How was Pointcarré born ?

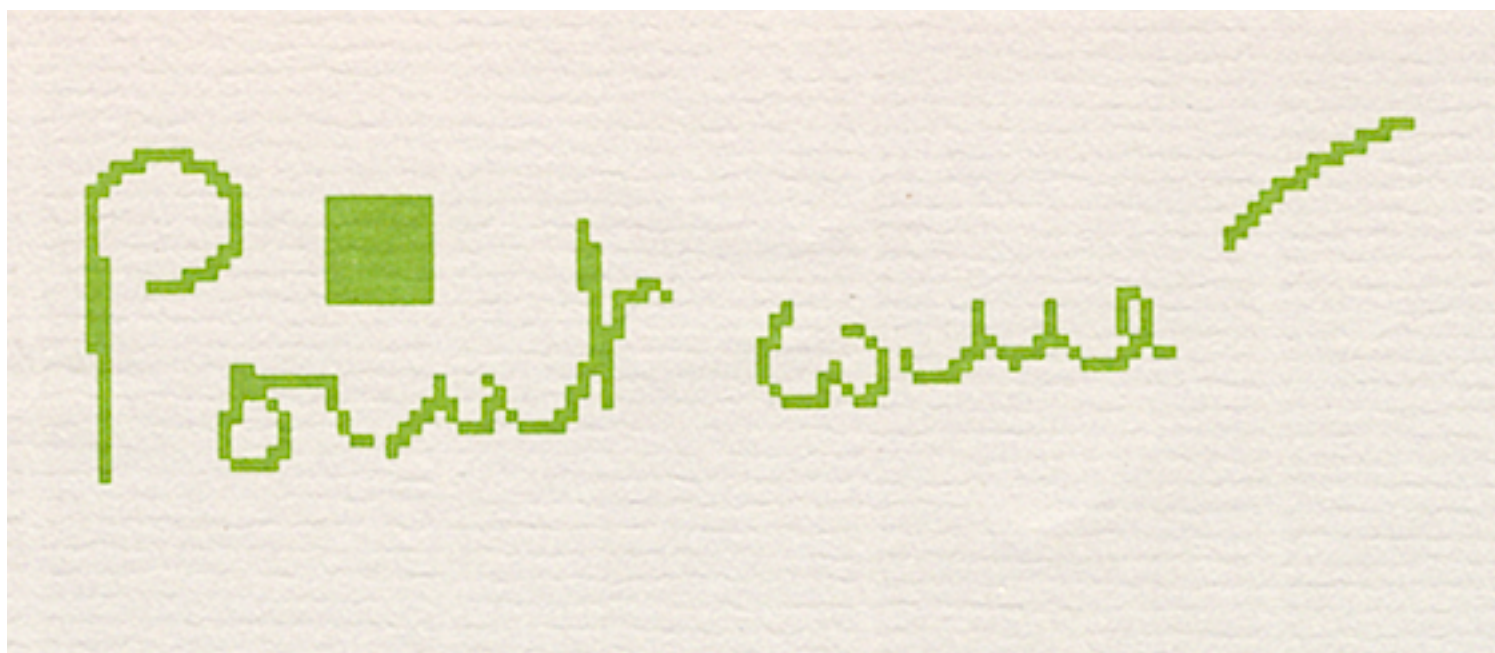

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Date : June 2018

Abstract :

The genesis of Pointcarré software, from the 1970s to the creation of the company "Pointcarré SARL" on December 1st, 1987.

First I started to weave[1].
It was in the 70s.

As I practiced weaving and improved my looms I learned to create more and more elaborate patterns.
At the beginning, with a four-frame loom, it was only possible to weave simple weave structure, small geometric patterns such as "houndstooth".

However fabrics with large drawings existed ; I had already seen somewhere. In fact I have the memory of having seen Peruvian or Inca fabrics.


These patterns are constituted as in many textile techniques by blocks. Each block consists of a number of warp threads and a number of weft threads. The patterns are made up of small squares; they look like they are drawn on graph paper. The drawings are very stylized ; very "pixelated" ...

In the weaving books was described a block weave structure named "Summer-winter". As its name suggests it allows to form in a fabric clear areas opposed to dark areas. This with few shafts needed ; two shafts are used to weave a plain weave background back and then one shaft per block.

So I equipped my loom with 10 shafts and 16 pedals. What create drawings with 8 independent blocks or 16 linked blocks with a symmetry in the threading.

(1) For more details on my weaving debut read the FAQ "How did I start to weave ?"
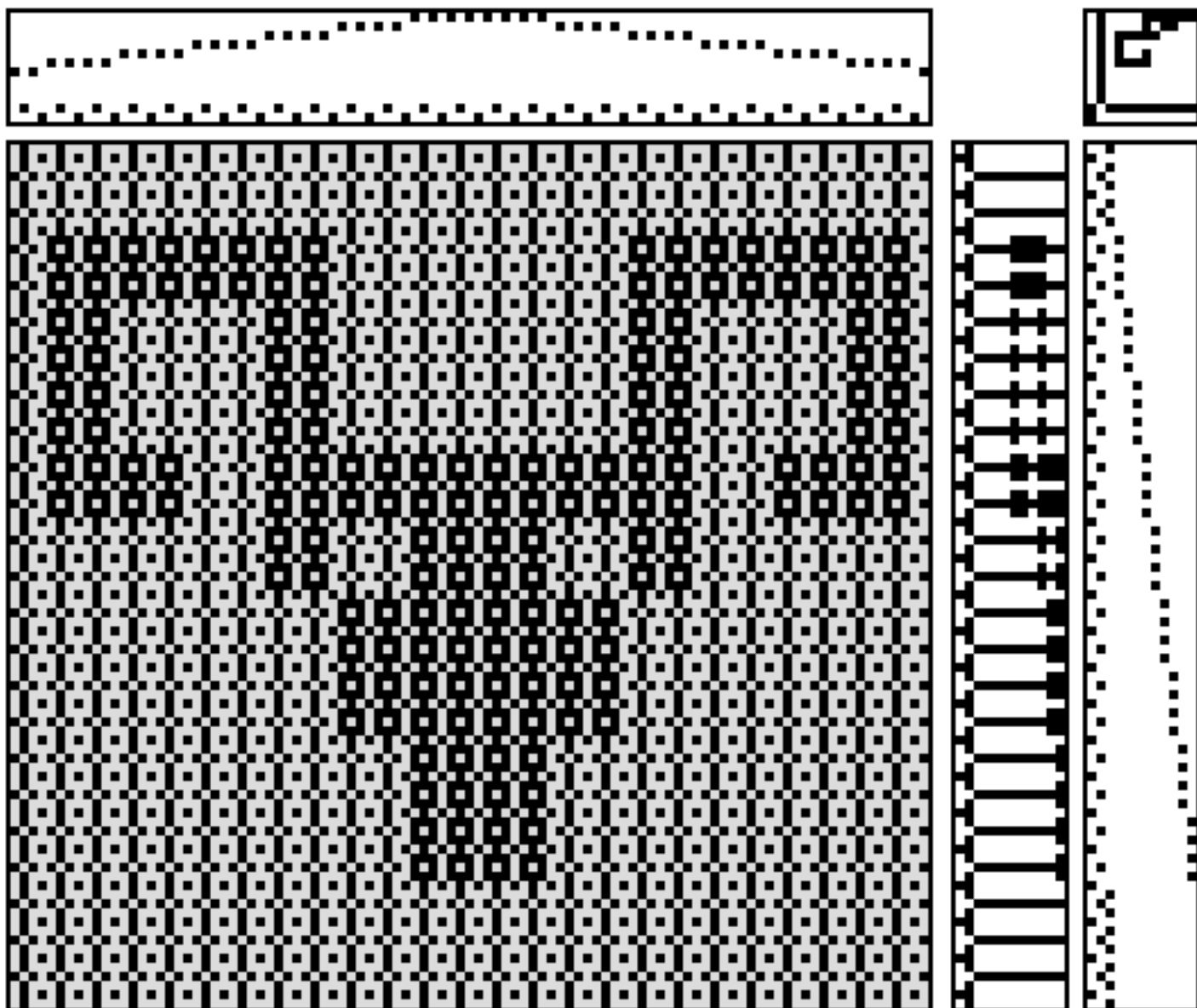
One of my first block drawings that served as a logo for weaving

