

SURVIVAL GUIDE FOR SCIENTISTS

# **Survival Guide for Scientist<sub>s</sub>**

Writing – Presentation – Email

*Ad Lagendijk*

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To Truusje, Wouter, Guido and Kristel



# PREFACE

Communication is part of almost any professional activity. For researchers, writing scientific papers and giving scientific presentations is a daily ritual. Scientists that do not practice these communication activities will not make any contribution to science. Fortunately, communication skills can easily be learnt by any professional. Unfortunately, many scientists – due to a chronic lack of self-knowledge – do not feel any necessity for improving their own communication competences. As a result, scientists often (50% of the time) give bad talks and often (50% of the cases) write low-quality manuscripts. In addition, many courses are given by people whose profession it is to give those courses. Lessons given by non-active researchers are hardly ever useful, but invariably a waste of time.

In the present guide I give very practical how-to advice on essential topics such as the foundations for writing scientific texts (including dealing with referees and editors), presenting data and research information, and the writing of collegial, efficient emails. Each section is organized as a collection of short rules, outlined and numbered in a logical order as self-explanatory pieces of information – allowing the reader the freedom to study any number of them in any desired order.

A number of the hints are certainly politically incorrect, but they are all the more useful and can be found nowhere else.

Originally the guides were aimed primarily at undergraduate, graduate, and postdoctoral students in the natural sciences. But I have discovered that also more senior scientists will profit from it

But it doesn't stop there: many of my hints, in particular those referring to presentations, are of invaluable use for a much broader audience of professionals, up to consultants and (public) managers.

Studying the full text will cost less than one hour and a half. Implementing the hints will immediately result in far better presentations, far better scientific papers and far better emails. In the beginning, adoption of the guidelines might cost somewhat more time. But in the end it will be amply rewarding: Your manuscripts will be more easily accepted by editors and referees, they will be better read, and better cited. Your talks will stand out. And all of this achieved by – in the long run – spending altogether less time on these activities.

This guide represents my views and my advice. But it is also meant to be your guide. Navigate to [www.sciencesurvivalblog.com](http://www.sciencesurvivalblog.com) to contribute, discuss or criticize my hints. The whole community will profit. Next editions will have your hints in them as well.

This text has evolved as the result of collaborations with PhD students, postdocs and senior colleagues of the *University of Amsterdam*, *University of Twente* and the *FOM-Institute for Atomic and Molecular Physics*. I am grateful for their input.

I am thankful to Sanford Bingham, CEO of *FileOpen Systems Inc.*, for his generous (software) support in the early stage of this project.

Ad Lagendijk

# LINKS IN WRITING GUIDE FOR SCIENTISTS

## 1.E.1.B Digital version

The *Writing Guide* will also be available as ebook (protected pdf). The pdf file will be prepared in cooperation with *FileOpen Systems*.

<http://fileopen.com>

## 1.E.4 Text formatter

In physics and mathematics the standard text formatters are members of the [Tex](#) family ([LaTeX](#) and [AmsTex](#), for instance). A number of my formatting hints will be given in '*LaTeX language*'. However, any reader will be able to translate these suggestions into commands for his own text formatter (such as *MS-Word*).

<http://en.wikipedia.org/wiki/TeX>

<http://en.wikipedia.org/wiki/LaTeX>

<http://www.ams.org/tex/amstex.html>

### 1.F.2 Further study

Some scientific organizations (examples: [AIP](#), [APS](#), [OSA](#), [IEEE](#)) and some journals offer long and useful style manuals. (I recommend in particular the *AIP Style Manual* and an [appendix](#) of the *Review of Modern Physics Style Guide*.) The definitive information is in the [Standard Handbook](#) of the [ISO](#), but unfortunately is

far too expensive (you can consult an [excerpt](#) from the ISO guidelines). If your appetite has been wetted after reading my Writing Guide, you can consult any of the above-mentioned style manuals. But you should realize that you are expected to work on science and on actually writing scientific papers, and not to work too much on reading about how to write scientific papers.

[http://www.aip.org/pubservs/style/4thed/AIP\\_Style\\_4thed.pdf](http://www.aip.org/pubservs/style/4thed/AIP_Style_4thed.pdf)

<http://forms.aps.org/author/styleguide.pdf>

[http://ao.osa.org/submit/style/jrnls\\_style.cfm](http://ao.osa.org/submit/style/jrnls_style.cfm)

<http://standards.ieee.org/guides/style/>

<http://rmp.aps.org/files/rmpguapa.pdf>

[http://www.iso.org/iso/iso\\_catalogue/catalogue\\_tc/catalogue\\_detail.htm?csnumber=3653](http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=3653)<http://www.iso.org/iso/home.htm>

<http://www.tug.org/TUGboat/Articles/tb18-1/tb54becc.pdf>

## 1.G Improving your English

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If you want to improve your English, listen to English radio programs (like the [BBC World Service](#)), read high-quality intellectual magazines as the [New York Review of Books](#), watch [CNN](#), or watch English-spoken TV programs (without subtitles in your own language). Make sure that presentations and scientific discussions in your group are in English.

