Imagery v1.8

A utility to convert Macintosh, Apple IIgs, Atari ST, Amiga, IBM PC and
Unix graphics files into Macintosh compatible TIFF, GIF and PICT2 files.

Sunday 31 May 1992

What's New in Version 1.1

<u>New formats</u>

Compuserve's GIF

Compuserve RLE and C-RLE

IBM Targa files (modes 0, 1, 2, 3, 9, 10 and 11) (untested)

Atari FCP (Flash Colour Picture) version of RLE

Atari IMG files (IBM IMG files not supported yet)
- old format, STTT and XIMG formats supported

Additions to existing formats

Window's BMP compressed files (BMP4 and BMP8)
Amiga IFF RGBN and RGB8 files

Fixes and improvements

IBM GRASP control file now written as TEXT file
IBM GRASP image files are now automatically converted to TIFF
User can now select destination directory

What's New in Version 1.2

New formats

IBM-PC EGAPaint/ColoRIX RIX files (untested)

Additions to existing formats

Atari ST DR Doodle (DOO) and STad PAC format's now tested
(Thanks to Wolfgang Lang for the sample files)

Fixes and improvements

Better on-line file support documentation
Monochome TIFF-P palette now automatically generated

What's New in Version 1.5

New formats

IBM-PC (untested)
QRT Raytrace (.QRT) files
MTV Raytrace (.MTV) files

IBM-PC (tested)
.IMG DRI GEM Image files (mono & colour)

Unix (tested)
XWindows Window Dump Files
(.XWD - Thanks to Michael Garnett for the sample file)
XWindows XBitmap Files (.XBM - Thanks to Mike at NCSU for the generator program)
Portable Bitmap (.PBM .PGM .PPM) files

Unix (untested)
Sun Raster (.RAS) files
CMU Window Manager Dump Files (.CMU)
MGR Window Manager Dump Files (.MGR)
FITS Files (.FIT)

HIPS Files (.HIP)
Usenet FaceSaver Files (.FSV)
Xerox Doodle Brush File (.XDO)

Additions to existing formats
Amiga IFF Extra-halfbright mode is now supported. (Untested)

Fixes and improvements
PIC decoder could hang on improperly created files and colours were sometimes incorrectly translated. These problems have been fixed.

Previous versions of Imagery would allow you to select an output format which has fewer bits per pixel then the current image. In fact, Imagery doesn’t support this yet with the result that the output file contains gibberish. For example: if the original file was a four bit palette image and the output was TIFF B/G, the output file would be a four bit grey image, but no mapping for the colours would take place - the image would look strange. Similarly, a 24 bit RGB image would generate total garbage if TIFF P or TIFF B/G were selected. However, most of the 24 bit RGB modes override the user selection, so this has not been seen too often.
This version of Imagery is smarter about such things and will not let you select an inappropriate mode, forcing the selection to the lowest valid one. There is no way to generate a TIFF-B monochrome bitmap from a grey or colour image in this version. That feature will be available in v2.0 which is slated for release at the end of March or April 1992.

New features
In answer the the many requests for PICT2 and GIF output, Imagery now offers these output formats. PICT1 (old pict) is not supported, but since System 6.0.5, all Macs including those without colour quickdraw have been able to decode colour PICT2 files. GIF files are always interlaced - since the primary use for GIF is to upload images, they should be interlaced as this lets a downloader preview the image in less than 1/8th the file's full download time. Imagery does not support GIF files of more than eight bit (256 colour) depth nor PICT2 files for 24 or 32 bit colour (yet).

What's New in Version 1.6

New formats
Unix (tested)
Sun Raster Files (.RAS)

Fixes and improvements
Critical failure in Atari ST PC1, PC2 and PC3 format conversion fixed.
(Thanks to Ewen Wannop for pointing out the problem)
Some GRASP GL files would cause lockup and bizarre offsets - fixed.
(Thanks to Paul Jacoby and Harry@UMSLVMA.UMSL.EDU for their help)

What's New in Version 1.7

Fixes and improvements
IBM PIC, GL and PCX format support improved. Fewer crashes.
(Thanks to Paul Wing and Paul Jacoby for pointing out the problem)

Complete overhaul of memory checking done. Fewer crashes on unusual files. FIxes peculiar hehaviour on mac IIsi and IIcis.

(Thanks to Candi on AOL and Wally for their help.)

Amiga IFF-HAM colour translation now correct and ".HAM" or ".LBM" extensions are recognised.

(Thanks to Mike Monaco for his help)

New Features

PICT2 24bit files are now possible. Those formats which required that format, such as Amiga HAM files, now work. Also, all PICT2 files now use the "dither" copy mode which will let them translate better on monochrome and non-colour Quickdraw Macs. Note, you require System 7 to see 24-bit direct colour images.

Known Problems

GIFLite

It seems that there is some sort of GIF "supercompressor" called GIFLite which is only available for the PC. It seems to compress GIF files upto an additional 25% and claims to keep the files compatible with standard GIF. According to Paul Wing, some will work with Imagery but others crash seriously. I'm afraid that at this time, I have no intention to support this variant of GIF. If you do have problems with GIFLite files, try GIFConverter.

Lotus PIC Files

As I mention later in this document, MS-DOS tends to rely on a simple three letter extension to identify what the contents of a file are. Not surprisingly, some three combinations, such as "DOC", "TXT" and "PIC" get used a lot. Lotus and Pictor both use the "PIC" extension, but the files are very different inside. Imagery cannot read Lotus PIC files at this time, although I am attempting to locate documentation on this file format.

General Thanks

Thanks to Stu Gove for giving the Sun Raster section a good testing, to Gary Kessler for his excellent suggestions and of course, Paul Jacoby for poking where necessary when necessary.

What's New in Version 1.8

New formats

Macintosh(tested)

Photoshop (8BIM)

Grey, RGB and CMY/CMYK only. HSL, HSV and multichannel not supported.

Thunderscan (SCAN)

1, 4 and 5 bit files.

Imagestudio RIFF (Raster Image File Format)

Grey, RGB and CMY/CMYK only. HSL, HSV not supported.