In fact this weave structure was not at all the one used by the Incas (which is rather a tapestry structure) but it allows to make similar drawings. However the constraint of the number of shafts requires more stylized drawings, on a minimum number of blocks.

So I spent hours developing animal patterns by drawing on graph paper, with a pencil and an eraser for every tool ...
Then to optimize the harness-tie, limited to 16 pedals.
Then to weave:

Cushions woven in "Summer & winter"

When I left France for my national service aid work in Morocco, on September 1976, I could not take my looms with me. Anyway I continue to develop new animal patterns during my free time.

In Rabat a factory proposed to weave custom made carpets, with a free pattern. I had the idea to use my animals for a carpet project. This gave me the opportunity to use some patterns that were not feasible in summer & winter, because requiring too many blocks.

In "knotted carpet" technique, there is no constraint as in weaving. The unit is the knot and you can do anywhere a knot of the color you want.

These Rabat's carpets have a density of 36 knots/cm², more precisely 6 knots/cm in width and 6 knots/cm in height.

I chose for scale:
     1 dot of graph paper = 6 knots x 6 knots

"1 dot of graph paper", i.e. a "squared dot", was exactly 1cm x 1cm.

"Dot" is "Point" in French, and "squared" is "carré".
So "squared dot" is "Point carré" in French.

It is this "square dot" that will later give the name of the software "Pointcarré".

I proudly handed my carpet project to the factory:

I indicated the colors to use and the correspondence of the drawing:
   1 square point = 1cm x 1cm.

Carpet project

A month later, visiting Rabat we went to see in what state of progress was our carpet. To my great surprise they pulled out of a drawer a roll of graph paper on which they had "transcribed" my drawing.

They had replaced on the graph paper each "square point" of my drawing, by a square of 6 points of a millimeter by 6 points of a millimeter ; they had reproduced my drawing at real size !

The concept of 1 "square point" matching = 6 x 6 knots was too abstract for weavers.

Moreover each animal had been surrounded by a black border ; tradition was that the colors should be separated by a black knot !

Finally, I noticed that the animals were not properly aligned ; they were placed a little anywhere on the background ...

It looked like this:
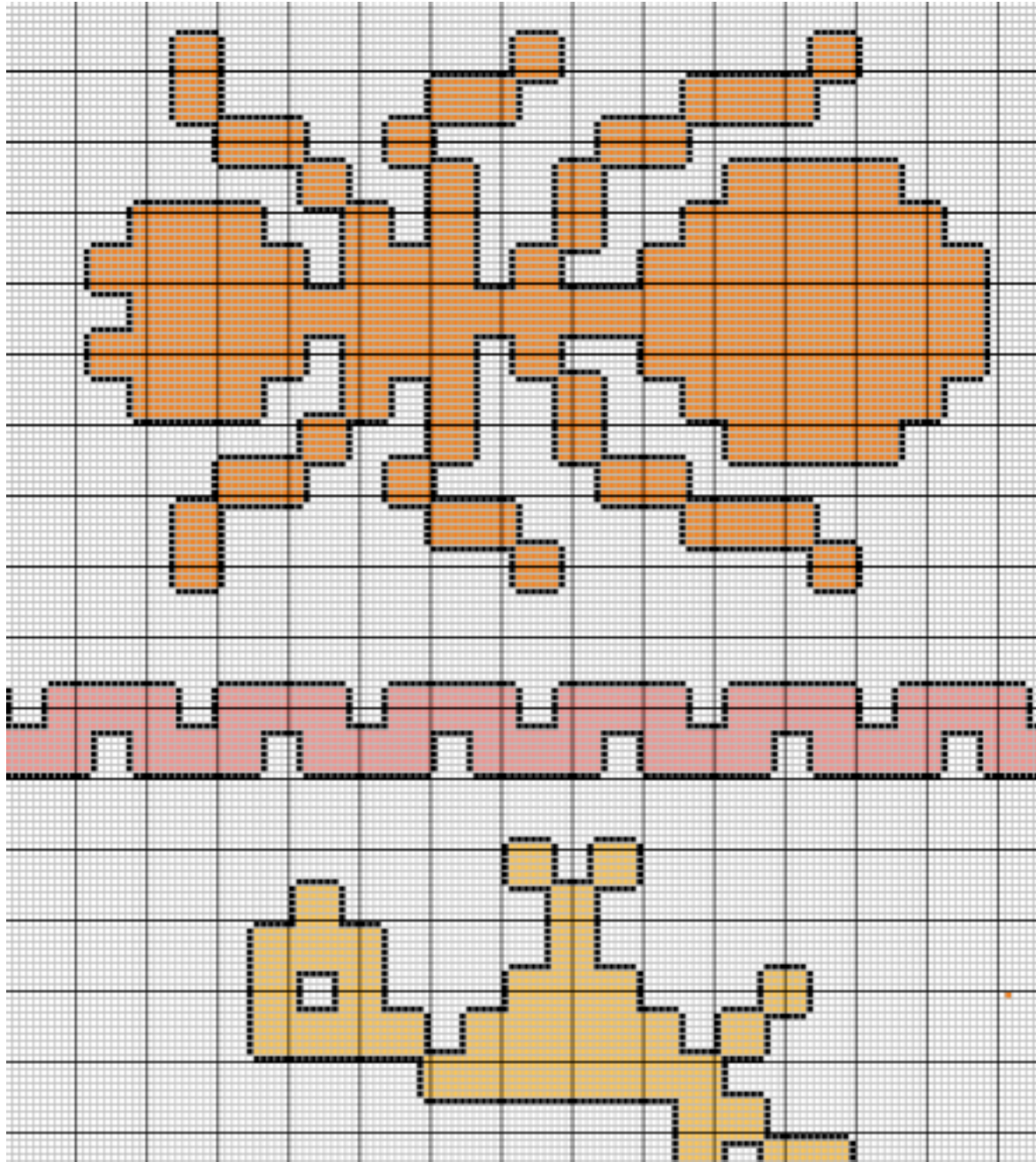
The director made me understand that we could not change the habits of the weavers and this carpet remained in the state of project.