A useful and amusing resource is Paul Brians' complete website on [Common Errors in English Usage](#).

<http://www.bbc.co.uk/worldservice/>

<http://www.nybooks.com/>

<http://edition.cnn.com/>

<http://www.wsu.edu/~brians/errors/>

### 2.B.2.A Computer programs

Make excessive use of [asserts](#) (or the equivalent of the assert macro/function in your favorite programming language). If the assert function does not exist, program it yourself.

If you keep old versions of your computer program, give them obvious names, explain in the first comment why this version of the source code has become obsolete and make the file read-only. Show your computer program(s) regularly to your supervisor and coworkers.

<http://en.wikipedia.org/wiki/Assert.h>



### 3.A Tex family

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The standard text formatter for texts that contain a lot of mathematical formulas is (*La*)*TeX*. On the internet complete and simple-to-use (*La*)*TeX* distributions can be downloaded. I use *MikTeX* to great satisfaction. For *Windows* *WinEdt* is the standard editor for *LaTeX*. You can use better front-ends like *Scientific Word*, but they often include proprietary macros. You can use *Scientific Word* as clean as possible by starting it with a style file from your favorite journal, for instance an *APS-(LaTeX)*-style file and saving always to standard *LaTeX*. Many publishers allow submission of articles in (*La*)*TeX*.

<http://www.ctan.org/>  
<http://www.miktex.org/Setup.aspx>  
<http://www.winedt.com/>  
<http://www.mackichan.com/>

#### 3.A.2 Compatibility

The *LaTeX 2.09* version is too old now. You have to use the newer version *LaTeX2<sub>ε</sub>*.

<http://www.ctan.org/tex-archive/info/lshort/english/lshort.pdf>

### 3.B *MS-Word* survival

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It is quite difficult to make professional publications with *MS-Word*. This is because *MS-Word* does a very lousy job on justification. With some *effort* you can improve the look of a printed *MS-Word* manuscript.

<http://www.aaronshp.com/publishing/WordType.html>

#### 3.B.5 Mathematical equations

*MathType* is a plug-in for *MS-Office* that considerably improves equation editing (much better than the *MS-Office Equation Editor*).

<http://www.dessci.com/en/products/mathtype/>

#### 3.B.7 Navigation

Users of your text can now easily navigate. Tell them of this navigation possibility because the world is full of ignorant *MS-Word* users. Maintaining and improving the text also becomes much simpler.

When exporting to pdf you might want your numbering of headings to be exported to the pdf file. *Here* you can find how you can do this.

<http://pubs.logicalexpressions.com/Pub0009/LPMArticle.asp?ID=551>

#### 5.A.4.B Subject classification

Be as precise as possible. Do not try to attract readers on false pretexts. Well-organized societies, like the APS, maintain a comprehensive list of subject classification that has to be used on all papers submitted to these societies. In the case of the APS it is called the *PACS* (Physics and Astronomy Classification Scheme).

<http://publish.aps.org/PACS/>

#### 5.A.9.F Preprint server

For instance the Cornell University archive, [arXiv](http://arxiv.org/), which is an e-print service in the fields of physics, mathematics, non-linear science, computer science, and quantitative biology. These archive papers are not refereed, but as they are available to everyone, they can be cited.

<http://arxiv.org/>

#### 5.A.9.G Accepted for publication

Apparently you are, according to him, in the game of 'serial publications'. Or as the APS puts it: After a paper on whifnium we do not need a paper on whafnium and later one on whoofnium. See the very interesting [APS-text](#) on referee criteria.

[http://prola.aps.org/pdf/PRL/v28/i6/p331\\_1](http://prola.aps.org/pdf/PRL/v28/i6/p331_1)

#### 5.A.9.K Spelling of names

Check, and check again, that all the names are spelled correctly. Referee A. Kühn will be utterly displeased if you spell his name as "A. Kuhn". Never, ever use first names in the list of references.

Check the citation database [ISI Web of Knowledge](#), or *Elsevier's ScienceDirect*, or just Google the name with some extra keywords, if you are not sure about the spelling of the names. Do not be sloppy. Authors will feel insulted if you misspell their names. Referees will feel insulted. Why make all these enemies, when by paying attention and being accurate you can make friends?

