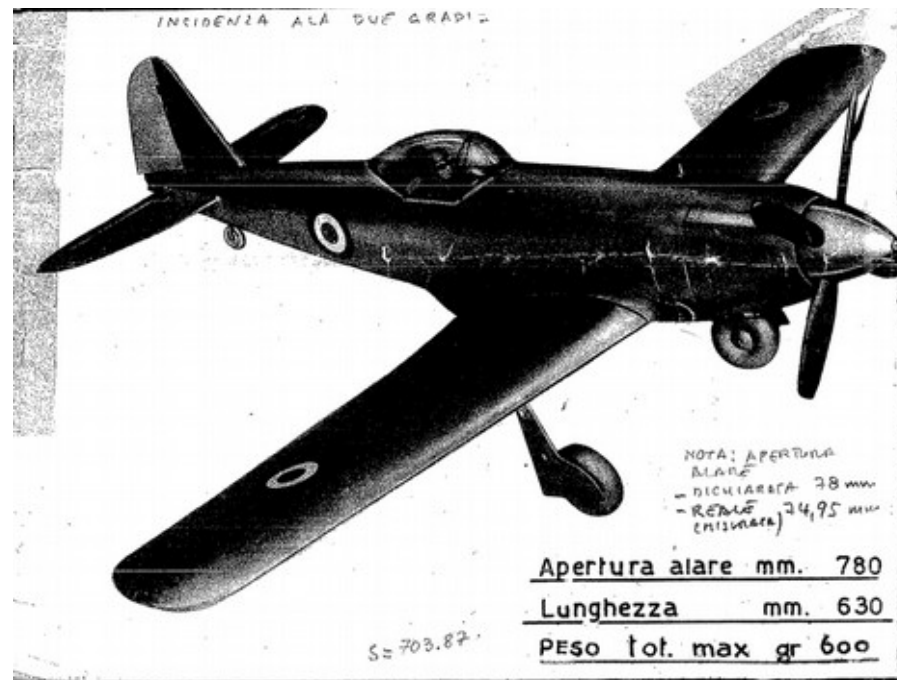




FIAT G.50 cardboard plane

Matteo 2015





How it all started ...

Many years ago I was an active and passionate modeler spending a lot of time (but no money !) building and crashing my creatures

Learning how to fly was a real challenge ... each crash was a real pain ... no foam planes existed meaning that crashes ended up in a plane beyond repair situation ...

Finally, I was spending more time building rather than flying ... and this is also part of the nature and beauty of this hobby !



How it all started ...

Being also a passionate of vintage stuff, I collected many balsa kits thinking **“I'll have time to build'em ...”**

After completing my degree and getting my first job I was forced to abandon this wonderful hobby ... no time ... new issues ... we all know how life goes ...



And re-started 25 years after ...

I forgot all that stuff for more than 25 years although the modeling stuff (kits, transmitters, finished and unfinished model planes and engines) was always following me ... moving on ... from house to house ... stacked in some cupboard until ...

... my passion got ignited again caused by a coaxial helicopter I got from LIDL for very little money

It gave me the opportunity to get a transmitter in my hands again ... what a pleasure !



And re-started 25 years after ...

So I resumed my hobby ...

The first task was completing an old half backed unfinished **Sterling rubber powered F4U corsair** ...

... and while doing this work I stumbled upon **cardboard model planes and Mr. Chuck Felton** ...





Chuck Felton ...

Chuck is a serious modeler and a very enthusiast person about everything he does, just visit his pages and read them all ... including stuff unrelated to model planes ...

Chuck is a specialist about building cardboard model planes and I got really struck by the simplicity and effectiveness of his methods

I noticed that he mentioned plans for the italian Macchi C.202 warbird ... being Italian I decided to go for this and contacted Chuck ...



Chuck Felton ...

Unfortunately, Chuck informed me that the magazine owning the plans went bankrupt and no way exist to get'em ...