Back from my national service aid work in August 1978, I resumed weaving, a year in Brittany then at Viller le lac in eastern France.

Tapestry exhibited at "Festiv'art" Villers le lac 1980

It was in 1981 that I really settled in Brittany and joined the union of Breton weavers.

Henri Lazennec, a former école polytechnique student, introduced computers to the union. Several Apple IIs and a plotter were available for rent and travel from one weaver to another. This hardware was driven by the software "Creation and weaving" written by Henri. It allowed to define a threading with the keyboard, then the pep-plan and finally calculated the resulting cloth. Clothes could be printed or drawn on the plotter. Henri also developed a pedal equipped with electromagnets that allowed the weaving directly controlled by computer.

A traditional source of income for the weavers was the weaving workshop, but in August 82 Henri had the idea of organizing a course of "basic programming". After placing advertisements he finally recruited only one candidate. He then gave me a call to find out if I would be interested in joining them for this course.

You must know that my father had made his career in computer science, more exactly in the manufacture of computer. He developed the first French computers and filed patents on magnetism for drum discs, ancestors of hard drives. He worked a lot and came back late at night. As a teenager I had sworn never to do computer science ; judging the job too much monopolizing.
Also, every time I had the opportunity to learn computer during my studies I had turned my head, preferring the path of pure mathematics.

When I see the obvious links between my passion for weaving and computer science (the perforated cardboard of Jacquard looms are a bit like the ancestors of computers), and the research possibilities that computer technology brought to weaving, I broke down.

I accepted to follow the course and made me host for a week at a friend's house on the monk island (Henri living near the Gulf of Morbihan).
I have a very good souvenir of this week when I had to take the boat early in the morning to join Henri and again the boat at night to reach my place.

For the record, the trainee was a certain Hervé Baudesson who will then create the company "Haute Tension" to sell Henri's software. Company which will be for years the main competitor of the "Pointcarré" company.

After learning the Basic in a week, I was bitten and I bought the cheapest computer on the market : a ZX 81.


In the middle the ZX 81 computer

I also had to find a TV and a cassette player.

With this equipment I started my first software : a drawing software.
Four keys on the keyboard was moving a square cursor in the four directions, up, down, left and right, one key validated the pixel on the screen, another could erase it. In addition two scales of work were available. A small one that displayed the entire drawing from a distance, each square of the drawing corresponding to one pixel of the screen. A big one where each pixel of the drawing matched to a square of 8x8 pixels.
This feature was invaluable for seeing my drawings from a distance, the distance allowing the brain to perceive a line of pixels as a . It was faster than hanging the drawing on the wall and going back 6 meters.
Being able to erase was also fundamental in developing drawings quickly ; often a pixel more or less changed the perception.
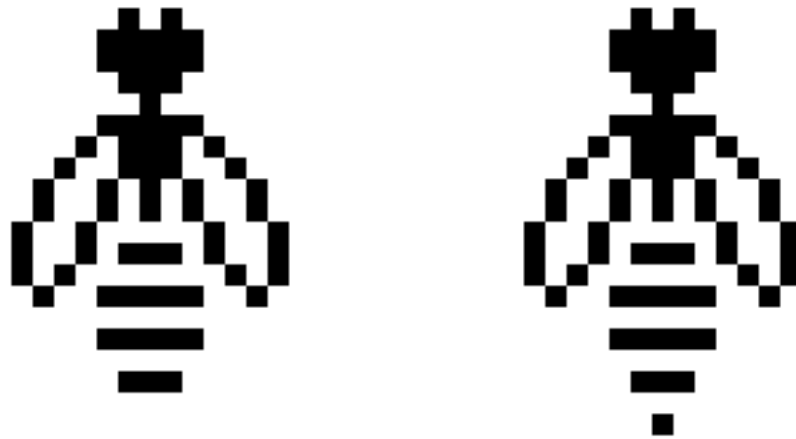
If I showed these two drawings separately, asking which animal it represent, I invariably got the same answers : bee and wasp.
However these two drawings differ only by one pixel. The point at the bottom of the wasp suggests the tip of the sting.

