

CrafT_EX: Applying T_EX, MetaPost, and friends in crafts

Mari Voipio

Everything started because of my job as a documentation manager in high-tech industry: when the word processor gave up on our big fat instruction manual and the purpose-built software wasn't within budget, we ended up with ConT_EXt. The transition period wasn't easy, but in time I learned to appreciate this software that does *not* make assumptions about what I'm attempting to do.

Thus, when I suddenly found myself with a textile craft book to be translated and prepared for printing, I thought of ConT_EXt. Life happened and the booklet is still sitting on my desk waiting for its turn, but in the meantime I have learned many other things about T_EX-based systems and started to exploit their potential in crafts.

The experience has been mind-blowing! I come up with new implementations almost weekly, although I don't usually try things out until I have a real need for them. I am not a programmer, but I realize that a computer is especially useful in reducing the tedious repetitiveness of the planning stages. Nothing can ever prepare a crafter to what happens when you play with real yarn and real paper and glue, but the "what if that's lighter blue" and "I guess this is the wrong font here" process can be significantly sped up by computer simulation.

I don't feel complete until I've shared my knowledge with others. I don't get many face-to-face opportunities to do that, so I decided to go online: <http://www.lucet.fi>. I haven't had the energy to fight with WordPress about the printing styles, so instead I'm planning to do printer-friendly PDF instructions with ConT_EXt and MetaPost.

Besides enhancing my creativity, I also use ConT_EXt to deal with the boring but necessary parts of having my own little craft business, e.g. for creating price lists and business cards. This migration is still very much in process, but eventually everything will be done with ConT_EXt and possibly MetaPost, with as few different style definitions as possible.

1 Plain vanilla typesetting

It may seem obvious to many readers that T_EX can be used to typeset craft-related documents just as well as anything else. However, to me it has been a new world where vector graphics can be inserted as is and the layout is mainly limited by my own skill, not by what far-away programmers thought I'd need the software for. While shedding 20 years worth of WYSIWYG workarounds and reverse engineering

The medieval and Renaissance manuscripts very seldom had numbered pages. If numbering existed, it got cut off when the manuscript was bound.

Thus, to refer to a certain place in a book, the learned men and pious women of the period often used multiple-strand ribbon bookmarks that were either fastened directly to the top of the book binding or loose, fastened onto an anchor - a button, a knot, a fabric bolster - on top. The bottom ends were finished with e.g. beads or tassels.

This far only some 30 medieval or Renaissance bookmarks are known, the delicate ribbons preserved by the manuscript they were used in. However,

this type of bookmarks are common in paintings, used in Bibles and prayer books as well as by learned men in study.



A detail of *The Vision of St Augustin* by Vittorio Carpaccio 1502

Figure 1: Documentation card for a historical bookmark.

has not been easy, I now find ConT_EXt much more versatile than anything I've had before, doubling as a word processor and tool for desktop publishing.

Thus far I've used T_EX, mainly ConT_EXt, to typeset three kinds of documents: documentation on pieces I've created, instructions on how to do something, and little odds and ends necessary to my tiny craft business.

Documentation is an integrated part of my crafting. I feel that telling the story behind an item adds to its value. A hobby of mine is historical re-enactment, and there it is important to "justify" the existence of an item by explaining the historical context, usually with literary and visual references. Even a small item can illustrate history and bring it close, e.g. a bead-decorated multi-strand bookmark illuminates an era when page numbers were a rarity and books were stored flat rather than upright.

Instructions are all about sharing the knowledge one has gained. Instructions on paper can seldom fully replace hands-on training, but I always try to include both written instructions and graphics as different people prefer different versions. Nowadays I try to complement the instruction sheets with online videos, but I'd rather not count on the moving picture; living with slightly dodgy Internet connections has taught me to value downloadable instruction files!

The business end of my typesetting is the newest addition to my T_EXing and also the one that saves me the most time: judicious use of layers and imposition suddenly makes perfect tags and labels much easier to achieve than it ever was with word processors. As I attend a variety of craft-related events, I used to have several different price lists, one "medieval", one "old-fashioned" and one "modern" (with man-made materials only appearing in the third one). Now I can fairly easily maintain just one price list from which

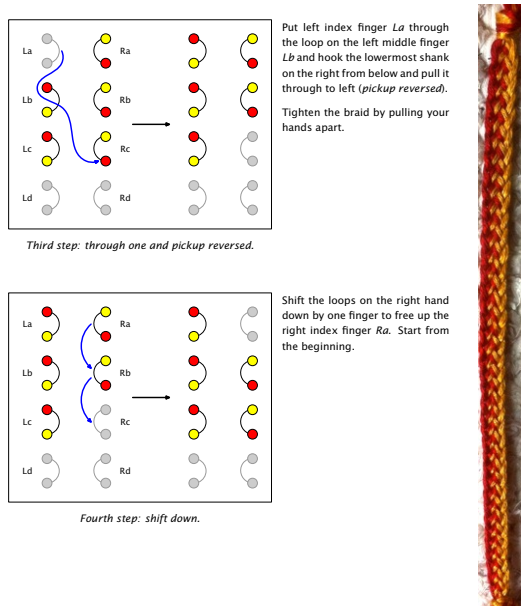


Figure 2: An instruction page for a broad lace.



