

# **A history of R (in 15 minutes... and mostly in pictures)**

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University of Minnesota

Lunch & Learn  
RMCC  
LATIS

# Who am I and Some Caveats

## Andy Zieffler

- I teach statistics courses in the Department of Educational Psychology
- I have been using R since 2005, when I couldn't put SAS on my computer (it didn't run natively on a Mac), and even if I could have gotten it to run, I couldn't afford it.



Me  
(on the EPSY faculty board)



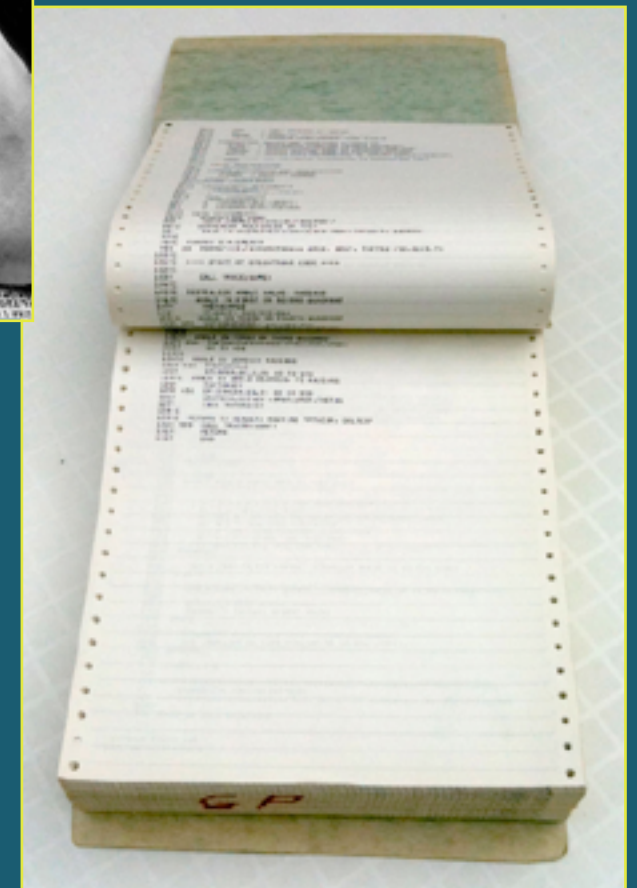
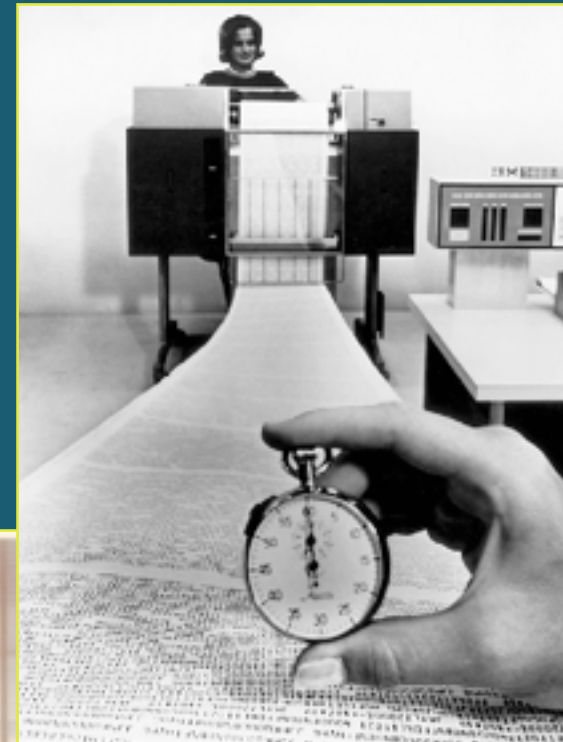
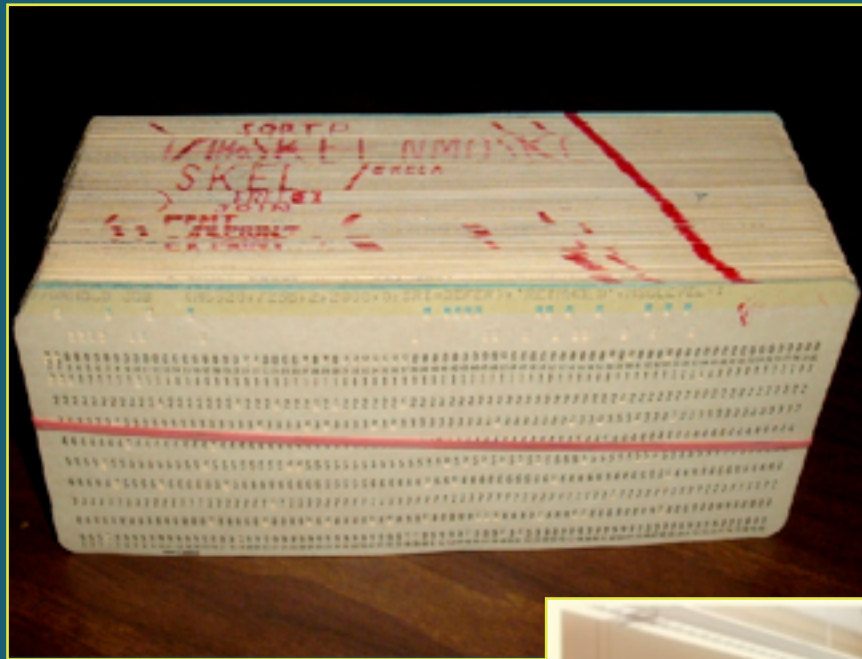
Me  
(everywhere else)