So, I went to my cupboard and found a very nice **Aeropiccola vintage balsa kit for a C/L FIAT G.59** warbird ... and the idea came to my mind

... why not building the G.59 with cardboard by adopting Chuck methods ?



... project started !

To start the project I had to

- 1) source the raw **material** (cardboard, balsa and plywood) and
- 2) think how to **adapt Cuck's methods** to the G.59 plane that is plenty of rounded surfaces
- 3) adapt the project **from C/L to R/C** as the kit is originally for C/L
- 4) decide to **re-use old equipment** or go for new technology ...



material

While I was shopping at LIDL I noticed

1) a couple of very large cardboard sheets
(approx 3mm thick)

2) while selecting vegetables for our dinner, a
nice vegetable box made of wood and some
plywood ... originally containing artichoken :-)

Why not ? Cheap and largely available !



method

I tried to adopt Chuck's methods whenever I could ... however, the G.59 fuselage is REALLY rounded and I was struggling about **“how to calculate the proper cardboard surface and shape”** until I decided to take a shortcut ... build the frame according to original plans and then wrap it with paper to get a pattern of the covering frame ... very easy !

However, after getting a paper pattern I had to cut the cardboard along 3 frames to make it follow the fuselage bent ... very nice result indeed ...

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FIAT G.59



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re-use old equipment

Initially I had the crazy idea to re-use my existing equipment and to adapt the project to these constraints

1) 2.5cc webra diesel without throttle or alternatively **OS MAX 1.5cc** with throttle control

2) 2 channels vintage transmitter, receiver and servos

I know that single channel models were a reality in the past and, indeed, my Sterling F4U corsair can be converted to single channel (rudder) with fixed engine and elevator

I have however no clue if someone was ever able to fly a low-wing plane with fixed engine and rudder-only control ... especially when you ran out of gas ... I am for sure not capable !

The exercise (beside weight considerations and math) was therefore to answer the question: **if you only have two channels what would you like to control?**



If I had 2 controls only ...

In this case I would like to have the following capabilities

- 1)turn:** either aileron or rudder are a must and cannot be substituted ... imagine running at full speed without the ability to turn ! What a disaster
- 2)climb / descent:** this could be accomplished by using the engine power or elevator but I concluded that - in case of engine stop - I would prefer to use the plane gliding capabilities and control landing with the elevator rather than simply try to land and praying ... elevator control is therefore the choice



If I had 2 controls only ...

The final selection was for ailerons and elevator plus fixed engine ... but wait a second !

What about weight ?

We're talking about vintage stuff and the plane weight will be approximately 300 g

Adding engine, vintage 2ch receiver, servos and battery pack would add an additional 300 g ...

I am not sure that with such a small wing surface and low wing the plane will be a joy to fly ... I am really scared about this ...



At the end I decided not to decide ...

I have kept the door open and I am building the plane ready for:

- 1) 2 ch + fixed engine (expected life span will be 6 seconds ...)
- 2) 4 ch and new technologies (mini servos, electric power and so on and expected life span will be 15 seconds ...)

I am looking for expert advices on this ... and seasoned modelers can for sure help me ...



At the end I decided not to decide ...

In any case

- 1) I had to modify the original project and make the entire wing assembly removable to allow access to the fuselage for fitting batteries, servos or whatever else ...
- 2) I will ask an experienced pilot to make the maiden flight for me :-)) as I have taken a 30 years break and flying a diy warbird is probably not like eating a piece of cake !