"TPIC" Targa Files

Now map to ".TGA" files (see below).

IBM-PC(tested)

Targa (TGA)

Uncompressed modes have been tested. RLE not tested, Complex not supported.

Lotus PIC files

(Note, the handling of text in this mode is not the best... Thanks to Lotus for docs)

The type of ".PIC" is automatically detected.

Apple IIgs(tested)

Super-HiRes (.SHR) files.

Apple IIgs(partially tested)

Apple Preferred (.PNT) files. (Thanks to C. K. Haun)

Generic (tested)

"RAW" file import. See section on this mode as it is fairly complex.

Fixes and improvements

New file icons for generated files which more clearly identify the type of image saved.

Imagery now has a rather simple image viewing feature. If you select "Display" as an output format, the file will be converted then displayed. Please note, this feature works best under System 7 and may not work for 24bit files under System 6. Please note, this was thrown in more as a thought exercise and it's pretty lame... next version should be better and offer more features.

IBM-PC PCX mode has been completely rewritten. Should work with just about everything.
IBM-PC BMP now handles more variants (Thanks to Jay Van Ark for these)
XWindows XWD pixel/byte order bug fixed. Should handle more images.
(Thanks to Jim McGowan for his samples)

Future enhancements

The next version will include Targa "TGA" and ZSoft "PCX" output. I have been told that a lot of "high-end" drawing programs for the PC can only support TGA files and that many other lower-end drawing programs can only support PCX. For example, Windows' Paint program only supports BMP and PCX (which is all the stranger when you consider that Microsoft was one of the two original designers of TIFF...). I may also add an "IFF" output mode for Amiga users.

Abstract

Imagery is a simple utility which converts a range of graphics files from the IBM PC, Macintosh, Apple IIgs, Atari ST, Unix and Amiga computers. The program generates standard TIFF files in TIFF 4.0/5.0 format compatible with Freehand, Digital Darkroom, Superpaint and many other drawing and editing programs.

Introduction

Like many people who wanted a Macintosh but couldn’t afford one, in 1985 I bought an Atari ST - one of the first in Canada and the very first one in Alberta. Within a year, Dave Small created a gimmick called “MagicSac” which allowed an ST to work like an old 64K ROM version Mac.

I managed to get a lot done on a single 400K drive system with about 400K free memory. Later I added a second 800K drive. However, when Small left his company to form a new company which created a 128K ROM version of MagicSac called Spectre 128 (later Spectre GCR), I found myself with an interesting problem.

To upgrade my ST to the point where it could be seriously useful with Spectre, not to mention buying the Spectre and obtaining a legal set of Mac 128K ROMs - which was becoming increasingly difficult, I would end up spending almost as much as buying a brand new Macintosh SE.

Also, Atari had a bad upgrade record with me. My original machine did not have ROMs, although the advertising guarenteed them. Same for an internal RF modulator. Atari never offered the RF modulator as an upgrade and only offered the ROMs as a $30 upgrade. Not much, I appreciate, but I had already more than paid for them. Well, when I asked Atari how I could upgrade my Atari ST to STm level (let alone STe), I was told “You’ll have to buy a new machine” - so I did... a Macintosh.

However, I was stuck with a **lot** of Atari image files in five or six formats (Degas, Degas Compressed, Neochrome, NVision and a handful of random singles) none of which were compatible with each other, let alone with anything on the Mac.

So, I wrote a program then called “TIFF-ST” which converted all of these various formats into TIFF files. I chose TIFF for a couple of reasons. First, it is a standard and an easily implimented one. It’s not proprietory. There is no special complex compression system unless you choose to use it and virtually all Mac graphics programs can use a version of TIFF.

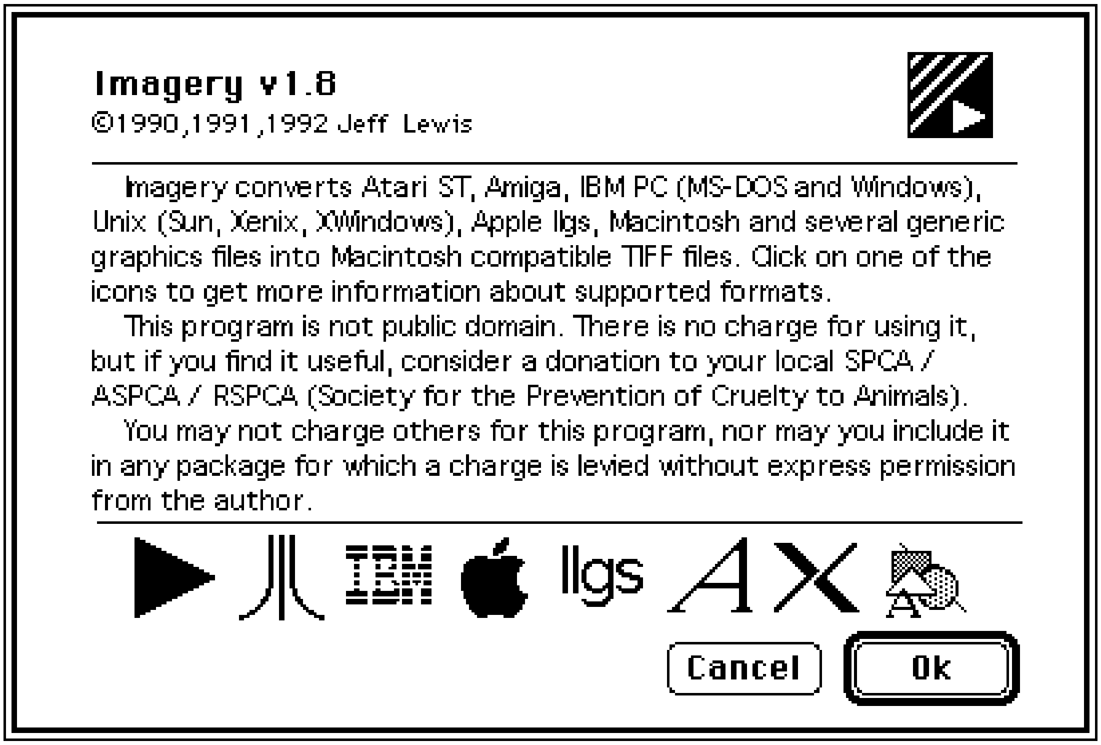
Later, I found I was getting Amiga IFF files as well as a variety of IBM PC graphics files such as GRASP and PCX. With Windows, BMP was added to the list. I added these to the original TIFF-ST program and changed its name to Imagery.

