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Last update: Nov 18th, 2003 (tiny bridge file making added)

Close Combat 2 "A Bridge Too Far"

CC2Tools – The Manual

(Mac- & PC-version of CC2)

What it is

"Close Combat - A Bridge Too Far" (abreviated CC2, ABTF, CC2-ABTF) was the second game of the CloseCombat-series created by Atomic and presented by Microsoft to the Mac-community. It was also the last game of this series for the MacOS. The series was then continued by SSI (now by UbiSoft) for PCs only (up to day CC3, CC4, CC5). The game was released in 1997 on a hybrid-CD, running on PCs and under the MacOS 7.5 up to 9.2.2 / MacOS X 10.2.6 / 10.3 (in Classic environment) as well. Later (localized) releases of CC2 were for PCs only. A trial demo of CC2 was also released in 1997 (Mac & PC).

Credits and all my thanks to the following programing gods:
Mick Conmy (mick xe5) (for his excellent texts on his site http://users.intrepid.net/~mcconmy/), Adam 'The Man' D'Arcy (who made public the file formats for the CC2 map graphics), Gerry Shaw (aka TinTin) (for his great tools Texture Maker v.2 and TM3), Vincent Viaud (for solving the LOS file structure), Andrew (The Naked Foot) Glenn (for his great MapMaking Guide), Escobar for his GadgetX/I- and IntrfaceX/I-tools, The Other Dave (David R. Tidy, for his CC2Faq.wri), NL_Oxcart, George Thanos, Taki (for his PacificFront mod, my first encounter to CC2-editing), GS_Marcks, Chris Ellens (for his great CCEdit map-making-tool for MacOS), Cpl Filth (for his great tools and a lot of help), Frantz 'Fritz' Pergolini, Robert Valerian 'Cappy' Ellison Ralph (for his Gadget-catalogue), Marcus 'Zorbo' Hofbauer, Piotr 'Czolg' Lewandoski, Kyle Scott 'Fish', Riccardo Mariani, Hikehara, Mizuchi, Kelly Kranendonk, Konrad, David Vilmen, IChrist (for his CC5-CC3 elements table), Han Bos (aka NL_Attila) ... and all the people not mentioned above, who helped CC2-editing to come true.

Special thanks this time to Ken Scott, who made the first steps in unveiling the CC2-number-of-teams-limit.

Purpose of the program

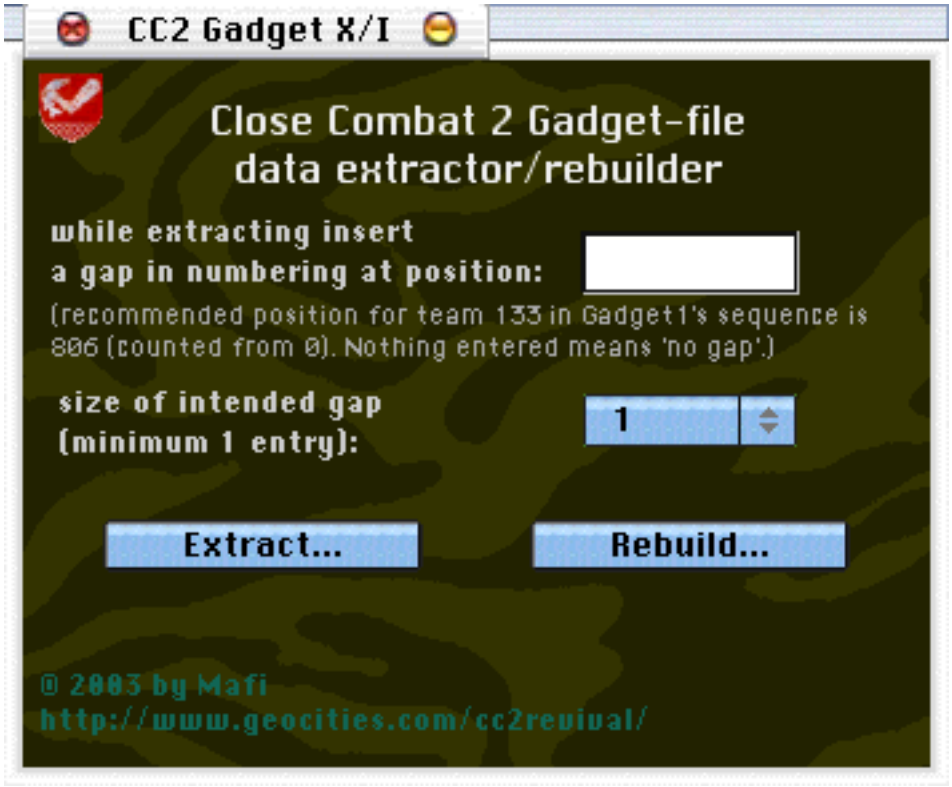
The goal is to convert existing CC5, CC4 and CC3 (custom) maps to CC2 format to use them on the Mac and to have better MacOS-like access to other CC2 files not already covered by Chris Ellens' tool "CCEdit" or my CC2-Soundeditor "myMook".