I have always been fascinated by the fact that the brain reconstructs an image; vision is a matter of coding graphic elements not a photograph. A drawing is therefore always interpreted. These stylized drawings show that we can suggest a symbolic image with very few pixels. By trying to minimize the number of pixels we try to define the minimum characteristics of a symbol. Just a trunk and tusks to characterize an elephant
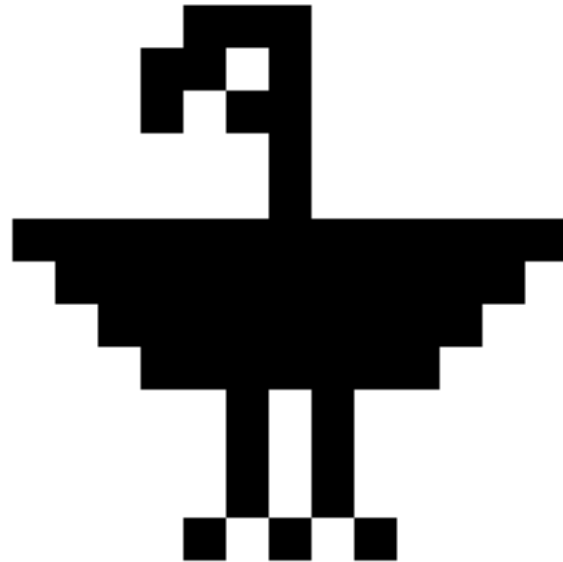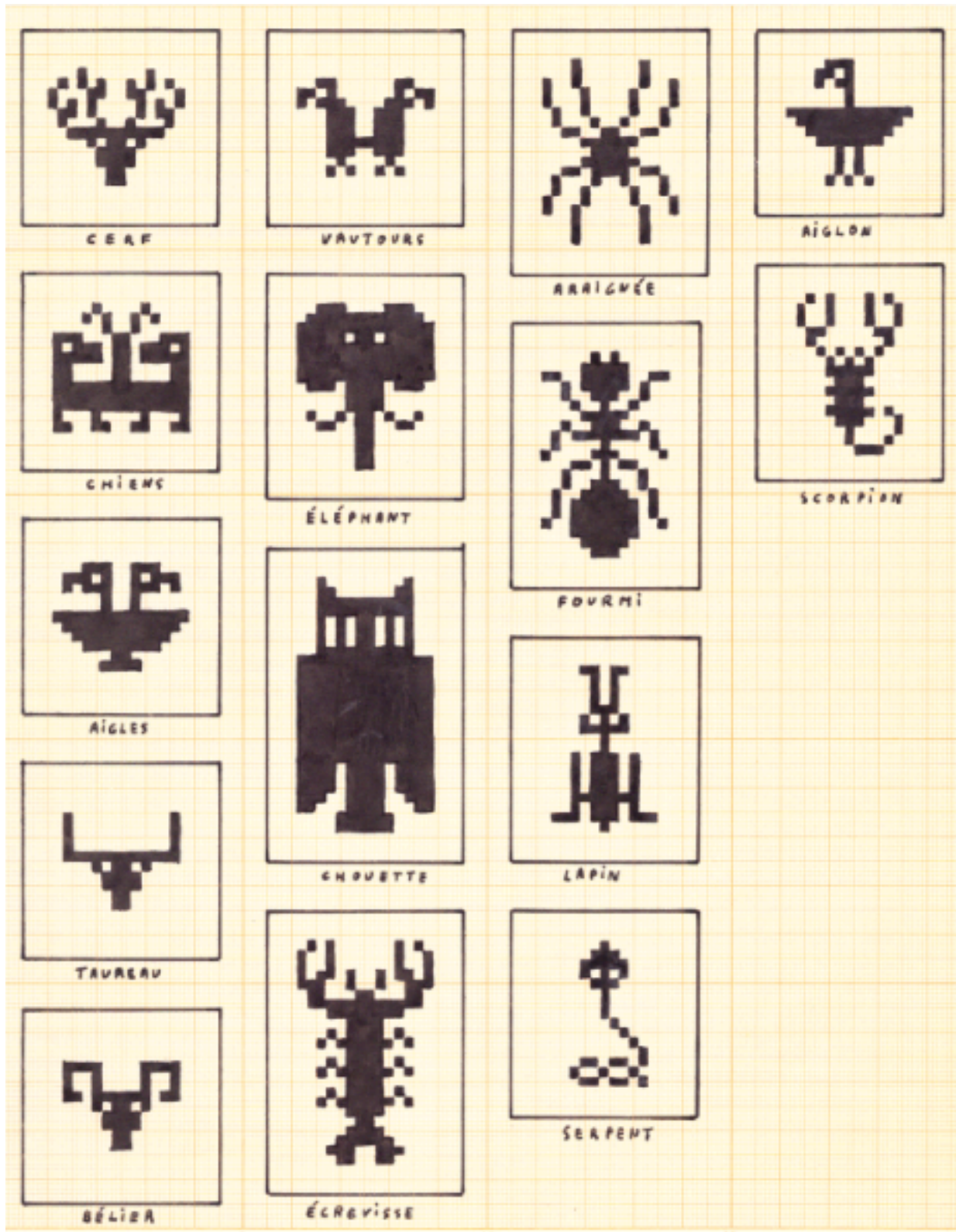
or a hooked beak and talons for an eagle.

When the graphic features that symbolize an animal are too complex, we need a large number of pixels. So I have never come to a satisfactory result to stylize a cat with few pixels. Fine whiskers and slit eyes require a large number of pixels.

This software allowed me to increase my drawing set and present them on an A4 sheet. My customers could easily choose the pattern of their cushion or their small tapestry.

CERF

VAUTOURS

ARAIGNÉE

AIGLON

CHIENS

ÉLÉPHANT

FOURMI

SCORPION

AIGLES

CHOUETTE

LAPIN
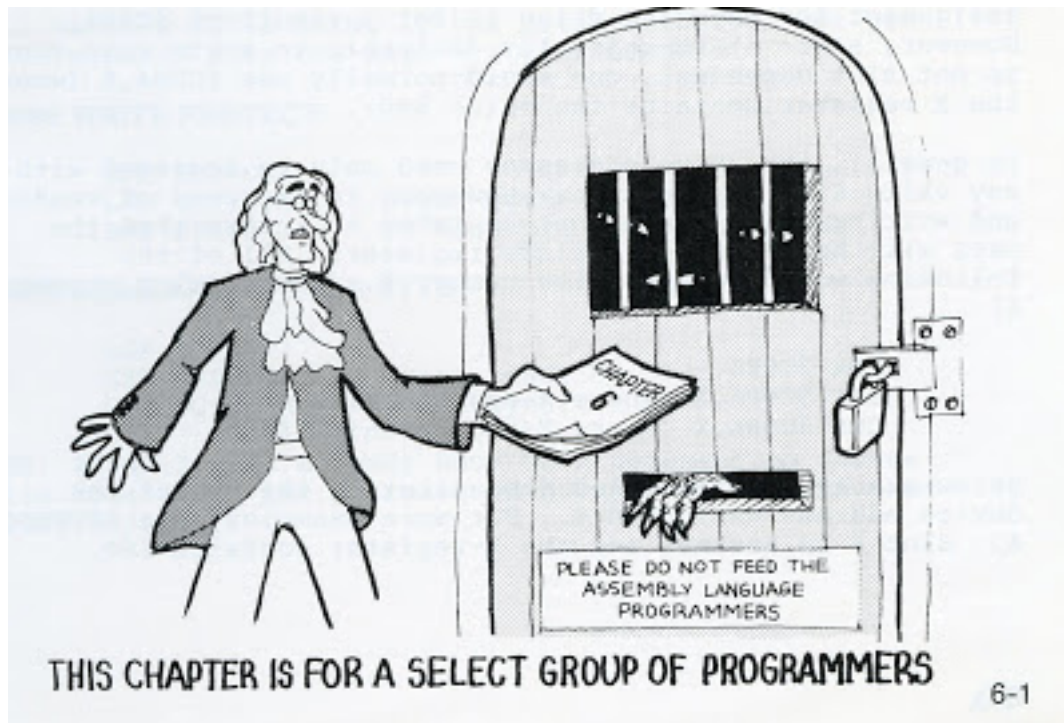
TAUREAU

SERPENT

BÉLIER

ÉCREVISSE

This computing environment was at that time extremely rudimentary. Loading the program from the cassette player took long minutes and it did not work every time. Once the work was done it was necessary to save the whole program with the drawing in memory on the magnetic tape.