Since then, I have spent a quite a bit of time and effort gathering nearly 4.3MB of information on every file format I can find. I am compiling these files into a single document which I hope to post or publish sometime early next year. Many of these graphics formats have been added to Imagery and I am still adding more with the addition of PICT based images to handle a
collection of vector based image formats such as DXF, IGES and CGM to occur in version 2.0.

Usage

Imagery is very simple to use and under System 7 can be used in two different ways.

The simplest way is to launch the program by double clicking the Imagery icon or by selecting the Imagery icon then selecting Open... from the File menu. The first dialog box is a copyright notice which can be dismissed by hitting Enter or Return or by clicking on "Ok".



Imagery v1.8
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Imagery converts Atari ST, Amiga, IBM PC (MS-DOS and Windows), Unix (Sun, Xenix, XWindows), Apple IIgs, Macintosh and several generic graphics files into Macintosh compatible TIFF files. Click on one of the icons to get more information about supported formats.

This program is not public domain. There is no charge for using it, but if you find it useful, consider a donation to your local SPCA / ASPCA / RSPCA (Society for the Prevention of Cruelty to Animals).

You may not charge others for this program, nor may you include it in any package for which a charge is levied without express permission from the author.

The icons call up lists of the currently supported image file formats for the machine for which the icon is used (excepting generic which is represented by the "generic" triangle).

Cancel

- Cancel this program and return to desktop

Ok

- Continue into program

Unlike the Macintosh, most other computers do not record information about the program which creates a data file, or information about the type of data contained within the file. They rely on information encoded in the filename, typically in the form of a three letter extension. The three letter extension dates back to old Digital Equipment computers and was picked up by CP/M and then IBM's MS-DOS.

Part of the problem with this is that several different companies used the same extension to represent very different file formats, and worse, some did not include enough information inside their file to allow for certain detemination of that file's format. IBM-PC PCX format is an excellent example of this as is the PIC format.

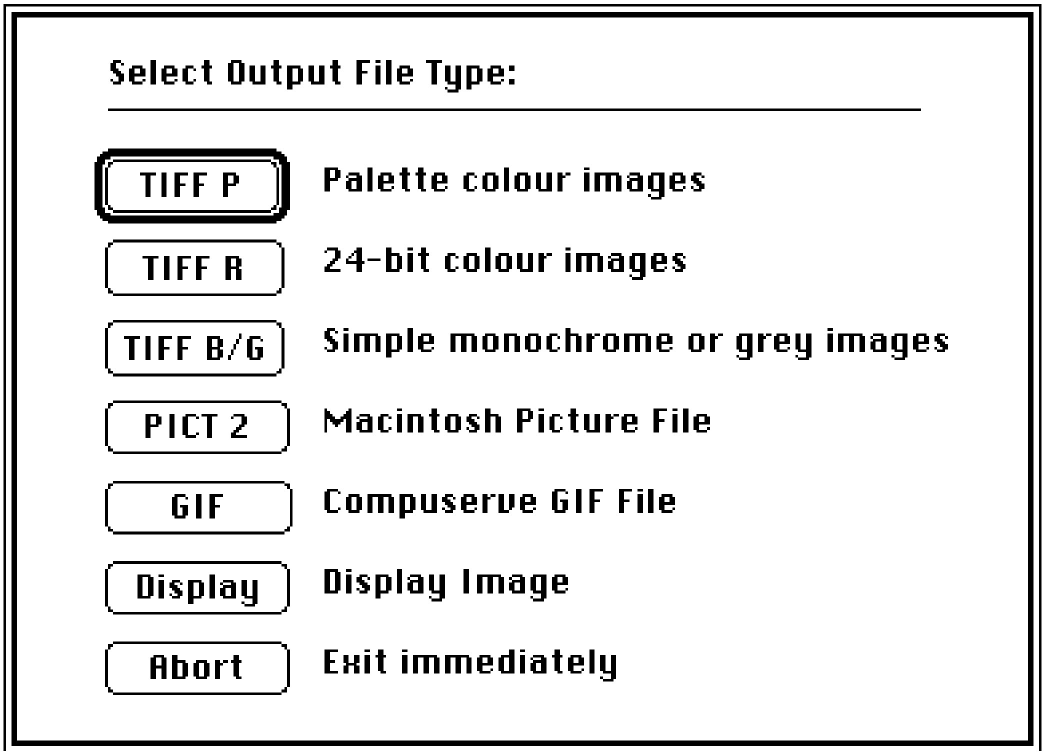
What Imagery does is to examine the extension of the file and then compare it to a list of known file extensions. If it finds one that matches, when possible, a check of the file format is made and if the file is acceptable, the file is converted into a Macintosh compatible TIFF file. (For more information on TIFF files, see the section on TIFF later in this document). For some files, the signature is checked against a list of known signatures. In a couple of special cases, two different files types will have the same extension. Imagery will attempt to determine which type it is.

The icons along the bottom of the first screen represent each of the different machines supported by Imagery. Clicking on them will bring up a new screen showing a list of all the image file formats and their extensions which are recognised by Imagery, and whether or not the format has been tested. Unfortunately, some of the file types are rarely used and I have not been able to obtain samples. If you need one of those formats, please try it. If it does work, then please send me a note. If not, send me a sample file (small if possible) and I'll try and fix it as fast as possible.

Also included is a list of future file formats. Those for which I have format information, will be added as time permits, and those marked with "†" are format for which I have no format information but will add as soon as I can obtain that information. If you have this information and are willing and able to send a copy, your assistance would be highly appreciated.