<http://www.isiwebofknowledge.com/>  
<http://www.sciencedirect.com/>

#### 5.F.3.A Thesaurus

Use a Thesaurus on cd-rom. Buy one that you can fully run from your computer (that is without the necessity of having a cd or DVD in the CD-DVD-reader of your computer). Or buy in addition a computer program that emulates CD-ROM drives. (for instance from [CD-ROM Emulator](#))

<http://www.cdrom-emulator.com/>

##### 5.F.3.A.1 Online

There are a number of online Thesaurus websites these days (examples [Thesaurus.com](#) and [Merriam-Webster](#)). Their working can be slow and their interface is full of ads.

<http://thesaurus.reference.com/>  
<http://www.merriam-webster.com/>

### 7.A.3.A International bodies

International unions in mathematics, physics and chemistry (like [IUPAP](#), with its [Commission](#) on Symbols, Units, Nomenclature, Atomic Masses & Fundamental Constants, and [IUPAC](#) with its [Nomenclature and Symbols](#) web page, have published preferred notations and units to be used in scientific communication. See also the [NIST Reference](#). If your world is still full of Angstroms and inches you probably work in a retirement home.

<http://www.iupap.org/>

<http://www.physics.umanitoba.ca/IUPAP/C2.html>

[http://www.iupac.org/dhtml\\_home.html](http://www.iupac.org/dhtml_home.html)

<http://www.iupac.org/general/FAQs/ns.html>

<http://physics.nist.gov/cuu/Units/>

### 7.B.2 Equation signs and definition sign

The highly-specialized symbol " $\cong$ " means "is congruent to" from algebraic number theory. The above prescription may differ from community to community: In the [Unicode](#) standard " $\simeq$ " (U+2243) is defined as "asymptotically equal to".

<http://www.unicode.org/>

### 8.B.3 Font size in figures

The default font size for text labels of coordinate axes is always too small in standard commercial programs like [Origin](#). Reproduce a figure at the exact size it will appear in the journal.

<http://www.originlab.com/>

### 8.C.1 Compatibility

The newest version of *GSview* is developed by [Ghostgum](#) (with a delay nag screen if you do not want to pay).

<http://www.ghostgum.com.au/>

### 8.F Colorful figures

If too many values of the parameter have to be considered, other presentation modes have to be introduced. Commercial plot packages, like [Origin](#), allow for various solutions to these situations.

<http://www.originlab.com/>

#### **8.F.1.A Professional lighting**

Only a few colors, or grey scales, and use professional lighting, with shadows. This shadowing helps a lot in getting quantitative information from the plot. [Mathematica](#) is one of the very few programs that allow for introducing lighting conditions.

<http://www.wolfram.com/>

#### *14.B.1.A.6 Navigation*

The bookmarks in pdf can be generated from some versions of *MS-Word* or with the `hyperref` package in *Latex* (here is a [hyperref tutorial](#)).

<http://www.tug.org/applications/hyperref/manual.html>

#### *14.B.1.C.1 Html formatting*

If your paper has been prepared with standard word processors as *MS-Word* or the like, just use *Save As Web Page (filtered html)*. You should not have embedded your figures in the *MS-Word* file, but they should be in there as links. You really want to clean up the non-standard html *MS-Word* has produced, although you did save them as 'filtered' html. Cleaning up your web pages with an html editor like [Dreamweaver](#) works like a charm.

<http://www.adobe.com/products/dreamweaver/>

#### *14.B.1.C.2 Navigation*

Generating a navigation tree in html from an *MS-Word* or pdf source is best done with commercial software (for instance Art HTML Listing from [ZZEE](#)).

<http://www.zzee.com/>

#### **15.B.4.A Commercial copy protection**

There are a number of solutions:

Reading of your pdf files could be implemented as to require an extra plug-in in *Adobe Reader* (for example [FileOpen's WebPublisher](#)).

<http://www.fileopen.com/>

#### **15.B.5 Websites**

(Example: commercial website protection software [HTML Protector](#)). If, in addition, you use only absolute website hyperlinks and no relative links, off-line reading will be very cumbersome.

<http://www.antsoft.com/htmlprotector/index.htm>

## 16.A Abbreviations

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Abbreviations not explicitly explained in the text are:

ACS	<a href="#">American Chemical Society</a>
AIP	<a href="#">American Institute of Physics</a>
APS	<a href="#">American Physical Society</a>
IEEE	<a href="#">Institute of Electrical and Electronics Engineers</a>
IUPAC	<a href="#">International Union of Pure and Applied Chemistry</a>
IUPAP	<a href="#">International Union of Pure and Applied Physics</a>
NIST	<a href="#">National Institute of Standards and Technology</a>
OSA	<a href="#">Optical Society of America</a>

<http://portal.acs.org/portal/acs/corg/content>

<http://www.aip.org/http://www.aps.org/>

<http://www.ieee.org/portal/site>

[http://www.iupac.org/dhtml\\_home.html](http://www.iupac.org/dhtml_home.html)

<http://www.iupap.org/http://www.nist.gov/>

<http://www.osa.org/>

## 16.B Trademarks

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<http://www.winedt.com>

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<http://www.antssoft.com/index.htm>

Macintosh is a registered trademark of [Apple Computer Inc.](#)

<http://www.apple.com/>

MathType is a product of [Design Science](#).