## Some caveats

- Although I was alive during much of the era I will be talking about, I was not working as a statistician at that time (not even as an elementary student for some of it).
- My knowledge is second-hand, from other people and sources.



# Statistical Computing in the 1970s





# Bell Labs

In 1976, scientists from the Statistics Research Group were actively discussing how to design a language for statistical computing that allowed interactive access to routines in their FORTRAN library.



John Tukey



John Chambers



Rick Becker



Judy Schilling



Jean Mc Rae

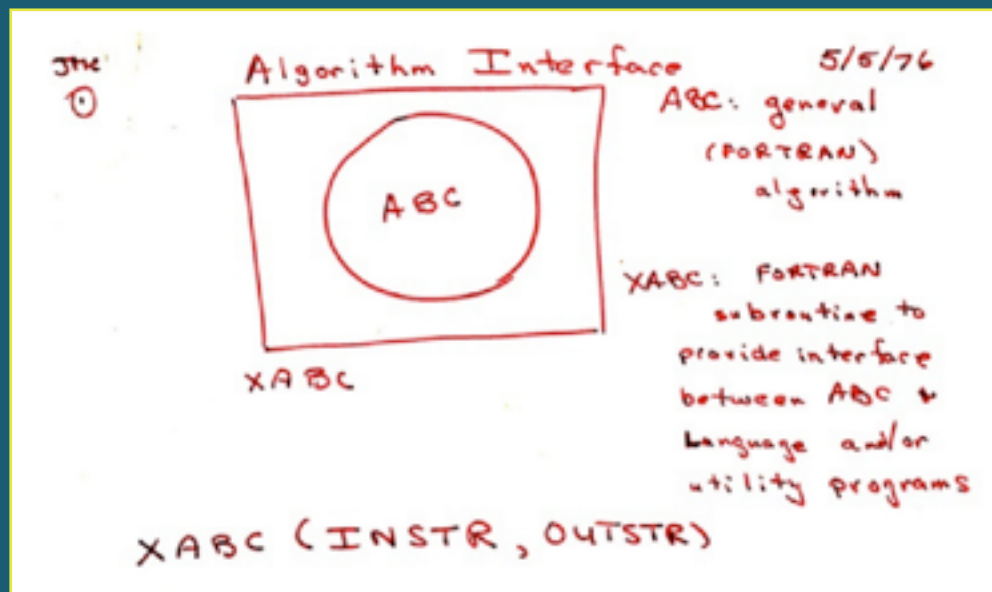


Doug Dunn



# Introducing... 'S'

## An Interactive Language for Data Analysis and Graphics



Chambers sketch of the interface made on May 5, 1976.



The GE-635, a 36-bit system that ran at a 0.5MIPS, starting at \$2M in 1964 dollars or leasing at \$45K/month.

STATISTICS DAY '76 EXHIBITS		
DYNAMIC EXHIBITS (CONFERENCE ROOM 1F202)		
AN INTERACTIVE LANGUAGE FOR DATA ANALYSIS		
A new interactive, general, extensible computing language is being developed for data analysis. It is designed to make quick, exploratory analysis of data possible without the details needed in conventional languages (FORTRAN). At the same time it is sufficiently powerful and flexible to serve as a vehicle for research in data analysis and for the development of specialized sub-languages.		
Compared to existing statistical languages, its novel features are: general hierarchical, self-defining data structures, with common structures provided automatically (e.g., time-series); syntactic power and flexibility; modularity which allows development of user profiles and sub-languages; emphasis on portability in the design; and an interface language which allows inclusion of new commands in the system starting from FORTRAN algorithms (not written for the language) in a simple way, without detailed knowledge of the language structure.		
R. A. Becker	MI 2C-320	x5512
J. M. Chambers	MI 2C-326	x2681
D. M. Dunn	MI 2C-479	x3320
J. E. McRae	MI 2C-323	x6180
J. M. Chambers	MI 2C-322	x3587

'S' was introduced to Bell Labs in November, but at the time it did not actually have a name.