Selecting Output Format

Selecting "Ok" for either of the previous two dialogs will take to you the output file format selection dialog shown below.



Select Output File Type:

TIFF P	Palette colour images
TIFF R	24-bit colour images
TIFF B/G	Simple monochrome or grey images
PICT 2	Macintosh Picture File
GIF	Compuserve GIF File
Display	Display Image
Abort	Exit immediately

TIFF P

is a compromise mode which stores a palette of colours and then the image as indexes into the palette. If there are a lot of different colours, this approach rapidly generates files far too large to be practical since each palette entry requires six bytes. On the other hand, for simpler systems such as any Atari format and most Amiga and PC images, this allows for complete colour specification while still maintaining a small file size. Please note that this is a TIFF 5.0 feature and not all TIFF readers can read this format. If your program cannot, then regenerate the file in TIFF-R mode. This is the default format.

TIFF R

should be selected if the image contains a large number of different colours. Several file types such as the Amiga IFF HAM mode automatically switch to this mode for the specific file which is in these modes. This is necessary because of the potentially large number of colours which may be defined in these modes. Note, this mode generates very large files since it require a minimum of three bytes per pixel.

TIFF B/G

should be selected if the image is a simple monochrome image or can be displayed in greys.

PICT 2

should be selected if a Macintosh standard PICT file is to be created. This format supports monochrome, grey and colour upto 32bits. Note that as of syste, 6.0.5, all Macs, including those which do not have colour quickdraw (Plus, SE and Classic) can display colour and grey PICT2 images, but will attempt to translate it into a monochrome equivalent.

GIF

is the graphics interchange format defined by Compuserve and is widely used by hobbyists to exchange images. The GIF encoder in Imagery 1.5 can only support images with upto 256 colours and are always interlaced to improve previewing GIF imaged when downloaded.

Display

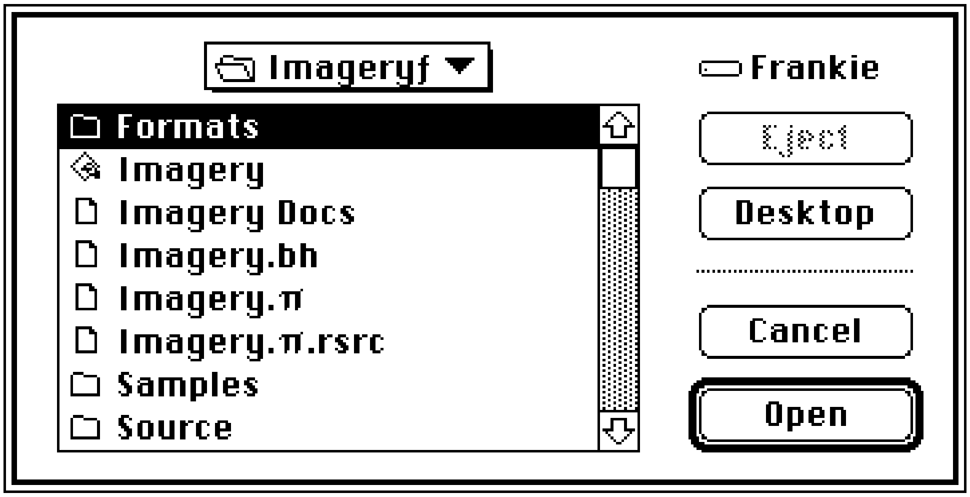
uses the PICT2 converter to display the file after conversion in a window. No editing is allowed at this time. Please note, this is a **very** simple display system. It will be improved drastically by the next version.

Abort

offers you a chance to exit the program immediately without continuing.

Selecting Input

The next dialog will be the Standard File Selector and you may repeated select image files until all conversions are complete. Selecting "Cancel" will end the program. As each file is processed a status window will inform you about the file being processed and of the current status.

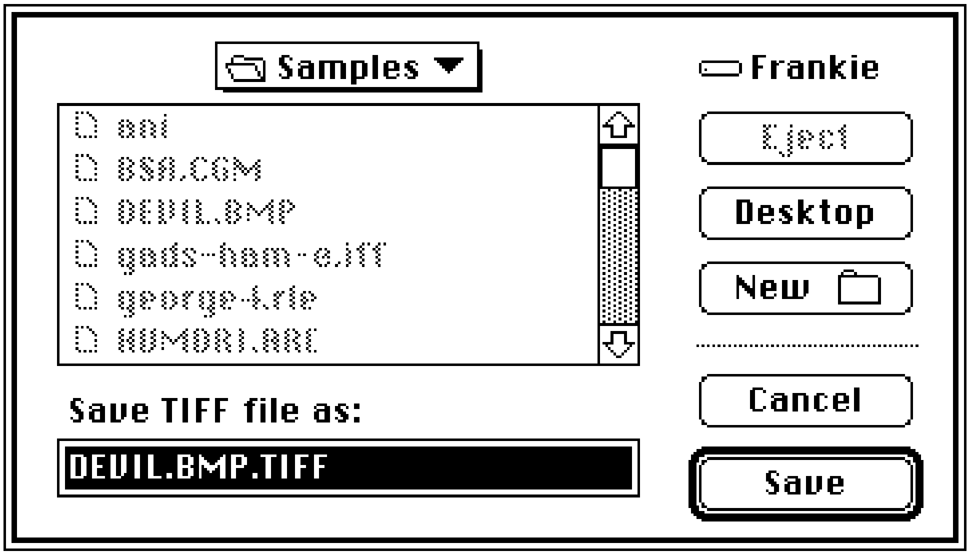


Since the image files will all be coming from non-Macintosh systems which do not use the Mac's file signature system, there is a problem identifying a graphic file and its internal format. On other systems, a unique - well, mostly unique - extension, typically of three letters, is used to identify the file type. I say "mostly unique" because in fact, there are several major cases where wildly differing file formats have the same extension.

To make things simpler, Imagery looks at the file's extension just as a program on one of the other computer systems would and then presumes the image format. Many of the translators also do several checks on the file to confirm that the format matches the extension, but many either do not or cannot (Atari files are the worst for this). The previous file list will give you the required extensions for all formats currently supported.