<http://www.dessci.com/en/>

ScienceDirect is a registered trademark of [Elsevier B.V.](#)

<http://www.sciencedirect.com/>

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<http://www.fileopen.com/>

GSview is a product of Ghostgum Software Pty Ltd.

<http://www.ghostgum.com.au/>

Google is registered trademark of [Google Inc.](#)

<http://www.google.com/corporate/index.html>

Thesaurus.com is a product of [Lexico Publishing Group, LLC](#).

<http://www.lexico.com/>

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<http://www.mackichan.com/>

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<http://www.adobe.com>

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<http://www.paragon-online.de/>

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<http://www.thomson.com/>

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<http://www.wolfram.com/>

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<http://www.merriam-webster.com/>

Art HTML Listing is a product of [ZZEE](#).

<http://www.zzee.com/>

**LINKS IN  
PRESENTATION GUIDE  
FOR  
SCIENTISTS**

### 1.C.1 Discussion groups

The author of the *Presentation Guide*, that is me, has over 30 years of experience in reading and writing scientific papers and in hearing and delivering scientific presentations. In my opinion many of the hints in this guide are crucial for delivering excellent presentations.

But it is also your guide: if you do not agree with one, some, or many of my hints, post your ideas at the weblog [www.sciencesurvivalblog.com](http://www.sciencesurvivalblog.com). If more people agree with you, the *Presentation Guide* will be improved by implementing your advice.

<http://www.sciencesurvivalblog.com>

### 1.D Presentation formatter

The standard these days for presentation software is Microsoft [PowerPoint](#). The Macintosh people will use a program like [Keynote](#). The *Unix-Linux* people will very likely use *Sun's* [StarOffice](#). These applications have a lot of inbuilt facilities for making a slide show.

Another acceptable way of making a presentation with a computer is to make individual slides with a graphics program and bind these slides, for instance with *Adobe Acrobat*. The collection of slides can then be presented with a viewer program, for instance [Adobe Reader](#) for pdf files.

Or you can make your slide show as a collection of web pages, and use some [Java](#) slide-show software.

If a slide-showing program lacks the facility to show in full screen mode, I will strongly advice against its use. The audience will see a cluttered screen of which only a part relates to the presentation.

<http://office.microsoft.com/en-us/powerpoint/default.aspx>

<http://www.apple.com/iwork/keynote/>

<http://www.sun.com/software/star/staroffice/impress.jsp>

<http://www.adobe.com/products/reader/>

<http://java.sun.com/>

### 1.F.1.B Digital version

The *Presentation Guide* will also be available as ebook ( a protected pdf). The pdf file will be prepared in cooperation with [FileOpen Systems](#).

<http://fileopen.com>

### 1.G.1 Communities

Presentation quality is, to some extent, a matter of taste. You can air your opinion at our weblog [www.sciencesurvivalblog.com/](http://www.sciencesurvivalblog.com/)

<http://www.sciencesurvivalblog.com/>



## 1.J.1 Improving your English

If you want to improve your English, listen to English radio programs (like the [BBC World Service](#)), read high-quality intellectual magazines as the [New York Review of Books](#), watch [CNN](#), or watch English-spoken TV programs (without subtitles in your own language). Make sure that presentations and scientific discussions in your group are in English and not in Russian or French.

<http://www.bbc.co.uk/worldservice/>

<http://www.nybooks.com/>

<http://www.cnn.com/>

## 3.B.3 Female speakers

A number of tips for female speakers have been published recently in [Physics Today](#).

[http://scitation.aip.org/journals/doc/PHTOAD-ft/vol\\_58/iss\\_2/54\\_1.shtml](http://scitation.aip.org/journals/doc/PHTOAD-ft/vol_58/iss_2/54_1.shtml)

### 4.A.4.B.2 Hyperlinks

Nowadays credit and references are often given in the form of a uri ([Unified Resource Identifier](#)). Do not fully reproduce the uri if it is ugly and long. Nobody in the audience will be able to follow that link anyway. Put something more useful there: "all information and papers can be found on our website [www.mydomain.edu](#)".

[http://en.wikipedia.org/wiki/Uniform\\_Resource\\_Identifier](http://en.wikipedia.org/wiki/Uniform_Resource_Identifier)

## 4.C.1 Font

Many fonts are designed for printing purposes and not for screen reading. On the web you will see that [sans serif fonts](#) as [Verdana](#) and [serif fonts](#) as [Garamond](#) are very popular. Sans serif fonts are supposed to be better for screens. I leave it to your taste what you use in your presentations.

