what you're suggesting is going to be slower - can OP be rebuilt easier? 8dr

DCE - Right now this will work, 8ds

GAS2 - This is the way CIMROS stuff can be done, 8dt

DCE - It bothers me that the journal looks like it does - could be done this way too 8du

RMS2 - You would have 2 files - one with text and one with print control stuff. How would people know to access the right print file? 8dv

DCE - There could be a link in the origin statement. Print control could also be stuck at the end of the file. 8dw

DLS - Is anyone out there intensively interested in this? 8dx

DCE - The last guy to really work on this left 2 years ago - Elizabeth, Harvey, and Bob B. have been working it; talked about Basic some, Potter panted. 8dy

SGR - I got tired of minutes and so let some of the last dribblings of conversation pass into the void... 8dz

FIRST DRAFT of MINUTES of KWAC meeting - Oct 16-17 1975

(J33726) 22-OCT-75 16:10;;;; Title: Author(s): SRI-ARC Applications Group /&ARC-APP; Distribution: /KWAC([INFO-ONLY]) ARC-APP([INFO-ONLY]) ; Sub-Collections: NIC KWAC ARC-APP; Clerk: JMB; Origin: < ROETTER, EDITEDMINUTES,NLS;6, >, 22-OCT-75 16:04 JMB
;;;;####;

33726 Distribution

Jeanne M. Leavitt, Susan Gail Roetter, Raymond R. Panko, Adrian C. McGinnis, James C. Norton, J. D. Hopper, Elizabeth J. Feinler, James H. Bair, Robert N. Lieberman, N. Dean Meyer, Sandy L. Johnson, Martin E. Hardy,

Joseph L. Ehardt, Marilynne A. Sims, Elizabeth F. Finney, Lawrence A. Crain, E. S. VonGehren, Glenn A. Sherwood, Kathey L. Mabrey, Jeanne M. Beck, David A. Potter, Robert N. Lieberman, Terry H. Proch, Ronald P. Uhlig, Susan Gail Roetter, Michael A. Placko, Stanley M. (Stan) Taylor, Elizabeth J. Feinler, Rudy L. Ruggles, Frank G. Brignoli, Robert M. Sheppard, Richard W. Watson, Douglas C. Engelbart, James C. Norton, James H. Bair, Duane L. Stone, Inez M. Mattiuz, Connie K. McLindon, Israel A. Torres, Buddie J. Pine, Laura J. Metzger, Priscilla A. Wold, Pamela K. Allen, Jeffrey C. Peters, Marcia L. Keeney, Jeanne M. Beck, Rodney A. Bondurant, Douglas C. Engelbart