# The Impact of UNIX on 'S'



Ken Thompson and Dennis Ritchie, creators of the UNIX operating system at a PDP-11.

```
HALT instruction, PC: 00030040 (HALT)

file : unix

RESTRICTED RIGHTS
USE, DUPLICATION OR DISCLOSURE IS
SUBJECT TO RESTRICTION STATED IN YOUR
CONTRACT WITH WESTERN ELECTRIC COMPANY INC.

real mem = 8323072
Warning: more page-frames than allocated in bit map
Only 2048 of 16256 used. (Increase PHYS_PAGES)
avail mem = 939008
# entering rc
clearing atab
clearing /tmp
mounting /usr on rpo
starting update
starting cron
leaving rc

login: root
```

Ported UNIX running in a simulator.



Tom London



John Reiser



The terms of the early UNIX licenses were minimal: The software came “as is” with no royalties to AT&T; but also no support and no bug fixes.

# 'S' in the 1980s and 90s



Allan Wilks



R. Douglas Martin

# R Finally Makes a Cameo

In 1990, on Robert Gentleman's sabbatical visit to Auckland, during a chance encounter in the corridor, the following exchange takes place:

**Gentleman:** "Let's write some software."

**Ihaka:** "Sure, that sounds like fun."



Ross Ihaka



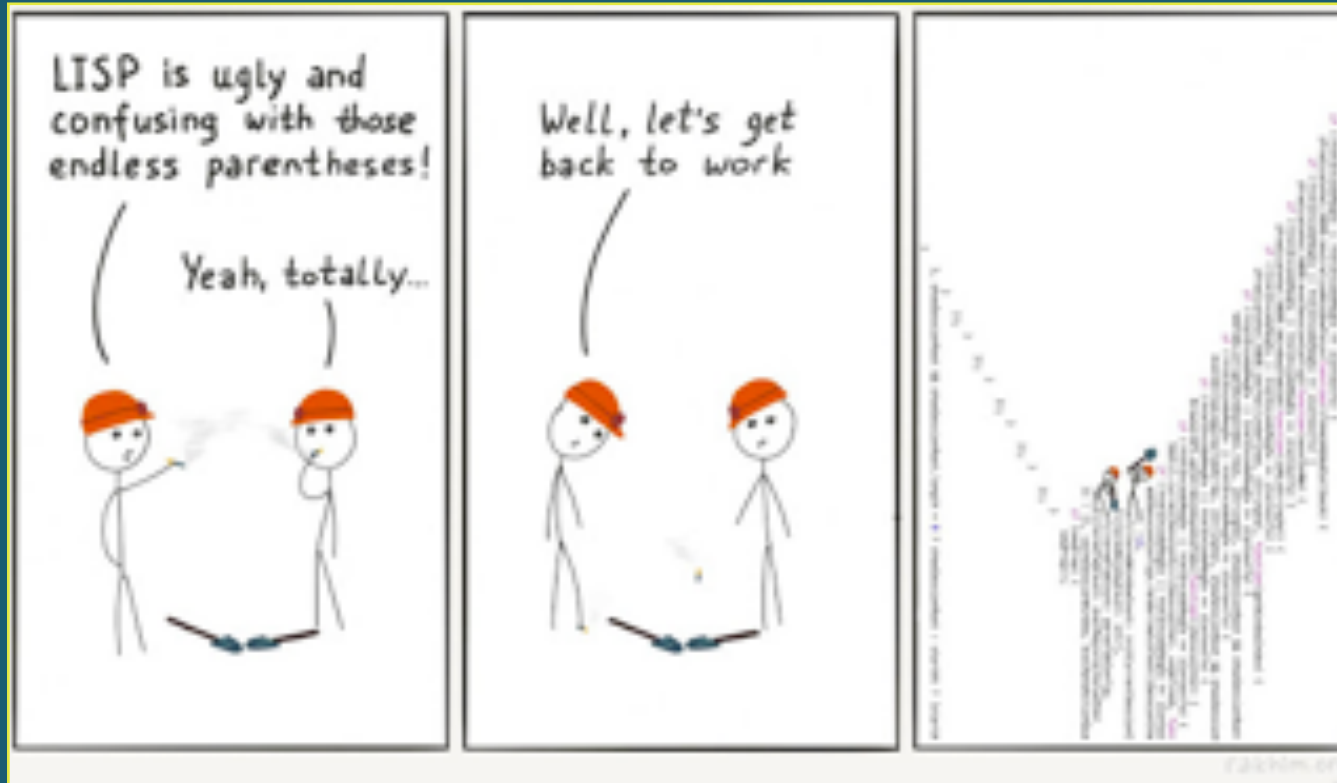
Robert Gentleman

Ihaka (2009)





# Early Versions of R



Martin Mächler

## R Becomes A GNU Project

From: Richard Stallman <rms@gnu.ai.mit.edu>  
To: ihaka@stat.auckland.ac.nz  
cc: rms@gnu.ai.mit.edu  
Subject: Re: Seen on your wishlist  
Date: Tue, 16 Sep 1997 21:56:06 -0400

So [explicitly], yes we would like R to be considered as a GNU program.