<http://en.wikipedia.org/wiki/Sans-serif>

<http://www.microsoft.com/typography/web/fonts/verdana/default.htm>

<http://en.wikipedia.org/wiki/Serif>

<http://en.wikipedia.org/wiki/Garamond>

## 4.D.2.C Other bullet characters

You can use the font [Webdings](#), or any other symbol font, for special symbols like diamonds, hands, and arrows.

<http://www.microsoft.com/typography/web/fonts/webdings/default.htm>

#### 4.D.2.D Bullets as pictures

But also pictures of numbers or characters can look much better than their font version. You can find many useful 'bullet' pictures on the net (use [Google Search Images](#)). With a simple graphics program you can crop the picture to the minimum. Sometimes you need to add some extra space to the left or right of the picture to get a nicely aligned set of bulleted lines.

I often use as bullet a colored picture of the 'checked' symbol (✓).

<http://images.google.com/>

##### 4.D.2.F.7 Professional examples

If you want to violate the rules I have just described about multi-lined outlined lists, you have to look at how professionals do this. Checking the websites of companies like [Microsoft](#) and [Adobe](#) will give you lots of ideas. Do not reinvent the wheel.

#### 4.F.1.A Contrast

A simpler way is to enhance the contrast of the pasted bitmap with a graphical program like [PhotoShop](#) (for instance *Filter*, *Sketch*, *Photocopy*).

<http://www.adobe.com/products/photoshop/index.html>

#### 4.F.1.B Math with *Tex*

There are programs that let you directly turn *LaTeX* macros into jpg figures that you can paste into your presentation. These programs generate jpg figure files for every equation you need. [TexPoint](#) (old versions are freeware) does it and [Scientific Word](#) does it.

<http://texpoint.necula.org/>

<http://www.mackichan.com/index.html?products/sw.html~mainFrame>

#### 4.F.1.C Math with *MathType*

If you do not want to use the *Tex* family, you can use the *equation editor* of the *MS-Office* family. I strongly recommend you buy [MathType](#), with is an upgrade of the *equation editor*. <http://www.dessci.com/en/products/mathtype/>

##### 4.F.4.A.1 Fonts

For a number of inline math symbols you probably will need a script font (usually at a much larger font size than the size of the accompanying alphanumeric text). I always use [Brush Script](#).

[http://en.wikipedia.org/wiki/Brush\\_Script](http://en.wikipedia.org/wiki/Brush_Script)

## 4.G.1 Figures not being plots

The graphics we are referring to here are pictures, photos, logos, sketches etc. In general their information density is not so structured and not so dense as in scientific plots. They are typically made, or edited with programs like *Adobe's PhotoShop* or *Corel's PaintShop*. Figures can vary tremendously in complexity, from very simple to very complicated.

<http://www.adobe.com/nl/products/photoshop/photoshop/>  
<http://www.corel.com/servlet/Satellite/nl/nl/Content/1150905725000>

### 4.G.1.A Bitmap or vector

For insertion in your presentation you should not use the vector format as these figures easily become too large (several megabytes). The standard format for vectorized pictures for is *postscript*. Convert them to jpeg with the cheap *GSview* or with more expensive full-fledged graphics editors.

<http://en.wikipedia.org/wiki/PostScript>  
<http://www.ghostgum.com.au/>

### 4.G.1.B Bitmaps with poor contrast

If you copy/paste a bitmap that was not made for presentation purposes (like a figure directly out of a digital version of a scientific journal), it might have poor (black and white) contrast. A simple way to remedy this is to enhance the contrast of the pasted bitmap with a graphical program like *PhotoShop* (for instance *Filter*, *Sketch*, *Photocopy*).

<http://www.adobe.com/products/photoshop/index.html>

## 4.G.2 Scientific plots

Scientific types of graphs have axes ( $x$ ,  $y$ , and possibly  $z$ ). Physicists, mathematicians and chemists use these a lot. They are typically made with plotting programs like *Origin* and *SigmaPlot*.

<http://www.originlab.com/index.aspx?s=8&lm=213&pid=509>  
<http://www.sigmaplot.com/>

### 4.G.2.H Repair figures

If you are lucky, the figures are embedded in your source file as an (*COM*, in earlier days called *OLE*) object, and you have on your computer the application installed that can handle objects of that type. Clicking on the figure gives you the server program and you can make the lines thicker and the fonts larger.

[http://en.wikipedia.org/wiki/Component\\_Object\\_Model](http://en.wikipedia.org/wiki/Component_Object_Model)  
[http://en.wikipedia.org/wiki/Object\\_Linking\\_and\\_Embedding](http://en.wikipedia.org/wiki/Object_Linking_and_Embedding)

#### 5.A.3.D.1 Fixed-line phone

Kits for connecting phones around the world exist. See for [example](#).