CC2Tools can do for you:
- convert all map graphic files of all CC-versions (from CC2 to CC5) into TARGA,

- convert from TARGA into CC2-BGMap, CC2-MMMap, CC2-OVMap, CC2-Vehicle-Textures,
- tiny CC2-bridge-file creating (import and conversion of 1 or 2 TARGA-graphics),
- shrink all CC2-CC5 map files in their size,
- and the main part is: shrinking and converting from CC5/CC3 into CC2 format in ONE step,
- and making the terrain-elements conversion from CC5 to CC2 or CC3 to CC2 or in any other way if you define an external translation table (TAB-seperated text file, MS-Excel-like).
- translation tables included for CC3 to CC2, CC5 to CC2.
- and it can do some manipulations to increase the number of teams,
- and can split/join the CC2 files Gadget0, Gadget1 and Intrface.cc2 as well as some CC3-CC5 graphics export.

The screens

Gadgets ex- and importing function



Use this window to split off the little graphical "gadgets" out of the files "Gadget0" and "Gadget1". Pressing the button "Extract..." will show up an input file selection dialog box. You can determine a "gap position" when the resulting files are exported. If you enter nothing in the editfield, no gap will be inserted in the numbering of the resulting files. Please use different folders for output for each "Gadget#" file you want to split off. Then you will be able to rebuild these files from the resulting output by pressing the button "Rebuild...".

Output of the "Extract..."-button will be

- when splitting "Gadget0": 700 graphics files (16-bit uncompressed TARGA). Resulting file names will be of the form "gadget0-004-0007.tga", where the last four

digits stands for the sequence inside the file "Gadget0" and the hex-digit between the two dashes shows the visual width of the graphical content of this gadget.
- When splitting "Gadget1" the result will be 939 files of the same format as above.

If you don't change the name of these resulting files, the rebuilding of the "Gadget#" files will work properly using the button "Rebuild...". It is not recommended to change the size of the gadgets.[1] But you can have more gadgets inside the "Gadget#" files. This cannot be done using Escobar's tools. So I was forced to implement the "gap functionality":

If you want to have more than 133 teams in CC2, you can simply expand the list of teams inside the base files "Teams" and "TeamDesc" (using a text editor or Ms-Excel, these files are TAB-seperated text files, CR-delimited (MacOS-like)). But the program CC2 will crash during startup because it is looking for additional gadget entries in the files "Gadget0" and "Gadget1".

To have an additional team, it is sufficient to add a gadget to the list of gadgets in the approbiate folder for the rebuilding of the file "Gadget0". My tool will detect these additions and place them at the end of the file "Gadget0".

In case of the file "Gadget1" you will also need an additional gadget at the end of the file and (different from "Gadget0") you will need an additional gadget in the middle of the files' sequence at position 806 (if you count them from 0). The reason is that in the file "Gadget1" there is a large and a small gadget for each team.

So you need a gap in the numbering of the files when splitting off "Gadget1". To avoid manual filename renaming I added the "gap position" functionality.

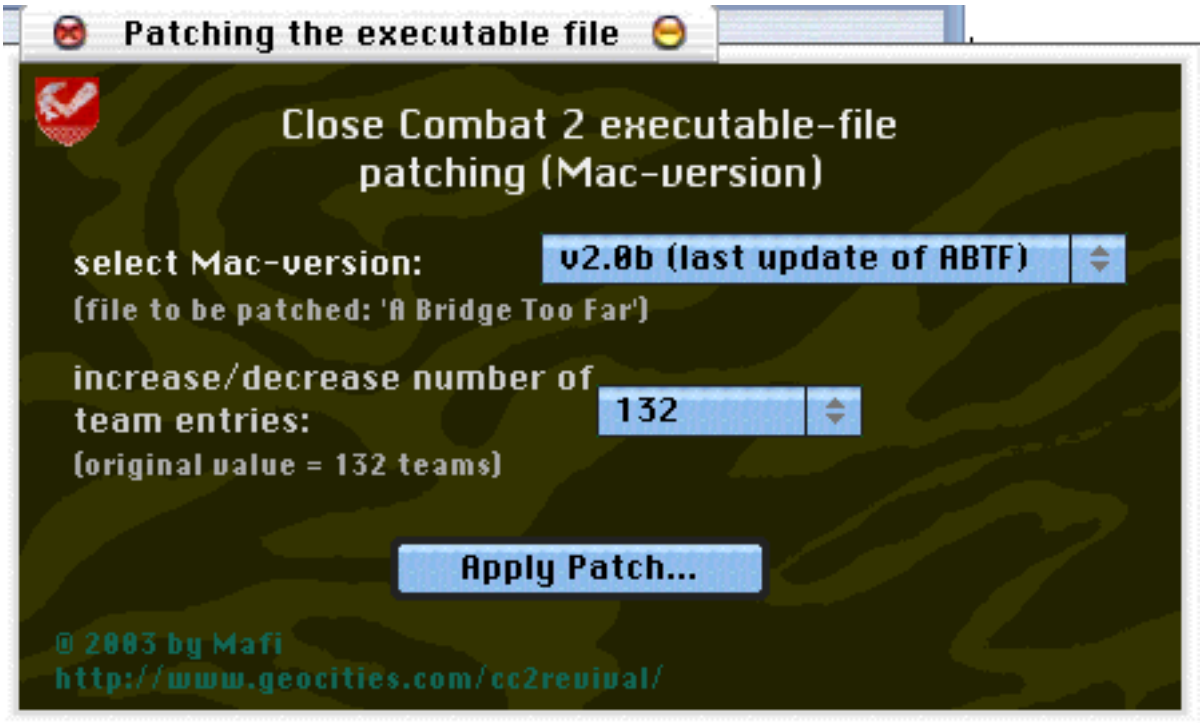
After expanding the files "Gadget0" and "Gadget1" in this way CC2 will work with more than 133 teams. Not tested yet how many teams are possible. Maybe there is a memory overflow limit.