Figure 3: An example business order.

I pick whatever is needed for a given event, without dealing with (e.g.) tedious mail merge functions.

2 Scrapbooking and cardcraft

My handwriting was never great to start with, and I'm badly out of practice since switching to computers over 20 years ago. Thus, when I have a reason to make a greeting card, I resort to typesetting everything on computer, so I only need to sign the card after printing. I've managed to create these texts in a word processor or vector drawing program — depending on what was available — but ConTeXt has made the process much easier to control. This especially applies when the card is of unusual size, e.g. because I've messed up with a punched border and cut it off to save the rest of the card; changing the ConTeXt code to reflect this is much faster than fiddling with text boxes in a word processor file.

Sometimes it can be hard to come up with a suitable picture for a card. I wanted to express my condolences and support to a friend whose long-awaited baby was stillborn, but the available cards were either too somber and dark or otherwise inappropriate. In the end I resorted to the “poetry for all occasions” section in my bookshelf, and found a beautiful Finnish poem on a child resting on soft green moss, gently rocked by the wind, a poem that wasn't too “heavy” to remember this little one. When I had found the text, the rest of the card grew out of it: looking for and finding a (free) rainy background, trimming the text by tearing the edges, applying it with glue dots on blue card.

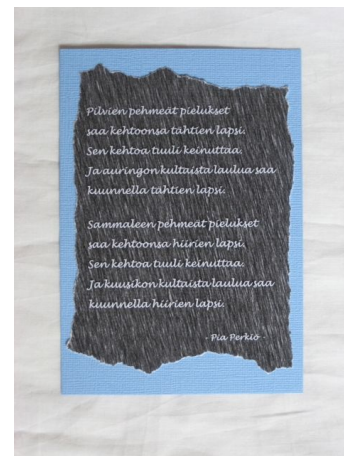


Figure 4: Condolences card.

I like using printed texts because I can get a new one if I mess it up in the assembly stage — but this card turned out to be one of those rare specimens where everything went right on the first go. As this was the first time I had tried using background texture, the learning curve was steep and bumpy as always, but definitely worth the effort. Not only was I content with how this card turned out (figure 4), I now have a template that can be tweaked to become any type of card with a background graphic and a text on top of it. Another poem, another background, a different edge treatment, e.g. a lace edge punch, and the card will look totally different with very little effort.

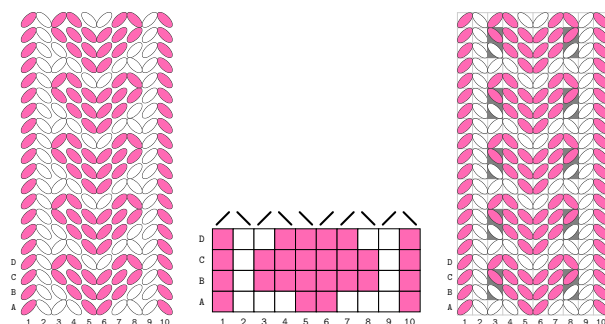


Figure 5: Tablet weaving of a heart braid pattern: simulation, threading chart, and turning sequence.

3 Tablet weaving

Tablet weaving or card weaving is an ancient technique for weaving patterned ribbons. It is a complicated technique due to the structure of the braid: the most common weaving tablet is a square with a hole for thread at each corner, and each card can be threaded either from the left or right, although all threads in a given card need to come from the same direction. During the weaving process the tablets are turned a quarter round away or toward the weaver to get a new shed (space for the weft), and one can either turn the whole pack together or split the tablets and turn them to different directions. All this makes for a fairly complex structure—and then there are additional techniques to further manipulate warp and weft threads.

When I originally learned tablet weaving, I was taught to plan my braids on squared paper. However, I soon found out that it was very easy to forget one of the variables, and those mistakes tended to be costly: it could take me three hours to thread a simple warp and start weaving, only to find out that the pattern wasn't at all what I wanted. I'm not the first one who thought about using computer as shortcut, and for several years I used open source software that had its features and limitations, but worked—only in Windows. When I changed over to Macs I had to come up with a different solution. For a while I used Inkscape to draw pattern simulations, but the oblique “stitch” turned out to be a bit hard to place accurately and in general I got tired of all the repetitive clicking and the work involved every time I wanted to change something. This was enough incentive to try to implement MetaPost instead.

For the simplest tablet weaving patterns I just make a simulation graphic for myself and follow it when threading the tablets. However, a threading chart makes the process of creating a warp a bit faster, especially if thread counts are included. For patterns where tablets turn separately, a turning



Figure 6: A page from my Helsing Book.

chart is also needed. In mine I mark the deviating tablets with a darker background, as in the heart ribbon that was inspired by Valentine's Day (figure 5). I chose to weave this in evenly and tightly spun pearl cotton to ensure clean lines, but I was still surprised by how well it turned out compared with the simulation.