<http://www.targus.com/us/default.asp>

#### 5.A.3.E Pointer

The problem with them is that they are illegal in a number of European countries (soccer hooligans would love to have them). There exist a number of American or Asian companies that sell them ([Here is one example](#), or use *Google*). Be sure that the one you buy takes normal batteries.

<http://www.z-bolt.com/>

## 8.A TRADEMARKS

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<http://www.apple.com/>

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<http://www.microsoft.com/en/us/default.aspx>

Origin is a product of [OriginLab Corporation.](http://www.originlab.com/)

<http://www.originlab.com/>

Scientific Word is a product [MacKichan Software Inc.](http://www.mackichan.com/)

<http://www.mackichan.com/>

SigmaPlot is a product of [Systat Software, Inc.](http://www.sigmaplot.com)

<http://www.sigmaplot.com>

# LINKS IN EMAIL GUIDE FOR SCIENTISTS

## 1.C.1 Size of the *Email Guide*

Suggestions for additions, corrections or other ideas for changes and improvements are welcome if they do not make the text much longer.

The preferable way is to post a comment at the weblog [www.sciencesurvivalblog.com](http://www.sciencesurvivalblog.com).

<http://www.sciencesurvivalblog.com>

## 1.C.2.B Digital version

The *Email Guide* will also be available as ebook (a protected pdf). The pdf file will be prepared in cooperation with [FileOpenSystems](http://fileopen.com).

<http://fileopen.com>

## 2.D Internet philosophy

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The rules of the internet, protocols, are voluntary standards, set out in [Requests for Comments](#).

<http://www.rfc-editor.org/>

### 2.D.1 Requests for Comments

All the *Requests for Comments* ([RFCs](#)) can be found on the internet. The basic idea about email, and as a matter of fact about all internet data transfer, is to communicate using plain [ASCII](#). ASCII text is mean and lean, and universal.

Commercial software developers try to destroy these standards and replace them by their own proprietary standards.

<http://www.rfc-editor.org/>

<http://en.wikipedia.org/wiki/ASCII>

### 2.D.2 ASCII as standard

Email communication, like all internet protocols, involves plain simple files, which are sent around the internet in [ASCII](#), either in a directly readable form, or in an encrypted ASCII form, [Base64](#) (so as to be able to send binary files).

### 2.E.2 Email servers

Your employer or your provider has at least two server programs continuously running for you (and your colleagues). One of these servers receives the email from all over the world sent to you and delivers it to your mailbox: usually this server is using one of the following two protocols: [POP3](#) or [IMAP4](#).

The other program (server) run and maintained by your employer or your provider, is the program that sends emails from your organization to computers all over the world. Usually this is an [SMTP](#) (or [ESMTP](#)) server.

[http://en.wikipedia.org/wiki/Post\\_Office\\_Protocol](http://en.wikipedia.org/wiki/Post_Office_Protocol)

<http://en.wikipedia.org/wiki/IMAP>

[http://en.wikipedia.org/wiki/Simple\\_Mail\\_Transfer\\_Protocol](http://en.wikipedia.org/wiki/Simple_Mail_Transfer_Protocol)

<http://en.wikipedia.org/wiki/ESMTP>

There are numerous email clients (like *Opera*, *Thunderbird*, *Pegasus*, *Outlook* and *Outlook Express*). They vary from having very sophisticated [GUI](#) (Graphical User Interface) interfaces to very down-to-earth [Perl](#) scripts, where you send email from the command line.

<http://en.wikipedia.org/wiki/GUI>

<http://en.wikipedia.org/wiki/Perl>

### 2.E.4 *Windows* or *Unix*

In the present guide I will often use examples based on using [Microsoft Outlook](#).

This focusing on *Outlook* does not limit this guide, as the vast majority of my comments are valid for many other email clients as well. And for those hints that seem to apply to *Outlook* only, readers will nevertheless be able to transfer the implementation of my advice to their favorite email program, like [Opera](#), [Pegasus](#), and [Thunderbird](#).

<http://office.microsoft.com/en-us/outlook/FX100487751033.aspx>

<http://www.opera.com/>

<http://www.pmail.com/>

<http://www.mozilla.com/en-US/thunderbird/>

### 3.B.1 Commercial anti-spam software

If you have multiple email addresses (that is POP3 mailboxes) of which some are not protected by spam detecting software, you have to buy a commercial spam-fighting program. I use [SPAMFighter](#) to great satisfaction.

<http://www.spamfighter.com/>

### 3.B.4 Spam reporting

To be able to report a spam-offender, you will need the complete message header of the offending email. Many email clients, for no reason, want to hide this header from you by all means. There are a [number of ways](#) around this limitation for all email clients, including tips on how to get at the [message header for Outlook](#).