As Ken Scott discovered, you can shrink the number of teams down to 2, but you must not change the files "Gadget0" or "Gadget1". The reason why is: the offset of the gadget of team 0 is coded in the object code of CC2 (Mac and PC). So we are coming to the next task:

Patching the executable application

We need to change the number of teams inside the object code of CC2 (Mac and PC version) if we want to have more than 133 teams. See Gadget-description in chapter above. As discovered by me, the offset of the second team gadget list of file "Gadget1" is hard coded inside the object code. The number of the gadget is 806 (if you count from 0, see Cappy-R's catalogue). The number inside the object code must be changed to 807 if you want to have an additional team gadget. The position of this number differs between the CC2 versions:

[1] But if you do so, don't forget to change the visible width entry (in hexadecimal) in the filename.

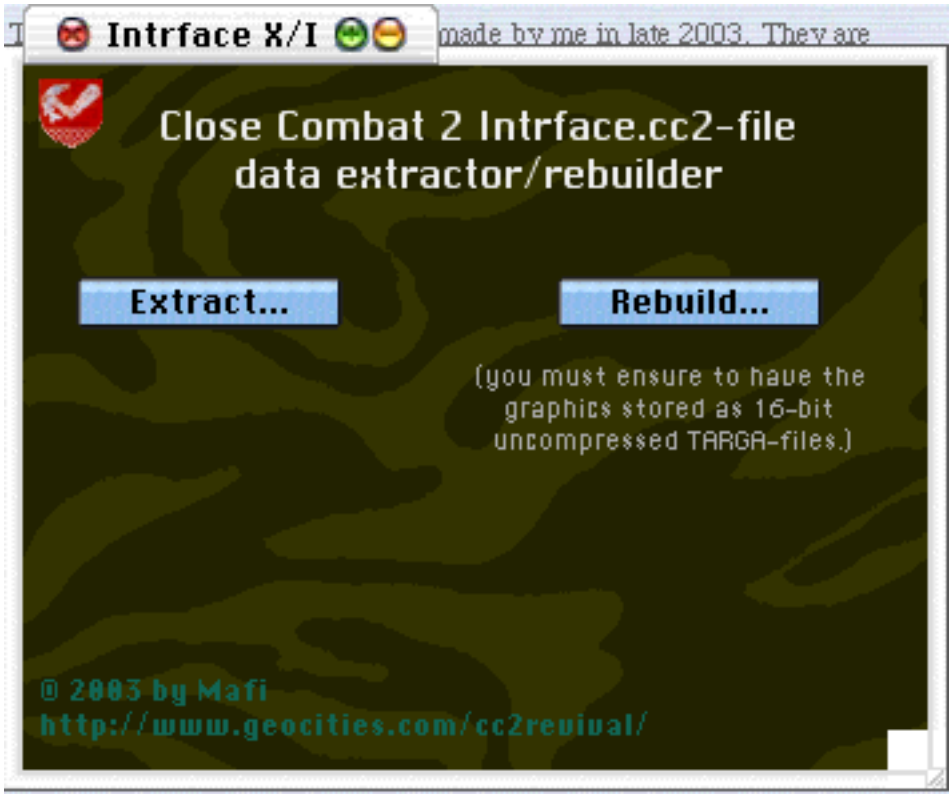


Both (Mac & PC) versions of CC2 store the informations about the teams in the base file "TEAMS". The number of teams is limited there only by the number of entries in this file. As Ken Scott discovered, you can shrink the number of teams down to only 2 teams, and CC2 will still work. Expanding makes it necessary to expand the number of entries in the base file "TEAMDESC", too. And you MUST expand the number of gadget images for the additional teams in the graphics file "GADGET0" by adding at the end. Same to do with the file "GADGET1". And you MUST insert in the file "GADGET1" smaller gadgets for this teams in the middle of the file at entry 806! This is the starting point of the larger gadgets of "GADGET1". In the executable (ABTF on Mac / CC2.exe on PC) you must patch this starting point 806 in the object code. The ending point of reading the smaller gadgets takes CC2 from the number of teams in the file TEAMS. The offsets in the object code where you have to patch is:

Version	Mac Value = 0326hex = 806	PC Value = 2603hex = 806
Demo	Offset = 03F8F6hex	?
First version after install from original CD-ROM	Offset = 03FD16hex	Offset = 0609BAhex
Last available update	Offset = 03FD02hex	Offset = 060967hex

My tool will do the patching, but you must select the version of your CC2 properly. And you can select how many teams you want to add.
If you want to have more vehicle teams, you will encounter that there is no patching possibility (up to now). An additional vehicle team will use the graphics of the first vehicle team (Sherman) and so on. Looks like a wrap-around / modulo function in CC2.