Moreover, BASIC was an extremely ... basic language.

Each dot was put in screen memory with the PLOT command and it took about twenty seconds to display the entire drawing on the screen.

To reduce the waiting time that occurred as soon as we change the visualization scale of the drawing I decided to learn assembler programming. This type of programming, which directly speaks to the processor of the computer, was reputed to be particularly difficult :

THIS CHAPTER IS FOR A SELECT GROUP OF PROGRAMMERS

PLEASE DO NOT FEED THE ASSEMBLY LANGUAGE PROGRAMMERS

6-1

I did not know at that time that this learning would accompany me during the next five years and would allow me to take a decisive lead in the development of Pointcarré software, especially on Apple II GS.

So I bought the Zilog Z80A microprocessor manual and became familiar with the programmer's patience, tenacity, and selflessness in machine language.

Imagine that you first have to write the program as a machine instructions list on the paper and then copy the list of digits corresponding to these instructions in the basic program with a long sequence of PEEK orders. Then it was necessary to save the whole on cassette (several minutes) then to test. Invariably the program crashed, either because of a design error, or because of a transcription error in the list of digits.

Try yourself to copy a hundred digits on the keyboard without a single error ...

Yet one day, and this is one of my most striking memories of programmer, I pressed the key that caused the display of the drawing, normally in about twenty seconds in BASIC, wondering what could be the time gained by programming this function in assembler. All of a sudden I realized that the image was already on the screen ; the display took a quarter of a second. I was then overwhelmed by a great sense of power. Only by speaking directly to the processor I displayed almost 100 times faster. I felt the difference of potential that came from the intimate knowledge of the language of the machine.

The transition to a more powerful computer was in a way imposed to me.

For the Christmas holidays we joined this year my parents who lived in the east of France. The trip being very long we stopped at night in Paris and I left the car in the street with most of the luggage, not having the courage to carry up everything on the 4th floor without elevator. The next morning, I had the unpleasant surprise that thieves had broken the rear window of the car and turned everything upside down. The children's Christmas presents were disemboweled, "playmobil" were floating in the gutter, and the computer was gone.

Two weeks later, on the way back, I parked in the same street, decided this time to carry up all the luggage. I then saw my eldest son Yder, fully open the window of the back door. "What are you doing?" I said, "we're going down here." He answered me :

"I do not want thieves to break my window !"

I bought at the beginning of 83 a computer ORIC 1. It had the advantage of being cheaper than Apple II while having the same microprocessor, a 6502.

After transcribing my ZX81 drawing software for Oric, I wrote my first weaving software. He kept the philosophy of the one of Henri Lazennec, the threading was defined by a sequence of keys on the keyboard. I added new functions, required by my experience as a weaver, such as the possibility of making symmetries within the threading or repeating blocks ; and also a little fantasy. The Oric allowed to make music and I associated with each shaft a note of music. Thus, during the display of the threading we heard the melody associated with the succession of shafts, giving a sound image of symmetries and repetitions.

Henri who had then chosen to commercialize his software had also bought an Oric in order to provide a software adapted to the budget of the weaver. Unfortunately the documentation of the Oric was very incomplete and it was missing in particular the address of the display routine. Blocked by the impossibility of displaying the fabric he had put his project on standby.

On my side, strong of my new programming experience in assembler I wrote my own display routine. My weaving software was thus available before Henri's one.

If programming took a bigger and bigger place in my life during these years, I continued to weave, but rather as a textile designer, then as a textile artist with my tapestries.

At Indigo 83 fair, from left to right :
François Roussel, Hervé Baudesson, Olivier Masson, János Vas,
Michèle Lemeur, Françoise Garin, Françoise Ryall, Alain Beaufils

In September 1983, we gathered together several weavers of the Bretons union to present a booth at the "Indigo" fair in Lille. It was at this show that I sold my first (and last) fabric as a textile designer to a wallpaper company.

Fabric "Cachemir" sold for a exploitation in wallpaper

The next step was the transcription of the software on Apple II.