Saving Output

The program will analyse each file in turn and then generate a new file by appending ".TIFF" to the end of the file and assigning it a "TIFF" signature. This will allow most program which can recognise the TIFF type to see these generated files. A standard output file selector will be displayed:



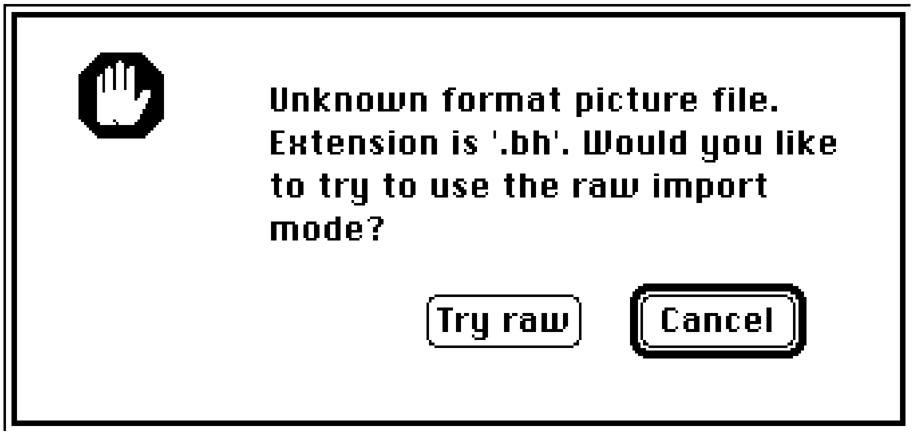
Save TIFF file as: DEVIL.BMP.TIFF

Animation files, or composite format files such as GRASP will generate multiple files. If there is a mechanism to identify the files within the source file, then the files will be given those names. Otherwise, they will take on the source file's name with a number appended to it.

With these files, you specify the destination for the first file and then that file and all other components will be saved into the same place.

Raw File Import

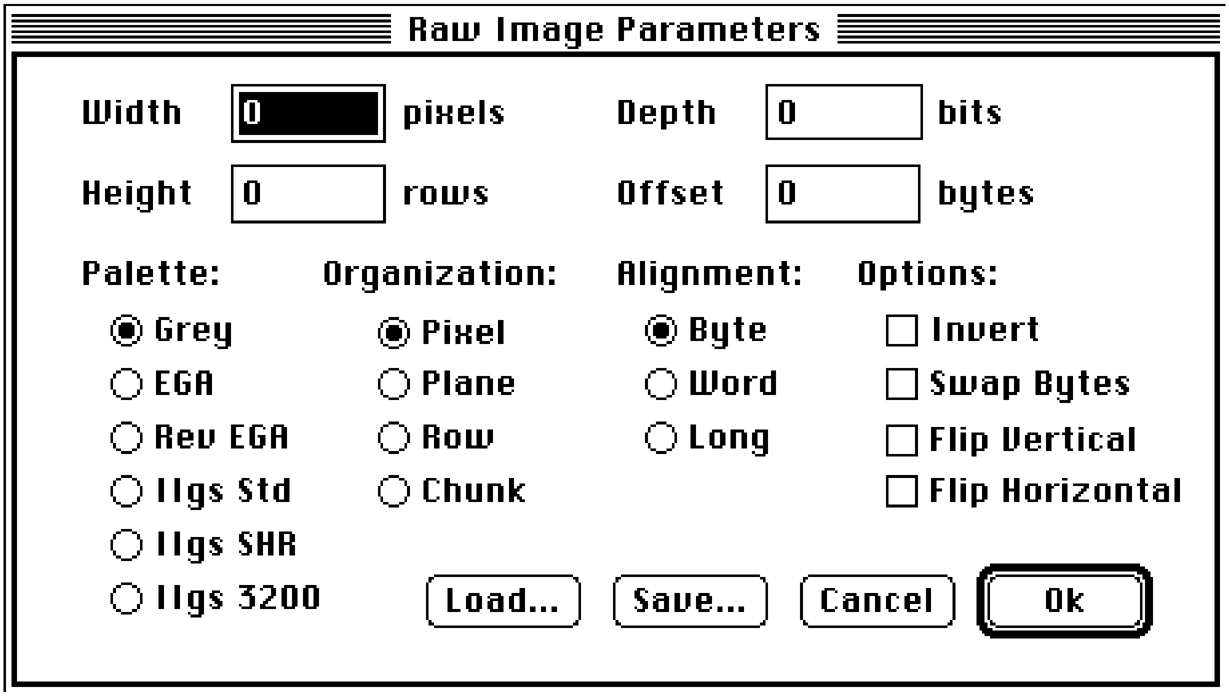
Imagery now includes a "raw" file import. This allows a knowledgable user to try and decypher and extract a usable image from an unknown or damaged file. Unfortunately, there are so many possible file formats and file compression methods that not all possible files can be imported using this module. Also, the number of parameters and variations makes using this more complex than would be desired.



Unknown format picture file. Extension is '.bh'. Would you like to try to use the raw import mode?

When a file cannot be recognised, the user will be given a chance to try raw import. A file extension of ".RAW" will automatically select this mode. You should not select this unless you have some idea as to the internal format of the file. No damage to the original file can happen by selecting this mode.

The raw image control dialogue looks like this:



Raw Image Parameters

Width 0 pixels   Depth 0 bits

Height 0 rows   Offset 0 bytes

Palette:	Organization:	Alignment:	Options:
● Grey	● Pixel	● Byte	□ Invert
○ EGA	○ Plane	○ Word	□ Swap Bytes
○ Rev EGA	○ Row	○ Long	□ Flip Vertical
○ IIgs Std	○ Chunk		□ Flip Horizontal
○ IIgs SHR			
○ IIgs 3200			

Told you it was complex, but don't despair, it's not as bad as it looks. Let's examine each of the fields and button groups.

The first four fields are pretty straight forward. Width and height define the picture size in pixels and rows. The depth field defines how many bits are used to define each pixel. Offset defines how many bytes to skip from the start of the file to the start of the image data.