I hereby dub R GNU software!

Richard Stallman makes it official!

# R Core Team



Friedrich Leisch



Luke Tierney



Paul Murrell



Simon Urbanek



Uwe Ligges



Stefano Iacus



Martyn Plummer



Peter Dalgaard



Kurt Hornik



Douglas Bates



Seth Falcon



Deepayan Sarkar



Tomas Kalibera



Duncan Murdoch



Thomas Lumley



Michael Lawrence



Martin Morgan



Brian Ripley



Guido Masarotto



Martin Mächler



Duncan Temple Lang



# Version 1.0.0 and Beyond



R v.1.0.0 signed by the  
members of the R Core Team



v3.4.0—*You Stupid Darkness*—Also a reference to the political situation in 2017.



v2.14.0—*Great Pumpkin*  
(First named release)



## v4.0.2—*Taking Off Again* (current version)

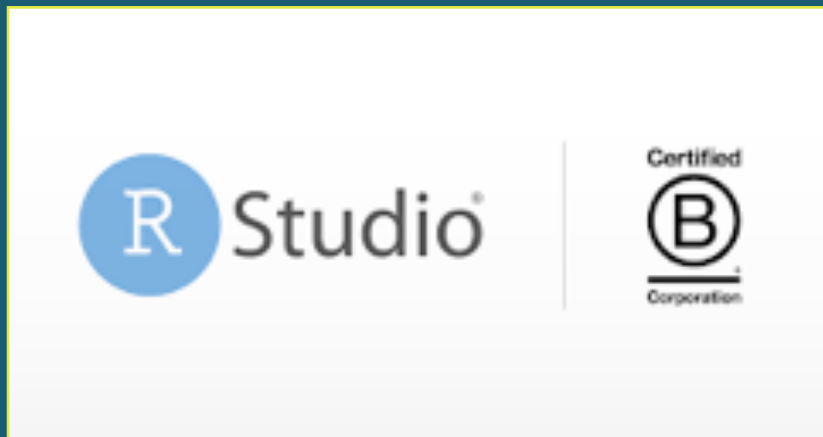


### v2.15.3—*Security Blanket* (wrap-up release)



# R Today

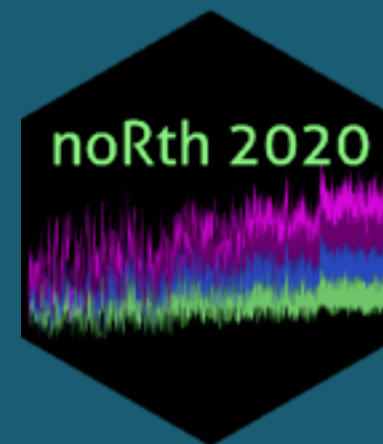
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Integrated IDE for using R



A peer-reviewed, open-access publication of the R  
Foundation for Statistical Computing



Local and national R-centric conferences.

Local meetups are a great way to connect with other R users!

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# THANK YOU!

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**SLIDES: <https://www.datadreaming.org/>**

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# References (and where to learn more)

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# Image Credits

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## Introducing... `S`: An Interactive Language for Data Analysis and Graphics

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## R Core Team

- Alchetron. [Brian Ripley page](#).
- ETH Zürich. [Martin Mächler faculty page](#).
- GitHub. [Michael Lawrence page](#).
- Google Scholar. [Deepayan Sarkar page](#).
- LinkedIn. [Tomas Kalibera page](#).
- New York University. [Stephano Iacus page](#).
- Roswell Park Comprehensive Cancer Center. [Martin Morgan page](#).
- Technical University, Dortmund. [Uwe Ligges faculty Page](#).
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- University of California, Davis. [Duncan Temple Lang faculty page](#).
- University of Copenhagen. [Peter Dalgaard faculty page](#).
- University of Iowa. [Luke Tierney faculty page](#).

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## R Core Team (cntd.)

- University of Natural Resources and Life Sciences. [Friedrich Leisch faculty page](#).
- University of Padova. [Guido Masarotto faculty page](#).
- University of Vienna. [Kurt Hornik faculty page](#).
- University of Warwick. [Martyn Plummer faculty page](#).
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