<http://www.spamcop.net/fom-serve/cache/19.html>

[http://www.outlook-tips.net/howto/view\\_source.htm](http://www.outlook-tips.net/howto/view_source.htm)

## 3.C Viewing

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The standard user interface of an email client is a GUI (child) window that shows a multi-line, multi-column view (string grid view, without grid lines) with on each line information regarding a single email message. (With *Outlook* you really have to do your best to get it that way, but it is [possible](#): start Outlook from the command line with the *cleanviews* option, as "outlook/cleanviews".)

<http://www.outlook-tips.net/howto/grouping.htm>

### 3.C.2 Font

For a number of reasons a [monospace font](#) is to be preferred.

<http://en.wikipedia.org/wiki/Typeface>

## 3.F Dangerous emails

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Nowadays criminals try to send you emails to get hold of critical private information like credit card numbers and username/password combinations for your banking programs. They want to get to your bank account, [PayPal](#) account or other internet banking system.

<http://www.paypal.com>

### 4.B.2 Rtf

In principle, the idea behind *Microsoft's* rtf ([Rich text format](#)) is appealing: a general cross-platform encoded 7-bit ASCII.

If you insist on using different fonts in your email messages, like [Verdana](#) and [Garamond](#), and font styles, like bold and italic, you cannot use plain text. My advice is to use html in that case, and not rtf.

[http://en.wikipedia.org/wiki/Rich\\_Text\\_Format](http://en.wikipedia.org/wiki/Rich_Text_Format)

<http://en.wikipedia.org/wiki/Verdana>

<http://en.wikipedia.org/wiki/Garamond>



#### 4.B.3 Html

Html is a reasonably stable set of formatting rules.

<http://en.wikipedia.org/wiki/Html>

##### 4.B.3.B Lack of standardization

As soon as you use more sophisticated tricks, such as [CSS](#) files, you run into a minefield. It is the nightmare of all companies that do their marketing through email.

[http://en.wikipedia.org/wiki/Cascading\\_Style\\_Slides](http://en.wikipedia.org/wiki/Cascading_Style_Slides)

#### 4.B.7 Font

Your email client allows you to prescribe the font you are using for the mail you send. It is tempting to use a fixed-pitch font (each character has exactly the same size, like in a type writer, also referred to as monospace), like [Courier](#), [Fixedsys](#), or [Andale Mono](#).

<http://en.wikipedia.org/wiki/Courier>

<http://en.wikipedia.org/wiki/Fixedsys>

[http://en.wikipedia.org/wiki/Andale\\_Mono](http://en.wikipedia.org/wiki/Andale_Mono)

#### 4.J Credit card

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Either fax or use only websites of those companies that supports SSL ([Secure Socket Layer](#), you will see an "https" rather than an "http"), a very safe encrypted way of sending information over the net.

[http://en.wikipedia.org/wiki/Secure\\_Sockets\\_Layer](http://en.wikipedia.org/wiki/Secure_Sockets_Layer)

#### 5.A Multiple accounts

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Nowadays many scientists will have multiple accounts. Either because they have more than one affiliation, or they want to maintain low-security mail accounts – like [Yahoo!](#), [Hotmail](#), or [Google](#) – and a high-security account for their professional correspondence.

<http://www.yahoo.com/>

<http://www.hotmail.com>

<http://mail.google.com/mail/help/intl/en/about.html>

##### 5.B.1.C Web interface only

Another situation where you have no synchronization problems is when you have only one email account that you handle only through a webmail interface (I assume that your webmail provider allows you to store large amounts of data on their server, which for instance *Google's Gmail* does.) The disadvantage is that you always have to be on-line to handle your new e

<http://mail.google.com/mail/help/intl/en/about.html>

##### 5.B.1.D Network drive only

Your provider will probably backup the network drive. That means restoration

of lost files will always need the support of the ICT-people of your employer. That is, unless they use a sophisticated [RAID](#) disk system, in which case you can do the restoration yourself.

<http://en.wikipedia.org/wiki/RAID>

#### 5.B.2.B VPN

Nowadays [VPN](#) (Virtual Private Network) servers are becoming very popular. As such they became the target for many hackers and crackers.

<http://en.wikipedia.org/wiki/VPN>

#### 5.B.3.A USB device

The best solution is to have a large capacity, fast and very compact USB 2.0 drive. A USB 2.0 stick might also do it. But a disk is much faster and has a much higher capacity. I have a light-weight 20 Gbyte [Arc Disk](#) disk

<http://www.archos.com/>

#### 5.B.3.B Synchronization

You will also need a good synchronization program, so that all the files on your computer are in sync with the files on your USB 2.0 device. It requires discipline. Whenever you leave work (home) you have to sync and whenever you start at home (work) you have to sync again. That is four times per day. I use [Beyond Compare](#).