So I was running two software, one of drawing and one of weaving. A first major progress was the adaptation of the drawing program to the mouse, which began to become a standard in the Apple world. The contribution of flexibility was so obvious that one day I said to myself : "Why not drawing with the mouse in the threading ?" I already had, in my drawing software, functions of "drawing with another pattern as a pencil" and the mode "Pattern step" which allowed to easily repeat a pattern. All of this was particularly suitable for block-type drawing where the same cell is often repeated on different shafts. I have 'just' to change the coding of all the diagrams of a cloth by an image coding and to allow direct drawing with the mouse on a large sheet of graph paper presenting the different diagrams of the cloth.
I then started feverishly in the writing of a unique program that took over the main functions of the drawing program, with the management of icons, and those of the weaving program. Everything became graphic, including the calculation of the cloth that I coded directly from the memory of the images of the different diagrams. The basic unit became the pattern as a set of pixels and the software a creator of patterns with possibilities of interactions and calculations between them.
At the end of ten days when I hardly came out of my office, except to sleep or eat a little, the first version of the software "Pointcarré" was born.
It was the first fully graphical weaving software with mouse control.
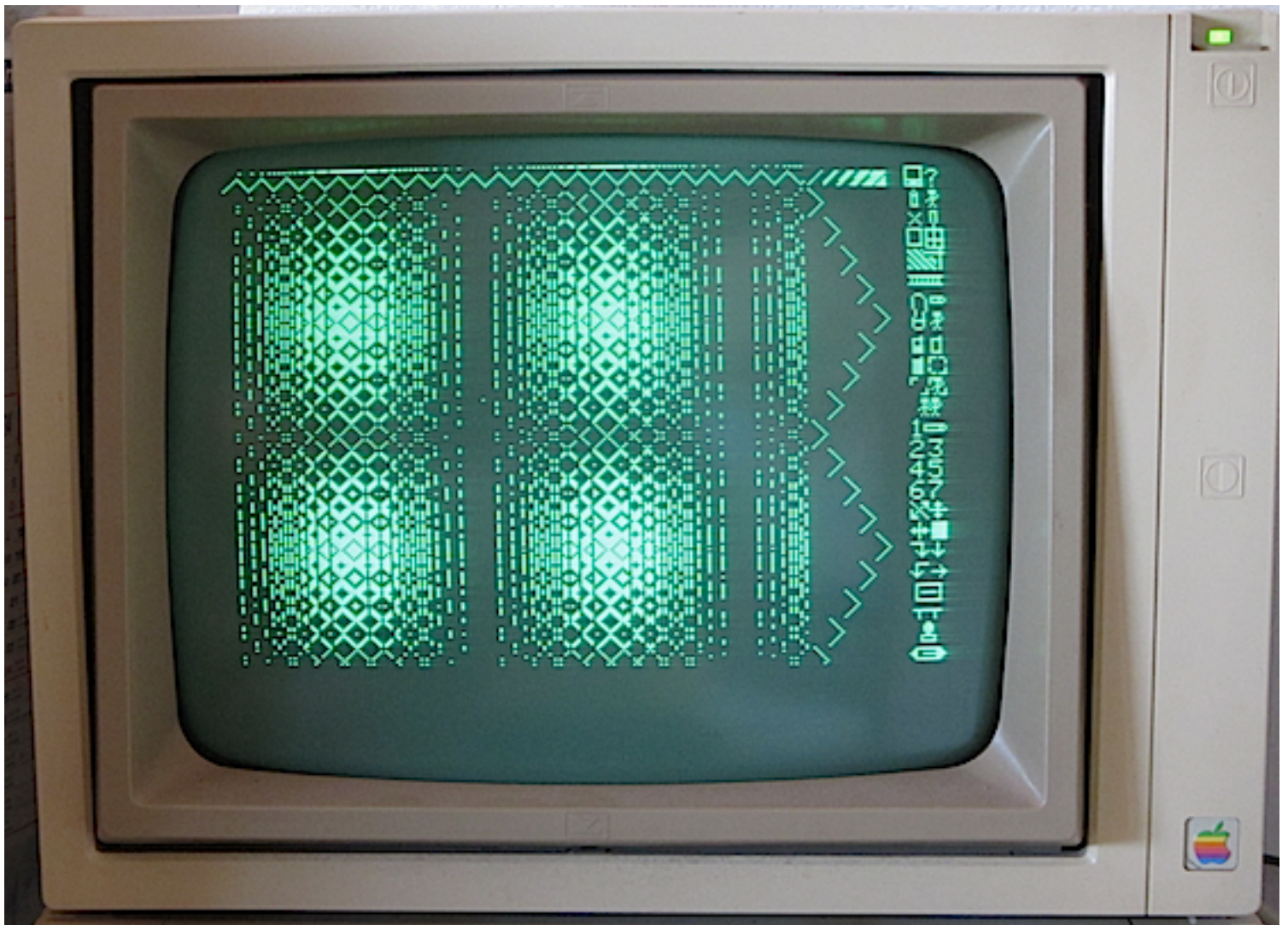
A cloth displayed in Pointcarré software

We recognize the function of "draw with a pattern"

The "Pattern step" and the controls of

"Plotter", Printer and electronic loom .

I first showed my weaving software to my weaver friends in Brittany, especially François Roussel.
He was enthusiastic and had a lot of ideas for features that I was quick to program. I myself had a lot
of weaver's desires that I realized in the software.
So over time, the software has "expanded", it interested more and more people and I started to sell it.

To protect the software from hacking I used as Henry the game connector of the Apple II, and I had the idea to drown this connector in glue inside a lego.
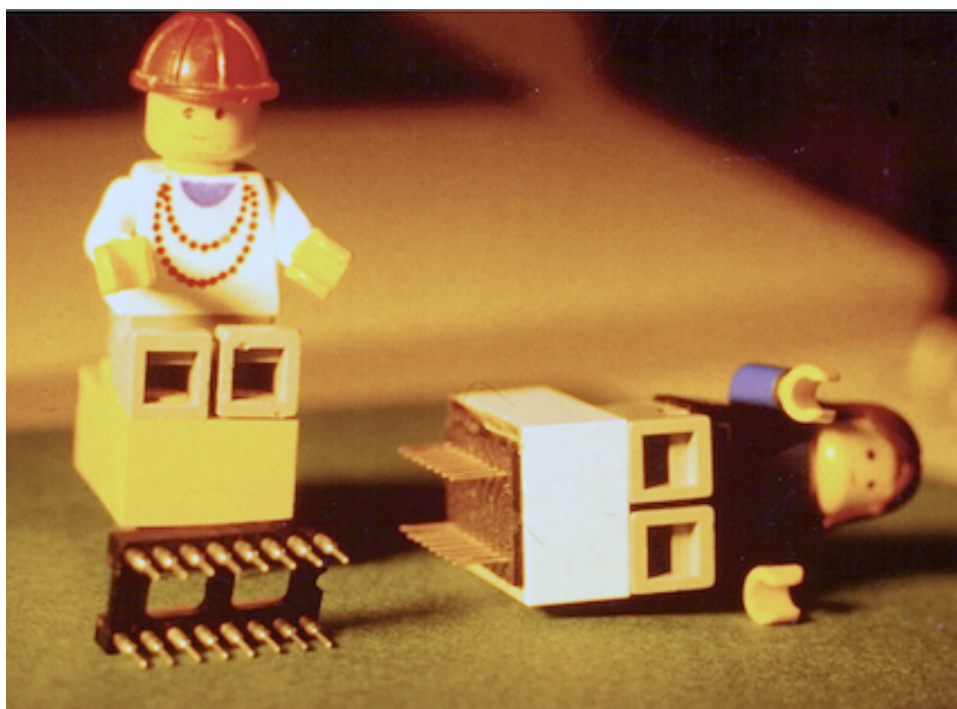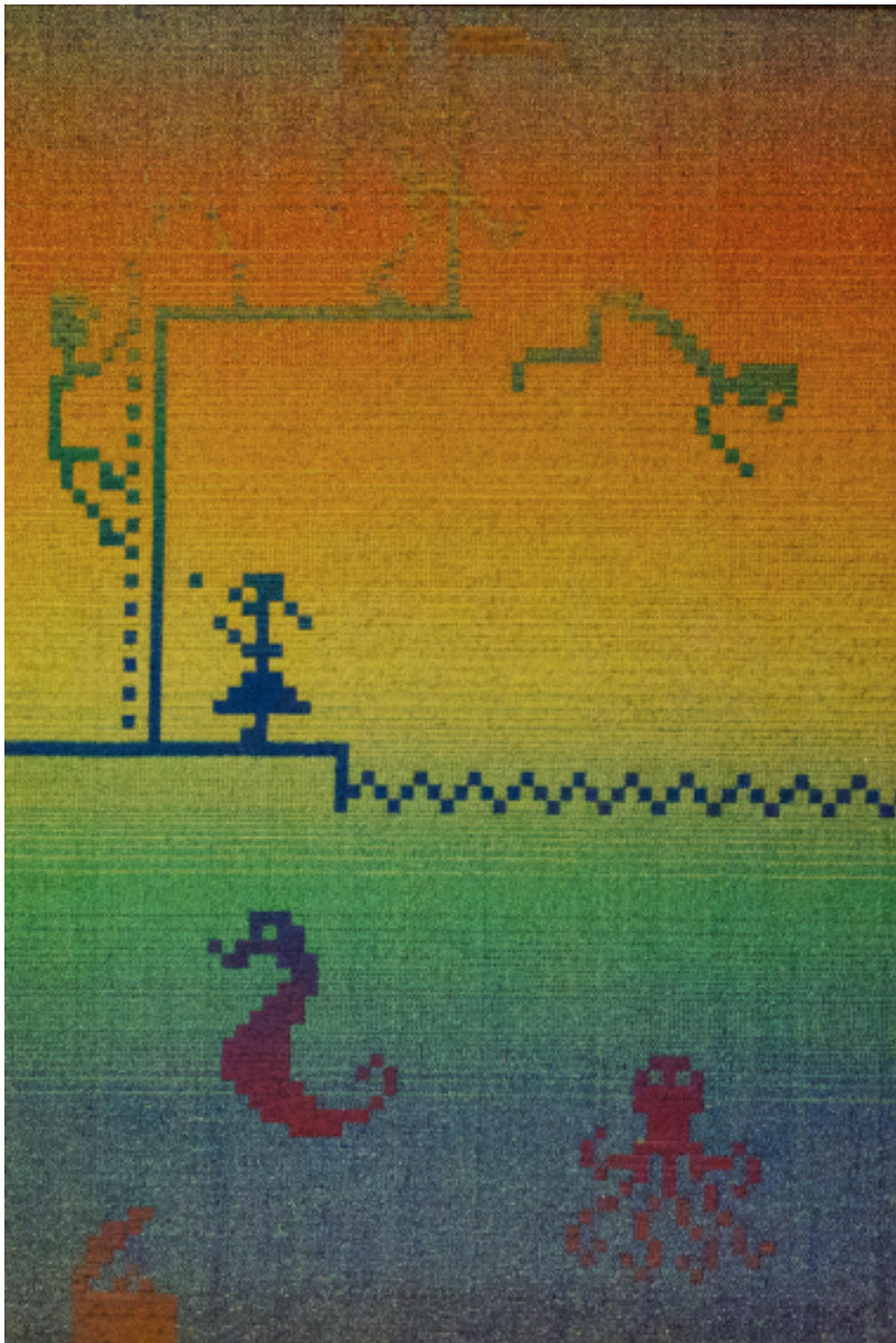