Intrface ex- and importing

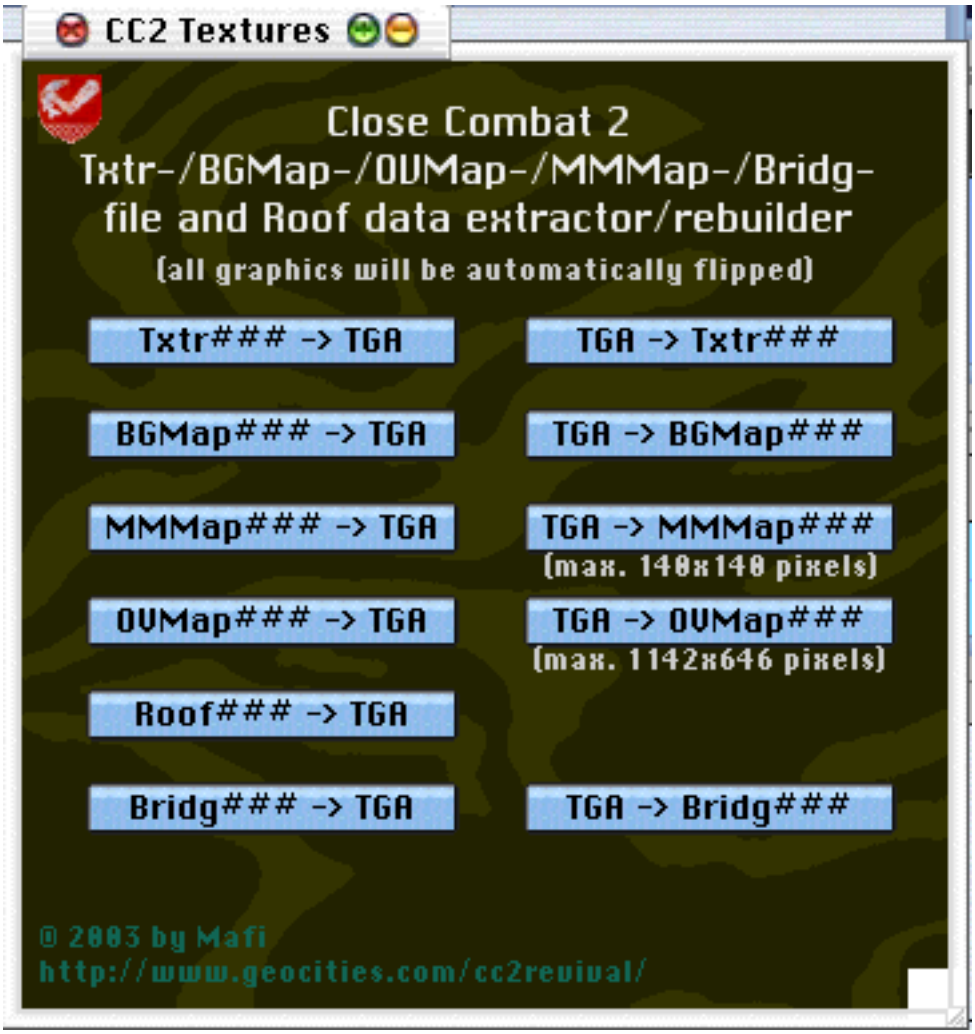


Same as with the "Gadget#" files, you can extract the graphical content of the file "Intrface.cc2" and rebuild it unless you ensure: you will always need 19 graphics, each of 16-bit uncompressed TARGA.

The file "Intrface.cc2" is only necessary for the PC version of CC2, but most of the existing CC2-mods have only this file. The MacOS-corresponding file is the file "UI". This file has a resource fork, which cannot be viewed by PC users (and therefore cannot be rebuilded there). So what to do: if you have a "Intrface.cc2" and want to change it into an "UI": export the "Intrface.cc2"-graphics, use a graphical program on the Mac, paste the graphic into the clipboard and use Apple's ResEdit 2.1.3 to insert the graphics into the resource fork's "PICT" resources. Last graphic must be placed into the "ppat" resource. So you can convert any custom "Intrface.cc2"-file into a Mac-"UI"-file. For more informations see my updated guides "CC2Guide-MacResourcesPat-v3.pdf" and "CC2Guide-UI_Intrface_OvData.pdf" from my site www.geocities.com/cc2revival/