Beneath these are three groups of radio buttons and one group of checkboxes.

Palette: This attempts to define a palette to translate the pixel data into colours. However, the decyphering of colour palette information (when available) is extremely complex and so, for this version, it is limited to:

Grey
: This is the same as having no colour translation.

IBM-PC EGA mode (Atari ST default 16 colour mode)
: Normal EGA for bitmaps stored as IRGB.

Reverse EGA mode
: Used when the EGA bitmaps are stored in reverse order (BGRI)

IIgs Standard, IIgs SHR, IIgs 3200
: Apple IIgs standard palettes.

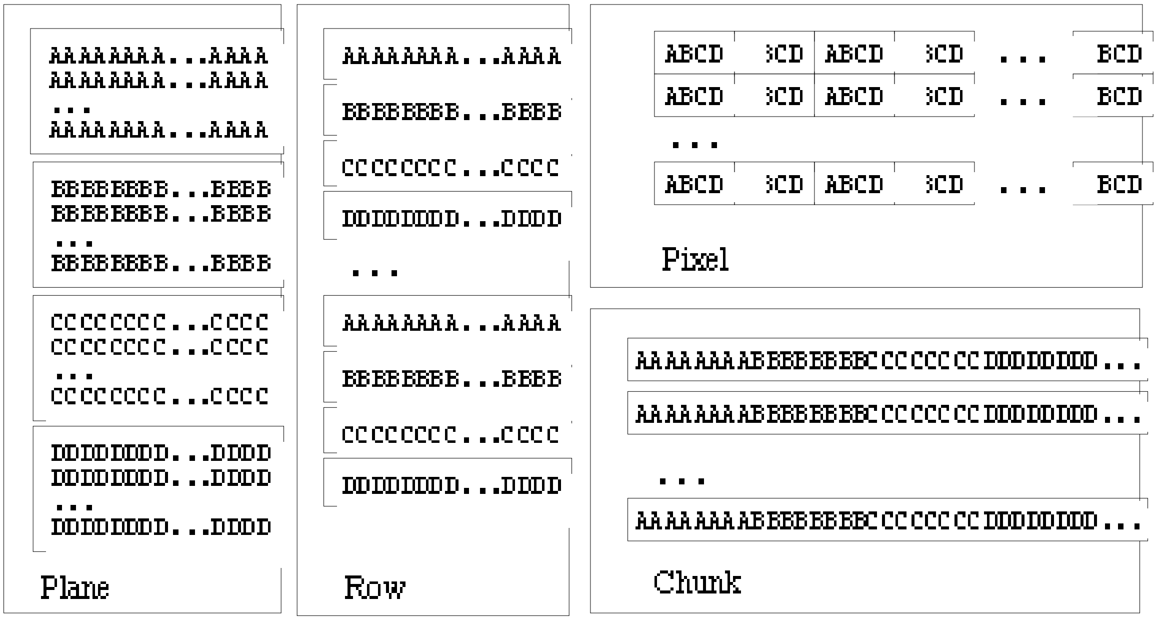
Organisation: This is the most complicated part of the raw import. Files can be arranged in many different ways. Some keep each pixel's data in one chunk, others gather all of the most significant bits in one plane, then the next and so on.

Let's look at one pixel of four bits

A B C D

where "A" is the most significant bit (causes the biggest change in colour or grey leve), and "D" is the least signficant bit (causes the smallest change in colour or grey level). Our hypothetical image can be thought of being made up of *width* pixels each of four bits as above and *height* rows of pixels.

Four specific organisations are allowed in this import:



Pixel
: Each pixel of the image is complete with all bits following from most to least significant. If the number of bits (depth) is not an exact multiple of 2 (1, 2, 4, 8) then the bits will be packed across bytes.

Plane
: The bits which make up the pixels are gathered into planes of similarly significant bits. For example: all the most significant bits are gathered together as if they were a

one bit depth image followed by the next to most significant and so on until the least significant bit.

Row

Similar to the *plane* format, but the bits which make up the first full row of the image are placed one following the other with the next following and so on.

Chunk

This is the most complex format. Based on the *row* format, it further breaks up the image into chunks which are interleaved. For eaxample, on the Atari ST, you will see the most significant bits for the first sixteen pixels in the first word, the next most significant bits for the first sixteen bits in the next word and so on down to the least significant bits for the first sixteen pixels in the last word of this group. This then is repeated for the next sixteen pixels and so on for the rest of the image. Imagery takes the size of the chunk from the alignment setting (see below).

Alignment: All data in a file must be aligned such that it takes up an exact multiple of eight bits - one byte. For example: even if each row contains six one-bit pixels, you can't write **just** six bits, you have to write a byte. This is "byte aligned". However, some systems, such as Microsoft Window's BMP, require alignment to a larger chunk - long (32bits) in the case of BMP. This options lets you select the correct alignment. **Byte** aligns to the next 8 bits, **word** to the next 16 and **long** to the next 32.

Also, if the image's organisation is "chunk", then this setting also determines the size of the chunk.

Options:

Invert

This turns the image into a "negative" of the data. Some computers consider the lowest number (usually zero) to be black and the largest number to be white while other are the other way around.

Swap Bytes

This option reverses the chunks of the image from Motorola to Intel byte order. The chunk size is determined by the alignment setting (see above).

Byte:	Not affected.
Word:	AB -> BA
Long:	ABCD -> DCBA

Flip Horiztonal

This option flips the image from left to right.

Flip Vertical

This option flips the image from top to bottom.

System 7 Support

This version of Imagery has minimal support for System 7 other than to ensure it is compatible, but it does take into account one feature of the System 7 Finder to make using Imagery simpler.

Under System 7, you can drop-launch a program by dragging a file of a type known by that program over the icon for the program. A similar mechanism exists in System 6 and earlier by selecting multiple files including the Imagery program, releasing the shift key and then double-clicking the program icon.

Imagery allows any file type to be dragged over its icon and also allows as many files as you wish to be selected this way. When you drop-launch Imagery, the first copyright screen is skipped, as is the Standard File Selector for selecting files and specifying where you want the file to be saved. Only the TIFF format selection dialog will come up to select the format for all the files in the selection.