The protection key of the Pointcarré software
inside a Lego cube
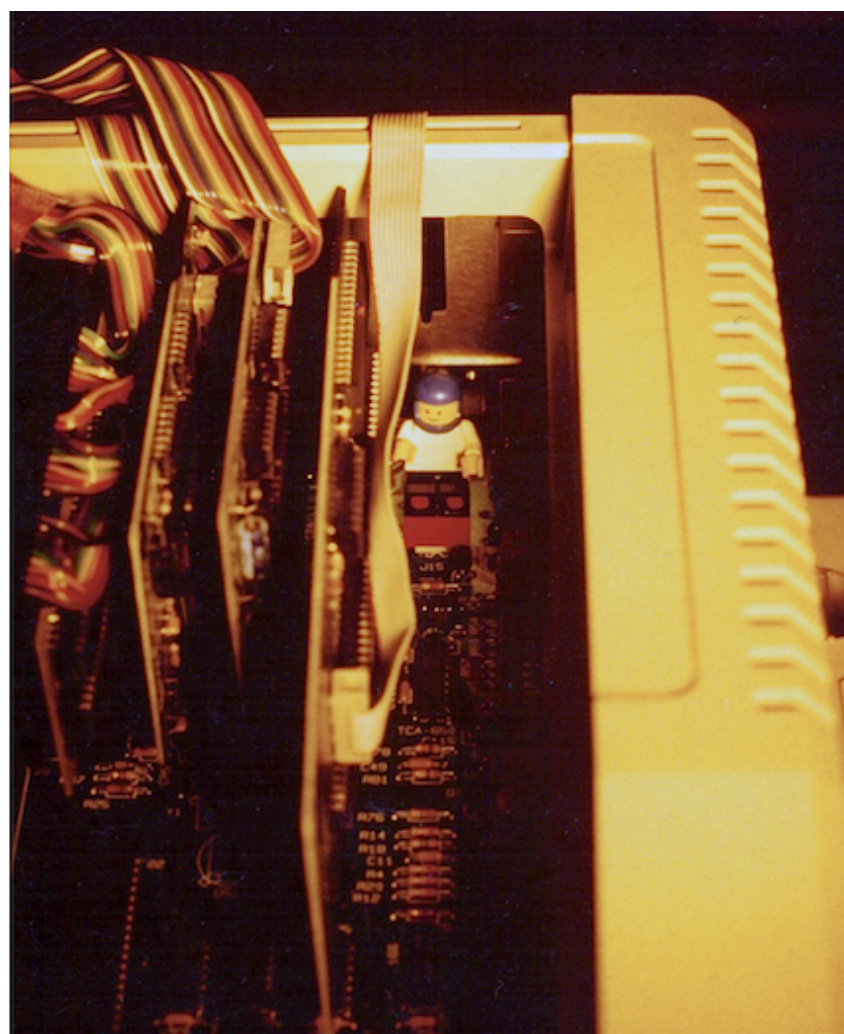
The protection key of the Pointcarré software
plugged inside the Apple II

Parallel to the programming, I still continued to weave and used my software for more complex graphic compositions, like this tapestry of April 84 :

Tapestry "La mort est un examen où tout le monde est reçu"

The weaving of the tapestry, with the design printed by Pointcarré software on ImageWriter.

The first commercial presentation of the software took place at Indigo fair in Lille in September 1985.

On the booth Pointcarré
2 Apple II and one plotter

My clients were initially weavers like me, textile designers and weaving schools.
In France first, in Europe, then in Canada (thanks to Puck Kasma then to Louise Bérubé).