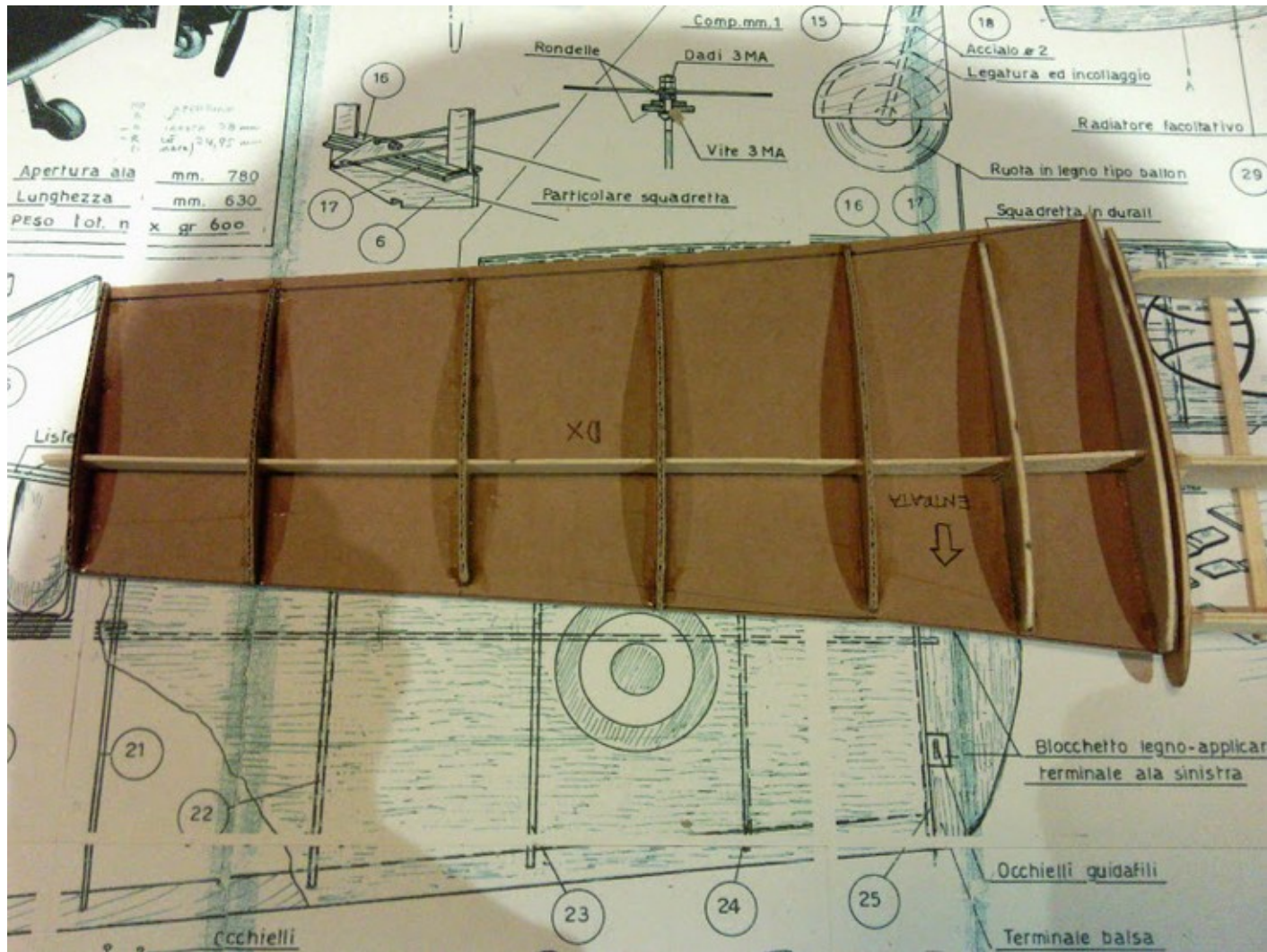
Wing details

The wing has been built by basically following Cuck's method with some exceptions:

- 1) Three ribs have been made with light wood wrapped with paper for robustness purposes (I wanted to make the two wings detachable for plane transport purposes) and the other are made out of cardboard
- 2) The wing central longeron is also made out of wood and – although very fragile – I believe that the entire wing frame will provide sufficient robustness (I am evaluating the option to wrap it with glued fabric ...)
- 3) The wing coverage is made out of three pieces and the round shape is obtained with the pizza cutting tool as per Chuck's method: once in place I will further cover the joins with paper to make it more robust