<http://www.scootersoftware.com/>

### 5.C Retrieving emails

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For many of the popular email clients like *Outlook* there are third-party (usually not freeware) plug-ins to remove duplicate emails. I use [Duplicate Email Remover](#).

[http://www.mapilab.com/outlook/duplicate\\_remover/](http://www.mapilab.com/outlook/duplicate_remover/)

### 6.D Finding

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You could consider using free indexing software (like [Google Desktop](#)). Or better use a superior, non-free, product, like [dtSearch Desktop](#). This program indexes your whole computer, on a scheduled time, requested by you. With superb finding filters you can find anything on your computer. *dtSearch Desktop* can search through *Outlook* folders.

<http://desktop.google.com/en/>  
<http://www.dtsearch.com/>

### 7.B Encryption

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Encryption is not useful for your daily email messages. There is a number of neat encryption methods, like [PGP](#) (*Pretty Good Privacy*). But these methods are only practical if the communication is between a very

<http://www.pgpi.org/>

#### 7.D.1.A Protect partitions

Use a program like [Partition Magic](#) to make at least two partitions on your hard disk.

<http://www.symantec.com/norton/products/overview.jsp?pcid=sp&pvid=pm80>

#### 7.D.1.B No traces

Your employer may have installed spyware programs. Run anti-spyware software not supplied by your employer. Wipe/delete temporary files. There are many locations on your hard disks where temporary files are located. The *Norton CleanSweep* part of [Norton SystemWorks](#) can find them for you.

<http://www.symantec.com/norton/products/overview.jsp?pcid=sp&pvid=nsbasic2008>

### 8.A Uri's

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The location of files in the internet is denoted through [url's](#) (universal resource locators) and [uri's](#) (universal resource identifiers).

[http://en.wikipedia.org/wiki/Uniform\\_Resource\\_Locator](http://en.wikipedia.org/wiki/Uniform_Resource_Locator)

[http://en.wikipedia.org/wiki/Uniform\\_Resource\\_Identifier](http://en.wikipedia.org/wiki/Uniform_Resource_Identifier)

#### 8.B.1 Spoofing

Double-lookup (translating the name into an IP-address and then vice-versa) is one of the techniques for spotting malicious users. [Spoofing](#) IP-addresses can be detected in this way.

### 8.C Core protocols

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On the internet there are two core transport protocols: [UDP](#) and [TCP](#).

Using UDP, programs on networked computers can send short messages known as [datagrams](#) to one another.

[http://en.wikipedia.org/wiki/User\\_Datagram\\_Protocol](http://en.wikipedia.org/wiki/User_Datagram_Protocol)

[http://en.wikipedia.org/wiki/Transmission\\_Control\\_Protocol](http://en.wikipedia.org/wiki/Transmission_Control_Protocol)

<http://en.wikipedia.org/wiki/Packet>

## 8.E Email RFC

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The most important Requests for Comments regarding internet email are (SMTP) [RFC 821](#), [RFC822](#), [RFC1521](#), [RFC2047](#), (POP3) [RFC1725](#), [RFC1939](#), and (IMAP4) [RFC1730](#), [RFC2195](#).

<ftp://ftp.rfc-editor.org/in-notes/rfc821.txt>  
<ftp://ftp.rfc-editor.org/in-notes/rfc822.txt>  
<ftp://ftp.rfc-editor.org/in-notes/rfc1521.txt>  
<ftp://ftp.rfc-editor.org/in-notes/rfc2047.txt>  
<ftp://ftp.rfc-editor.org/in-notes/rfc1725.txt>  
<ftp://ftp.rfc-editor.org/in-notes/rfc1939.txt>  
<ftp://ftp.rfc-editor.org/in-notes/rfc1730.txt>  
<ftp://ftp.rfc-editor.org/in-notes/rfc2195.txt>

## 9.A Abbreviations

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Important abbreviations often used in the text are:

POP3	<a href="#">Post Office Protocol</a> version 3
SMTP	<a href="#">Simple Mail Transfer Protocol</a>
RFC	<a href="#">Request for Comments</a>
IMAP4	<a href="#">Internet Message Access Protocol</a> version 4

[http://en.wikipedia.org/wiki/Post\\_Office\\_Protocol](http://en.wikipedia.org/wiki/Post_Office_Protocol)  
[http://en.wikipedia.org/wiki/Simple\\_Mail\\_Transfer\\_Protocol](http://en.wikipedia.org/wiki/Simple_Mail_Transfer_Protocol)  
[http://en.wikipedia.org/wiki/Request\\_for\\_Comments](http://en.wikipedia.org/wiki/Request_for_Comments)  
[http://en.wikipedia.org/wiki/Internet\\_Message\\_Access\\_Protocol](http://en.wikipedia.org/wiki/Internet_Message_Access_Protocol)

## 9.B Trademarks

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