In October, 1986, I participated in another exhibition : the International Exhibition of Arts and Crafts, at the Porte de Versailles exhibition center in PARIS

I presented my tapestries there, but we find on the booth
an APPLE II and a plotter

In 87 finally appeared the Apple II GS !
The big novelty was the color, which would only appear six months later on the Macintosh.
It was a big step forward to be able to visualize the colored fabrics on the screen and I bought an
Apple II GS in February 1987.

The problem was that there was virtually no development tool available besides BASIC. The C
language existed at that time but not on Apple II GS.
The technical documentation was also very fragmented.
 I remember that during the reading of these hundreds of pages, very often the words "TBP" was
widely used. My English was at the time even more basic than today and I went on not trying to
understand. Until the day I had the revelation: "TBP" meant "To Be Provided". The documentation
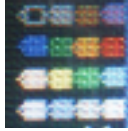I was reading was full of holes, it was not finished !

As much as the machine language is useful and effective for optimizing computations or display
routines, it is also cumbersome and unsuitable for HMI (Human Machine Interaction) type
programming.
The Apple II GS had indeed an operating system with dialogs, a desktop, a graphics file
management, a mouse, just like on a Macintosh.
The assembler was unsuitable but it was the only effective language available at the beginning of the
GS, and I used it for 3 years, until the translation of Pointcarré on Mac.

The screen of Pointcarré GS

Menus like on Mac and 16 colored pencils

Little by little, François Roussel became an evangelist of Pointcarré software. Wherever he went he made demos and carried the good word to his many contacts in the world of design and the textile industry.

We were very complementary. He took care of external relations and I stayed at home to develop.

One day François said to me "You risk to earn more money with your software than by selling your fabrics".

Then came the idea of creating a company to both develop our business as textile designers and the sale of the software.

This company was created on December 1st, 1987, under the name of ... "Pointcarré SARL".

To finish with this story of square points, I recently made the bathroom of my house in Rennes. I used small tiles ; the square dot is here a 2.5 x 2.5 cm tile.

This gave me the opportunity to use the Pointcarré software for me.
It's always a satisfaction, because all these years I had to spend a lot more time writing the software and developing it than using it for my own work as I intended at the beginning.

So I made a drawing with all my animals, adding some snails.
I printed it, with all the valuable features of Pointcarré : a secondary grid allowed me to count more easily the tiles, and I was able to print separate pages that I stuck then.
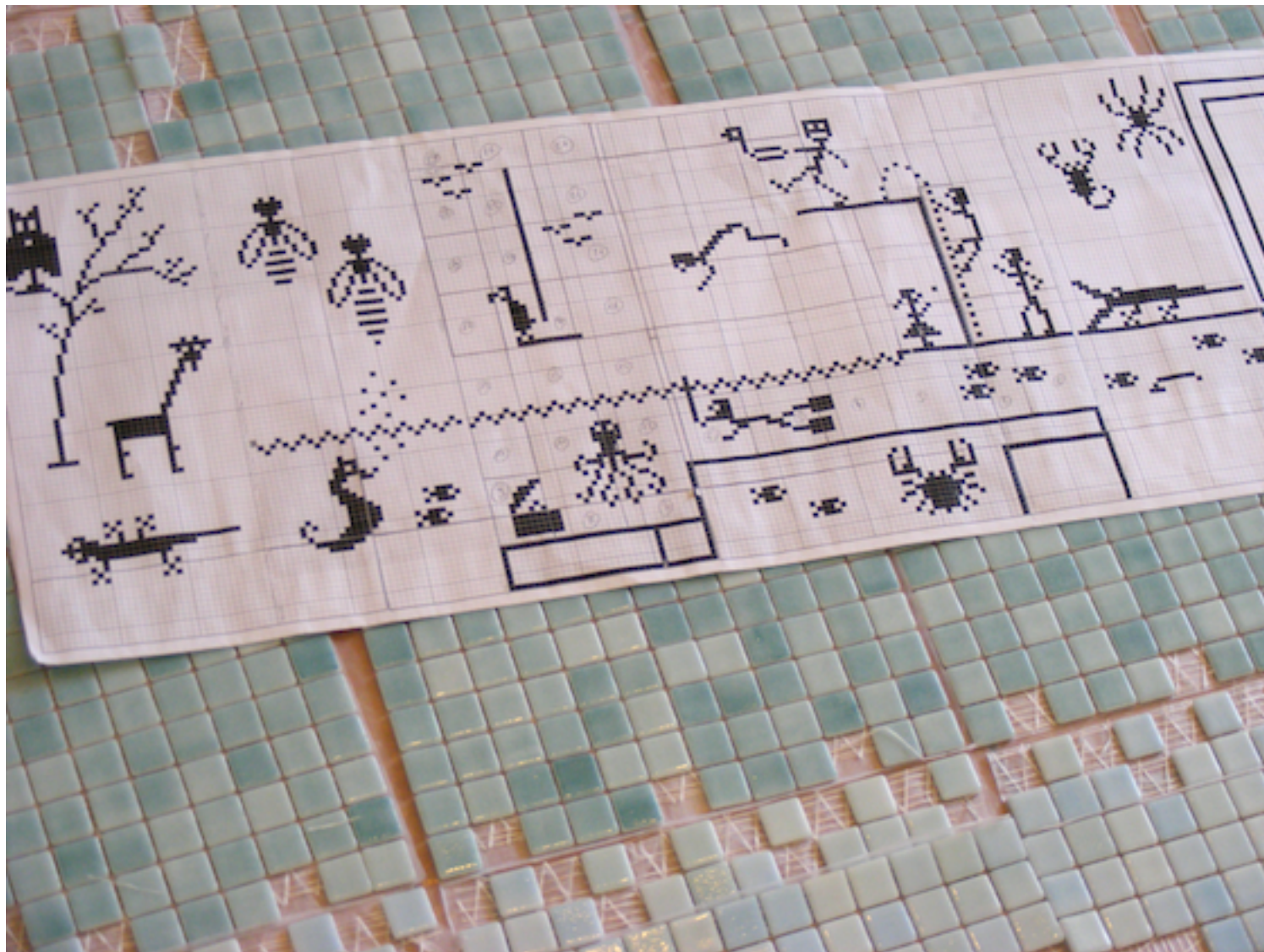
The drawing spreads on the four sides of the bathroom.

Then I transcribed the drawing into the mosaic set.

First remove the tiles to form the drawing on the set

Then glue darker tiles in the holes

Then stick the mosaic set on the walls

The bathtub

The shower

It's crazy all you can do with Pointcarré !

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