CC2 Texture ex- and importing

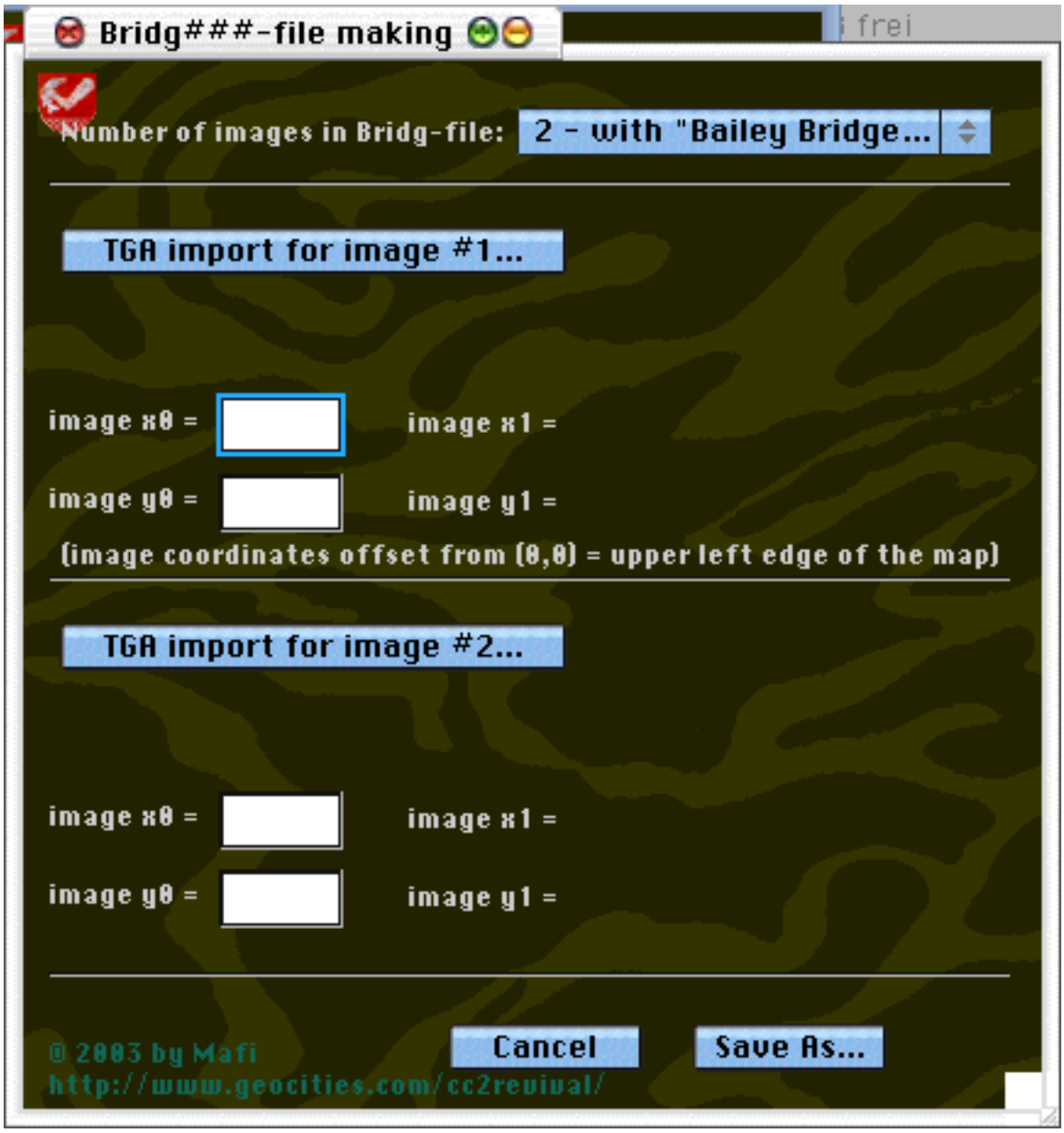
Most of the graphics (but not all) are MacOS born files. Their file format is mainly "Big Endian" (exception: "Intrface.cc2"). These graphics use an identical scheme: a 4 byte header ID is followed by a table with data descriptions and then the umcompressed graphical datas (each pixel 16-bit long). Files containing only one graphic are: all Textures (files "Txtr###", header ID "txtf"), "BGMap###" (header ID "MAPI"), "OVMap" and "MMMap" (header ID 4 zero bytes). The roof- and bridge- files (headerID "ROOF" and "BRDG") contain several graphics and therefore they have a longer offset table incoporated. Using the screen



will show you the possibilities of my tool. If you convert back to CC2 file format you must ensure to have again 16-bit umcompressed TARGA file format for your graphics, otherwise the program will fail. Something to notify: TARGA format has flipped graphics, my tool (like some others) makes automatically the correct conversion.

In case of the Roof- and Bridge-files you must select a folder where the resulting output will be stored. Rebuilding of Roof-files can be done with Chris Ellens' map making tool for MacOS, "CCEdit 1.4a5" (http://www3.sympatico.ca/ellens/ccedit/).

For Bridge-files I have added a seperate window (v3.02): when you press the "TGA -> Bridg###"-button, the following window will appear:

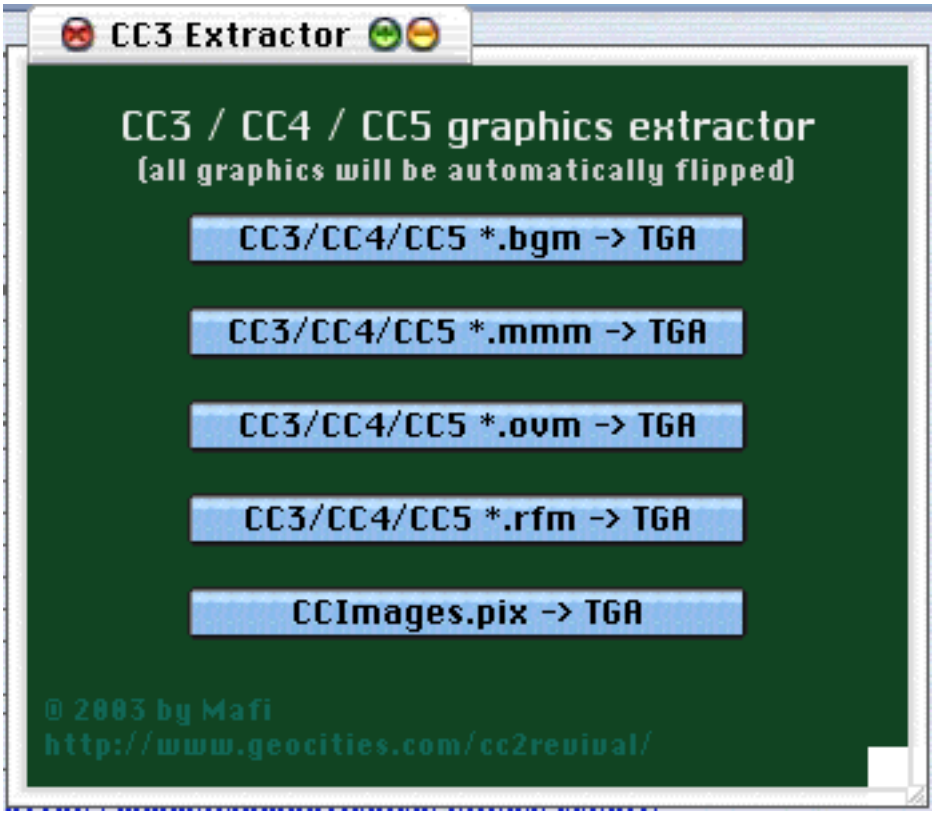


First you must select how many images the Bridge-file should contain (1 = blown bridge image only; 2 = blown bridge image and a repaired bridge image). Then you must select the approbiate TARGA-graphic file(s) for input (16-bit color depth, uncompressed). The program will determine and take the size from the selected graphic file(s). The next step is to tell the program the position of this images on your map. Offset is (0,0) = upper left corner of your map. Enter the images' upper-left coordinates in the edit fields. If all is set correctly, press the "Save As..."-button to enter the name of the file to be created and save your new Bridge-file. For further informations concerning the Bridge-files see my updated guide: "CCGuide-Bridg###-files_v6.pdf".

CC3 / CC4 / CC5 Texture exporting

All of the graphics of the PC-only CloseCombat game series released after CC2, are PC born files. Their file format is always "Little Endian" (Intel style byte format, reverse byte format). If you want to have (custom) maps intended for CC3 (The Russian Front), CC4 (Battle of the

Bulge) or CC5 (Invasion Normandy) to be converted to CC2, you will first take a look at the background garphics using this window:



Simply the same as above, but remember: the difference between a CC5- or CC3-*.bgm-file to a CC2-BGMap is only the byte format of the pixel datas and the byte format of the numbers encoded in the header. The header ID is nearly the same: BGM has "MAPI", MMM and OVM have 4 zero bytes. The header ID of RFM is E002F001hex. The collection of user interface graphics in the file "CCImages.pix" has the header ID "PICS".

Something you must know: roof graphics in CC2 are always full colored rectangles. In the newer versions CC3 – CC5 these roof graphics show only the roof and interior without the surrounding terrain. These terrain region is left white. Therefore these roof files contain not only an offset table but also a table with vertices, as told to me by Cpl_Filth (thanks Corporal!):

Author: **CplFilth** (---.oulu.fi)
Date: 10-08-2003 18:17

CC3-CC5 Roof-File format

All values decimal and MSB-first(big endian) unless otherwise indicated. All integers are 4 bytes long.

```
Header ( a total of 16 + 132*roofs bytes )

        Once:
                integer E0 02 F0 01 // header ID
                integer number_of_roofs // ie. roofpairs
                integer 0
```

```
                integer 0
        for ( each roofpair )
                integer 2 // number of roof images for this entry
                integer number_of_vertices
                for ( i = 0 ; i < number_of_vertices ; i++ )
                        {
                        integer vertex.i.x-coordinate
                        integer vertex.i.y-coordinate
                        }
                for ( i = number of vertices ; i < 12 ; i++ )
                        {
                        // 0xCDCDCDCD indicates this vertex is not used
                        integer 0xCDCDCDCD
                        integer 0xCDCDCDCD
                        }
                integer 2*roof_width
                integer roof_top_left_x-coordinate
                integer roof_top_left_y-coordinate
                integer roof_bottom_right_x-coordinate
                integer roof_bottom_right_y-coordinate
                integer offset_of_exterior_data // from beginning of file
                integer offset_of_interior_data // ditto

Data (the rest of the file) // standard cc format graphical data ie. pretty
much TGA

roof0_exterior_data
roof0_interior_data
roof1_exterior_data
roof1_interior_data
roof2_exterior_data
roof2_interior_data
etc.

That's about it.

CplFilth
```

The main task: Map-Converting from CC3/CC4/CC5 to CC2

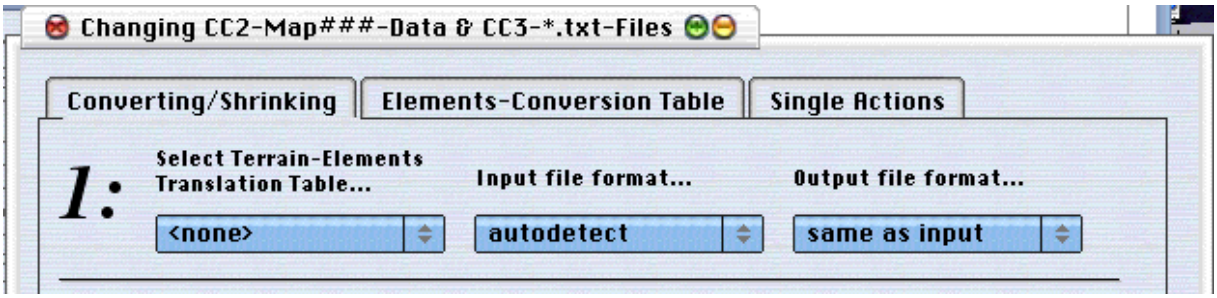
The differences in the roof file formats is one of the main difficulties in converting a CC3-CC5-map into a CC2 map. For all other things there ware tools on PC already available. To do the job there are some other problems to solve, too:

- CC3-CC5 maps are encoded in a different graphics file format (LITTLE ENDIAN), CC2 graphics are encoded in Big Endian,
- CC3-CC5 map data files depend on a different terrain-element definition,
- CC5 maps are too large for CC3 (CC3 limit is 30x30 mega-tiles), CC5-CC3 maps are too large for CC2 (CC2 limit is 19x19 mega-tiles).[2]

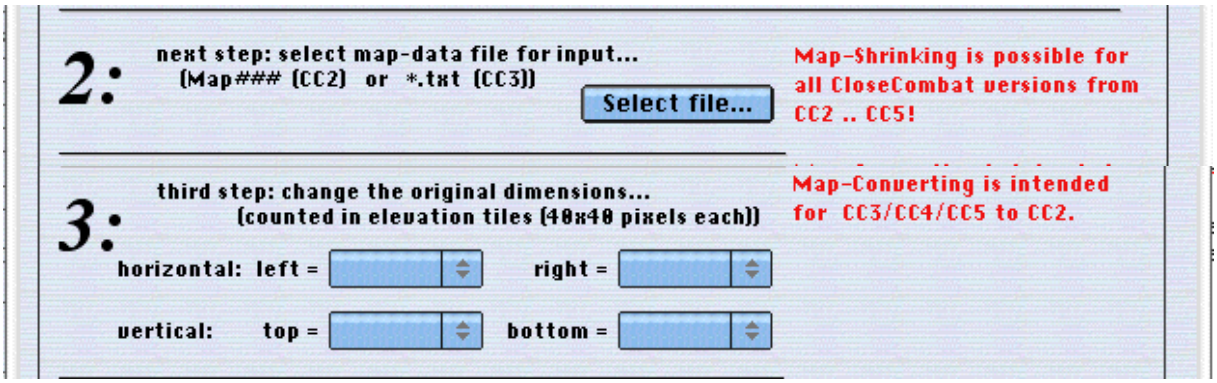
So I put it all together into one (now nearly overcrowded) window. The input files are always detected by their header if they are from CC2 or not. The steps are as follows:

[2] A mega-tile is a graphical subset of a map with a 120x120 pixel dimension. It is also called 'deployment tile' because these tiles are the grid to deploy your troops at start of a battle and the grid for placing the victory locations.

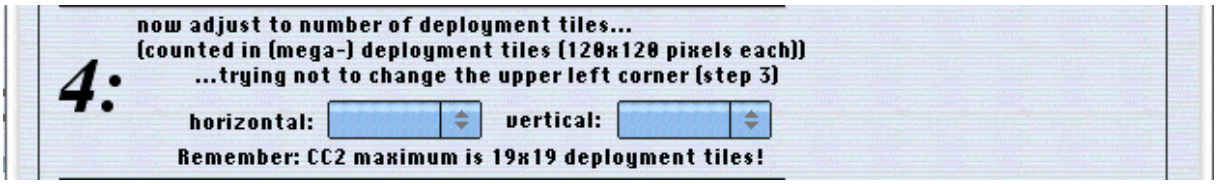
1. select if you want to have a translation in the terrain element numbers. I have included two translation tables (CC5 to CC2, CC3 to CC2) which can be altered freely. Remember: some of the mods use different terrain element definitions. In CC2 these definitions are in the base file "Elements" (TAB-seperated text, CR-delimited). And you must set the output format of the resulting file(s): same as input, CC2 or CC3-CC5.



2. Then you must select a map data file. These kind of files contains the map's terrain description (numbers, TAB-seperated text file) depending on the terrain definitons of the the base file "Elements" and the elevation description. There are differences in the file format between CC2 and the other versions, and they have different headers (luck!). After this file is imported you can do the next step:



3. you can keep the original dimensions of the map if it will fit to your pupose. In any other case you can select a new upper left offset of the map (popup-menus at the left side) and in step 4:



4. you can determine the width and the height of the new cut-out. The width and the height can be entered in step 4 counted in deployment tiles and will be shown up counted in elevation tiles in the popup-menus of step 3 at the right side. My tool will always try to have a width /height in full deployment tiles (that means: a multiple of 120 pixels), but you can set up the upper left edge of your cut-out freely counted in elevation tiles (that means: multiples of 40 pixels).
5. Now the new dimensions are set and you can convert all kind of files to your new dimensions:

- Map-data files (CC2: "Map###" out of the folder "Data/Maps"; CC3-CC5: *.txt files). In case of the CC2 files: I managed to recalculate the bridge-file data addendum at the end of the "Map###" files..
- LOS-files (CC2: "Map###.los" out of the folder "Data/Maps"; CC3-CC5: *.los files),
- Background graphics (CC2: "BGMap###" out of the folder "Graphics/Maps"; CC3-CC5: *.bgm files),
- The minimap and overviewmap files are not shrinked but created new from the original background graphics cut-out when pressing the corresponding buttons. My algorithm used is not so good as the one of Chris Ellens' CCEdit..
- Roof files (CC2: "Roof###" out of the folder "Graphics/Maps"; CC3-CC5: *.rfm files). Remember the roof graphics differences: I solved the white space problem around the CC3-CC5 roof graphics by pasting in the terrain graphics from the original background graphic. If the program will not find this file, it will ask for it in a seperate dialog. This pasting in will occur always when: converting from CC3-CC5 to CC2 and when some of the roof graphics must be cut-off during shrinking (so I avoided a recalculating of the vertices). Best way to avoid the seperate dialog box: keep all incoming CC3-CC5 map files in one folder.
- CC2-bridge files will also be recalculated correctly during shrinking...
- Like the CC2-scenario files. The only thing I didn't implemented is to take over the original deployment zones. Do this manually. In case the input is CC3 scenario file this file can be converted into (shrinked) CC2 scenario. These CC3 files have the name of their battles (sorry, they have no header). If the input is a CC4 or CC5 map, these scenario files are *.btd files and can be convertedd and shrinked into CC2 files, too (they have a header, thanks to Mick (xe5) Conmy for his advice and description).

The entries in the used translation table from step 1 can be viewed on the second tab-panel entry (and can be changed and saved for further use). On the third tab-panel entry are some single actions for tasks **without** shrinking:

- converting background graphics from CC3-CC5 into CC2 format,
- converting roof files from CC3-CC5 into CC2 format,
- creating CC2 OVMap### and MMMap### files from CC3-CC5 background graphics,
- and the same with resulting CC3-CC5 *.ovm or *.mmm files.

An example: converting an original CC5 map to CC2 on the Mac

I will take Cherbourg Arsenal map. Launch CC2Tools. Open the dialog "Map converting/shrinking", make first tab panel visual. There are 5 steps to do (they are numbered):

1. set translation table to "<select external table>" an search for the file "CC5toCC2.txt" which came with this archive. It will be loaded into memory. Now set ouput format to "Close Combat 2" (THIS is ESSENTIAL).
2. select CC5 map data file for input: "CHRBRGAS.TXT" from original CC5 CDROM; my tool will show then the file format and size of the map.
3. set the new dimension to Left = 4, Top = 34 with a width of 14 mega-tiles and a height of 13 mega-tiles.

4a. press the button "Shrink..." and enter new name for output file "Map400".

4b. press the button "Shrink LOS..." to search for corresponding LOS-file "CHRBRGAS.LOS" and enter name of new LOS-file "Map400.los" (quicker than making a new LOS-file).
5. press button "BGMap..." and search for CC5 background graphics "CHRBRGAS.BGM" from same source as above. Set output file name to "BGMap400".
6. press button "MMMap..." and search again for same CC5 background graphics "CHRBRGAS.BGM" from same source as above. Set output file name to "MMMap400".
7. press button "OVMap..." and search again for same CC5 background graphics "CHRBRGAS.BGM" from same source as above. Set output file name to "OVMap400".
8. press button "Roof..." and search for corresponding CC5 roof graphics "CHRBRGAS.RFM" from same source as above. Set output file name to "Roof400".
9. press button "CC4/CC5-btm -> Scenario..." and search for corresponding CC5 BTM scenario file "CHRBRGAS.BTM" from same source as above. Set output file name to "Scenario".
10. open new "Scenario" with Ms-Excel or SimpleText and change the map name from "Map102" to "Map400" (this must be done, if not, the map will not start),
11. create a folder named "1400", place the new "Scenario" and some suitable existing "AlOOB" and "AxOOB" files in it , too.
12. change your base file "Batnames" and add an entry map 400 as single battle and increase the number of battles (Ugur's method).
13. Place the folder "1400" in the folder "Close Combat:data:data:battles" of your disk image of CC2 original disk, place the file "Map400" in the folder "Close Combat:data:data:maps", place the graphics files "BGMap400", "OVMap400", "MMMap400" and "Roof400" in the folder "Close Combat:data:graphics:maps".
14. Perhaps you will launch CCedit od CClos and generate a different LOS-file, if you need it.
15- Ready, start ABTF and you will have a new map with the lower portion of "Cherbourg Arsenal".

The other side

For MacOS there are only two other tools for CC2-modders available: the excellent map maker "CCEdit" by Chris Ellens and my CC2-Soundeditor "myMook". Both tools helped me in making my CC2-Afrika-Mod. My new tool now will help me and other CC2-gamers to have more CC2-maps on the harddisk. For PC users there a lot of more tools available: at the moment the largest tool collection can be found at JimmyD's toolshed:
www.wargamer.com/Hosted/CCJimmyD/index.htm
Another good source is still CSO: www.closecombat.org
And a lot of CC3/CC5 mods and custom maps can be found at ftp://ftp.rlgaming.com

Any one interested in having more? Contact me:

Mafi Oct. 22nd, 2003
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http://members.fortunecity.de/closecombat2/ http://www.geocities.com/cc2revival/
http://www.closecombat2.claranet.de/ http://www.cc2.claranet.de/
http://www.dieppe.claranet.de/ http://www.mappa.claranet.de/