4 Historical (re)creation

Another of my favorite braiding techniques is finger-loop braiding, where loops of yarn are held on the fingers of both hands (usually not the thumbs) and manipulated by switching them from finger to finger through or past each other. This technique is surprisingly well-documented in 15th and 17th century English manuscripts that have been transcribed by several researchers. By now I remember the simplest braiding sequences, but need cheat sheets for the more complicated ones. Because modern books are frowned on at some of the events I go to, I decided to create a Renaissance-style fingerloop braiding “recipe book” to show demonstration spectators and to jog my memory.

Thus, my “Helsing Book of Braids and Laces” (named in period style after the place where it was created) is typeset in ConT_EXt with the Lucida OpenType calligraphy and blackletter fonts, and printed on sturdy off-white parchment paper (figure 6). Sample braids are attached with a few sewing stitches through the paper. I chose this approach for two reasons: I wanted to make the book easy and cheap

to replace if it gets rained on (for example); and I wanted to be able to add new braiding recipes anywhere in the book so I can keep related braids together instead of having to add them to the end of the book in the order I find or create them. Currently there are only six A5 pages of recipes in my printed copy and many samples are missing, but the project is constantly growing, spurred by the positive interest that my little booklet has received wherever I've shown it.

5 Other ideas

One idea leads to another, and the possibilities seem endless. In tablet weaving I need charts for double-faced weave and brocade, and a lot of automation to omit the most tedious stages of pattern planning. I could also use weaving drafts and especially simulation graphics for rigid heddle, inkle and backstrap weaving and even my small “real” weaving loom. I am also learning Japanese braiding techniques and recently found a book with beautiful patterns, but instruction charts that just don't parse for me, so I have to rework them using a system I can understand.

In other textile crafts I'm itching to try my hand at quilting, as MetaPost will be handy in playing with shapes and color. I should also be able to create cutting plans and even cutting patterns for many medieval and Renaissance items of clothing, another task I'm used to doing on gridded paper. As there are several common fabric widths and shrinkage depends on the fiber, the preliminary cutting plans often have to be remade after the fabric is purchased and washed; this should be at least less smudgy with MetaPost, if not less work.

I also want to learn to create interactive PDFs from my instruction sheets. When I've gotten more practice in integrating MetaPost in ConTeXt documents, I hope to be able to add all types of fancy frames around my texts and pictures as well. The combination of MetaPost and ConTeXt also allows for fitting text into shapes and clipping text and graphics to shapes.

Besides paper and fibre, I also play with beads. When I string a necklace, it typically has a pattern where two colors and/or shapes and/or sizes of beads are combined. I think this could be simulated to some extent by placing objects on an oval path of appropriate diameter or length. There are so many factors to be taken into account that MetaPost will never be able to substitute a real tactile beading board and a real strung necklace, but a quick simulation should show whether something will be pleasing to my eye and if so, what amounts of, say, 6 mm and

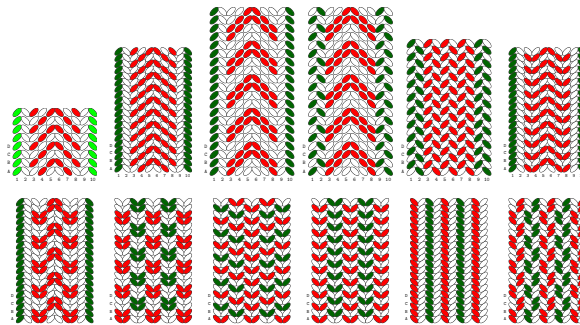


Figure 7: Testing a design theme and variations.

4 mm beads I need for the project. Again, playing with color is faster virtually; in real life, it takes a while to pick out all 50 red beads and put 50 blue in the vacated slots, while on the computer it is a matter of a quick round of find and replace—or replace all, if one is feeling courageous.

6 Why T_EX and friends?

Recently my games with MetaPost and (Con)T_EX(t) have attracted quite a bit of curiosity both within the ConT_EXt community and among the braiders, so I often have to explain why I've made this choice. The main aim of the whole exercise is to shorten or entirely avoid the most repetitive and tedious stages of crafting to free up time and energy for creativity. If changing a color scheme on a braid takes three minutes instead of 30, I can try out a lot more color schemes in the same amount of time. When I go into that mode, I don't want technical issues to hold up the flow of new ideas. (See a design theme and variations in figure 7.)

I'm sure there is existing commercial or open source software for everything I use, and usually learning to use just that software would be faster and easier. The flip side of the coin is that dedicated software is (at best) good at doing what it was intended to do, but it can often be expensive, or restricted to just one operating system, or good at the basics but hopeless at an advanced level. As I'm interested in a wide variety of crafts, I need something that is as versatile as possible and the ConT_EXt suite in combination with MetaPost and T_EX/ConT_EXt code ticks all the boxes for me. I hope to write more articles in the future going into more of the T_EXnical and MetaPost-ish details.

◇ Mari Voipio
 mari dot voipio (at) lucet dot
 fi
<http://www.lucet.fi>