A future version will also add AppleEvents to allow other programs and scripting systems to convert a file on the fly with no user interface at all - the Mac equivalent of a Unix filter program.

Special Features

GRASP

In version 1.0 of Imagery, GRASP GL files were unpacked into a collection of PIC and CLP image files and a TEXT control file. In version 0.5, the TEXT file was given a binary file type which made editing it difficult. As well, the text file was not converted from MS-DOS format to Mac format.

In this version, the PIC and CLP image files are now automatically converted to TIFF and the control file is now a TEXT/MACA file which can be opened with TeachText or any other editor which can read standard TEXT files. The MS-DOS format for this text file is now converted to Macintosh format.

What are TIFF Files?

TIFF stands for "Tagged Image File Format" which was developed by Aldus (Pagemaker, Freehand, Superpaint and Digital Darkroom) and Microsoft (Word, Works, Project, File, etc.). It is a machine independent format designed exclusively for bitmap images.

What makes TIFF unique is its tag based system. Other file formats such as the Amiga IFF and Compuserve GIF formats use tags, but neither of these use a directory system to make finding the tags quick and simple, nor do they allow the highly flexible format and extension of the file format that TIFF provides.

TIFF files currently can handle simple monochrome bitmaps, palette based colour images and RGB full colour images of unlimited colour depth (32bits of resolution specification per colour - 4Gig bits of colour info per colour!). As well, there are four compressions schemes: no compression, RLE/Packbits (MacPaint) compression, CCITT-3 Huffman compression (FAX) and LZW (Lempel-Ziv Welch) compression similar to the one used in GIF.

Many PC graphics programs and DTP programs can now support TIFF and several use TIFF as a default format for saving pictures. Similarly, most Mac drawing programs and DTP packages can import and export TIFF format files. If you aren't sure, check under "Import" for your favourite drawing or DTP package to see if it is supported. Several programs on the PC now use TIFF exclusively for their file storage.

While TIFF files cannot support object based images without having them first translated into a bitmap image, they are very effective for storing scanned images (which was the original intent of the file format) as well as complex and high resolution colour drawings. Further, since the format for this file is widely distributed and is open-license, it is easy for anyone who wishes to support this format to add it to existing software. In fact, several companies including Hewlett-Packard and DEST have been distributing low cost developer's kits for TIFF for several years.

TIFF Compliance

The TIFF files Imagery generates comply very strictly to the TIFF 5.0 specs as defined in the Aldus/Microsoft TIFF Standard Specification version 5.0 final dated 8 August 1988, with all defaults selected to allow maximum compatibility with TIFF 4.0. The only exception is that I use the *SubfileType* tag instead of the recommended *NewSubfileType* because either will work and the former is still more widely accepted. Similarly, wherever the TIFF 5.0 document mentions that TIFF 4.0 only allowed one of several choices now offered in TIFF 5.0, I have selected that choice to ensure compatibility with older TIFF 4.0 readers.

The writer conforms to TIFF X, R, G, B and P standards as defined in Appendix B of the aforementioned document and includes all required tags for those formats.

None of the generated TIFF files use any form of compression. This is because most Mac and PC programs are still based on TIFF 4.0. TIFF 5.0 adds LZW compression similar to the one used in GIF files, but many readers still cannot support that. When TIFF 5.0 becomes the dominant form, I'll add the compression.

The “TIFF Incompatibility Myth”

One of the most annoying statements to me it the one that goes “Yeah, but the real problem with TIFF is that there are so many incompatible kinds of files...” Well, I’d like to take a moment here to debunk that myth.

One aspect of TIFF files is that there are both standard and non-standard tags. The standard ones are clearly defined in the TIFF specifications, but the specs also allow for developers to create and use their own tags. Tag numbers zero to 32,767 are reserved for standard tags while the “negative” tags (-1 to -32787) are reserved for developers. Further, Microsoft and Aldus are supposed to keep a complete list of assigned tags. What’s supposed to happen is that a developer writes in and requests a block of tags for their own use - they don’t even have to say what the tags are for.

Ok, sounds like a problem, right? How does a reader know what to do with these developer’s tags when there is no way to find out what a tag does?

Well, the answer is this - you don’t have to know. In theory, the image in the file should have all the standard tags and the developer’s tags contain length information. If the tags are correctly formed and written, and if the reader is written correctly, everything should work fine. The image you get may not be perfect, especially if the developer tags contains information about modifying the image, but at least you can get the image out and then reprocess it yourself.

So, why the incompatibility myth?

This comes from two things that stem from two all too common problem - programmer laziness and programmer arrogance. The first happened on the IBM PC. The TIFF specs clearly state that **all** TIFF readers should be able to read MM (Motorola byte order) and II (Intel byte order) files. Most Macintosh applications which could handle TIFF files in fact did read both forms. However, few PC program would read MM format files. This is laziness **and** arrogance.

The second problem lay with programmers who simply could not stick to the standard. By this I refer to two things: creating new tags without registering them and worse, not following the specs when writing the standard tags. An excellent example of this is Teletypesetting's T-Script PostScript rasterising program. Their 1.4 TIFF export module ignored the rule that states that tags **must** be written in tag number sorted order. Theirs doesn't. Smarter programs (like Aldus's Freehand program which seems to be able to read correctly just about anything as a TIFF file) will presort the tags anyway just to make sure - others don't and reject the file.

(The people at Teletypesetting claim that they were working with a newer version of the TIFF standard which allows non-sort order, but I contacted the TIFF support desk at Aldus and they assure me that the 8/8/88 document defining TIFF 5.0 is still the most recent version and that it requires tag sort order. Version 2.0 of TScript fixes this problem.)

Simply put, when the TIFF 5.0 spec is followed to the letter, by programmers writing both readers and writers of TIFF files, there is never a case where any TIFF file will be incompatible with any reader on any CPU, except in cases where the program in question is not capable of working with the data contained within the TIFF file - a monochrome bitmap drawing program would not be able to handle TIFF-G, TIFF-P or TIFF-R files all of which contain colour or grey images.

The only other area of contention is the recent addition of LZW compression. Most readers are still TIFF 4.0 readers which are mostly compatible with TIFF 5.0 files except in two ways - one critical tag has been changed (SubfileType -> NewSubfileType) and LZW compression was added. This is why Imagery generates TIFF 4/5 intermediate files. It does not use LZW and it uses SubfileType tags - which is allowed under TIFF 5.0. Imagery files should be readable by TIFF 4.0 and TIFF 5.0 readers.

I hope this puts an end to the incompatibility myth.

TIFF 6.0

Aldus, who currently seem to be the driving force behind TIFF, are about to release version six of the TIFF specs and there are many new and very interesting features including JPEG support. However, much as LZW compression is still widely unused, almost four years after its introduction to TIFF, I suspect that it may be many years before these features become widely used. This is a great pity because they really have added some impressive new features.

However, until TIFF 6 becomes more widely supported by readers, Imagery will continue to generate TIFF 4/5 compatible files. The upcoming "Pro" version will offer selectable TIFF 4, 5 or 6 mode generation.

User Interface Issues

A couple of Imagery users have written to me about my choice of a user interface. Specifically, they argue that it's not Macintosh-like enough. Two points on that: first, check out Font/DA Mover. Written by Apple, part of the system software package... and it works very much like Imagery.

Second, and more importantly, my idea was to create something which is very commonplace in Unix - a filter. In Unix, it is common to take a file and pass it though a chain of small programs, each of which do one thing, modifying the data and passing it on to the next program in the chain with the final file being written at the end.

This isn't possible on the Mac, but with the addtion of drop-launching, I tried to create a similar idea. You drop the file on the first icon and then pass it through each one until you've filtered the file into a desired form.

The fact is that currently, Imagery isn't graphically oriented. To add menus and windows would make the program less effective, not more so. However, Imagery Pro will include editing and modification windows and will gain a user interface when run directly. It will, however, still include the same drop-launch conversion mode.

I hope this clears up the questions.

Copyrights and Fees

Imagery is not public domain and is copyrighted © 1990-1992 by Jeff Lewis. This program is freeware, although if you find it of any use, please consider a donation to your local SPCA, ASPCA or RSCPA (Society for the Prevention of Cruelty to Animals). If not, there are no Karma penalties for using this package. :-)

No charge may be levied for this program, nor may it be included in any package sold for profit without express authorisation from the author. It may be distributed freely via BBSes and on electronic data services which do not explicitly charge for file downloads, that is, do not charge a per file rate as opposed to a per hour rate, and may be included in freeware/shareware collections as long as no additional charge for its inclusion is levied. Further, no service or distributor may attach additional restrictions to this program or to its distribution. This program must be distributed complete with all documentation and additional programs.

The following companies have explicit permission to include Imagery on selected commerical products:
Nautilus CD, Nautilus Inc.
BBS-In-A-Box, Arizona Macintosh Users Group.
The AND Group/MacVonk Canada

Bugs and Warranties

Warranties: there are none. This is a free program - what do you want for nothing? :-) You use this at your own risk. I've tested it as well as I can and while it's not the best thing I've ever written (although it is getting better) - it is simple, clean and functional.

Bugs: there are probably plenty. I have tried to catch as many as I can, but this was a hack utility which has become sort of a project/hobby and will grow on forever simply because I enjoy playing with it.

Known bugs and weaknesses

In order to make the odd file which aligns a row to a long word rather than to a byte (Windows BMP files for example) fit in with TIFF which is row/byte aligned, I just redefine the image to be a little wider. This results in several pixels of garbage along the right edge. It's unlikely this one will be fixed soon.

Some file types outright lie about the real size of an image. In these cases, the program may crash because it overruns the image buffer. Some formats are more susceptible to this than others and with these, more extensive checking is done.

Amiga HAM-E IFF files are not yet supported. Normal HAM and Extrahalfbright is supported.

The GRASP decoder simply breaks the GL file into its constituant files. These are PIC files which are then quietly rerun through Imagery to convert them to TIFFs. The control file has a TXT extension and can be edited with a text editor.

None of the animation decoders actually generates an animation file. Until a standard for animation is defined (ie: QuickTime), this is the best I can do. Palette rotation animation is not supported at all. As well, GRASP files contain a control program which is interpreted and that is outside the scope of Imagery.

I do have an interpreter shell written, but when I asked the author of the PC GRASP program for permission to create a Mac interpreter, he didn't think much of the idea and he did not actually give permission to do this. Since GRASP is a copyrighted program, I do not wish to get into legal hassles over this. So, I am in the process of writing an interpreter/translator which will "compile" the GRASP file into either a PICS file, a MooV (QuickTime movie file) or into a composite file which can be interpreted by a to-be-written run-time system. Since this new form would not actually be interpreting GRASP commands, this should neatly avoid any legal issues.

Unfortunately, it is unlikely that such a feature will become available until after version 2.0 is realeased.

(Note: Since the writing of the above, several people have pointed me to existing GRASP viewers for Unix based on X-Windows. I have obtained the sources for these viewers and hope to be releasing a GRASP viewer called MacGrasp shortly.)

Comments and Reports

I can be reached via Compuserve at 76217,2241, on America Online as "T Werewolf" or via the Internet at 76217.2241@compuserve.com. I'd like to hear about any bugs you may find, and if you know of a graphics file format Imagery doesn't support let me know. If you have a layout for the format, please include it and I'll write it in as quickly as possible. If you have any suggestions, I'd also like to hear them, as long as they're polite :-).

Future Products

An IBM-PC version of this program should be available within a few months, and a new commerical version called "Imagery Pro" will be released this fall with full bidirectional conversions (where possible) and a selection of image editing and enhancing tools as part of the Unity/OneSolution series of modular applications. It should also be able to support Photoshop, Digital Darkroom and Superpaint modules (pending further information) and will combine many features of all three of these programs at a very reasonable price - less than US$100. A Windows version of Imagery Pro is slated for late fall.