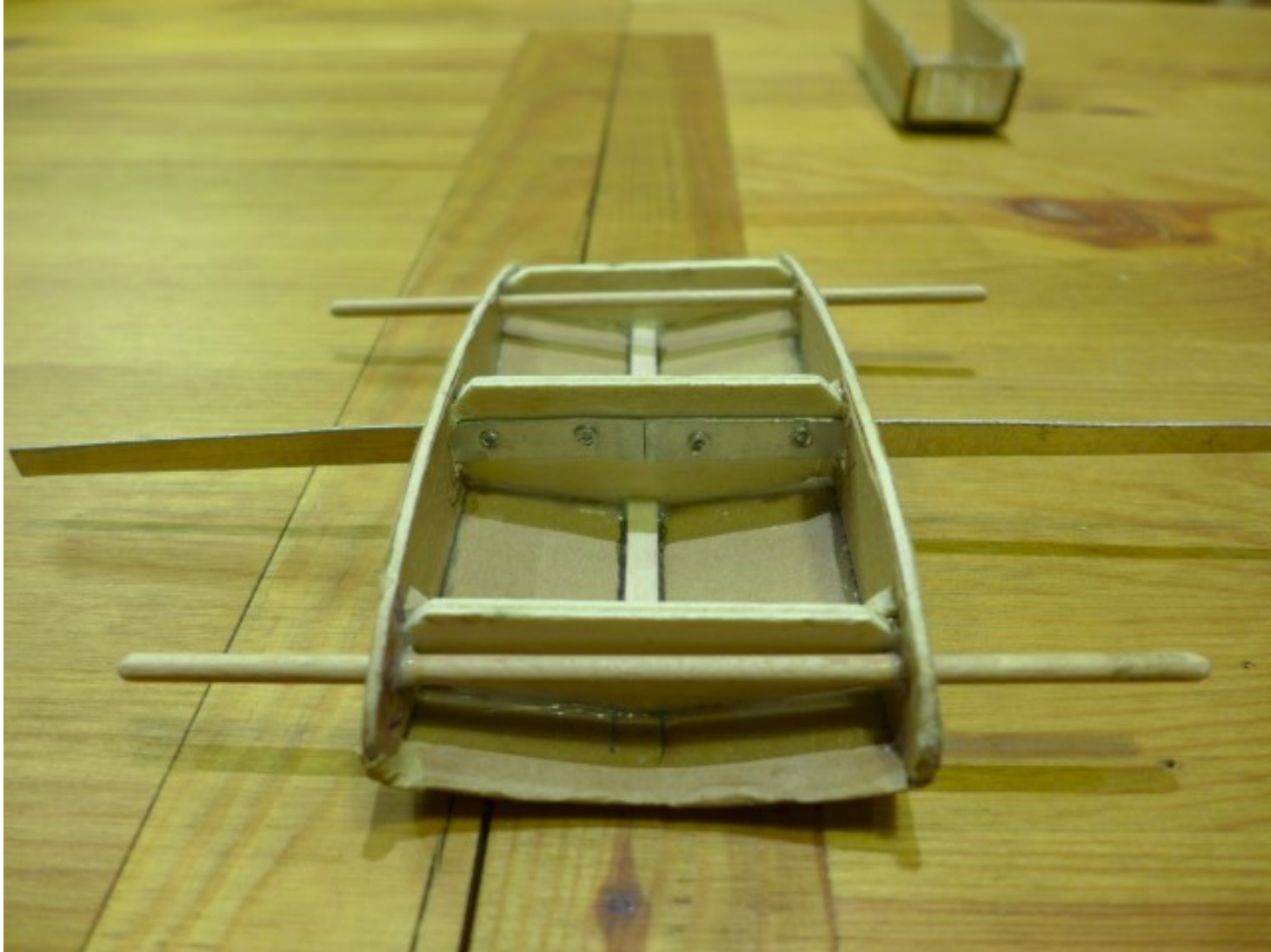


Wing



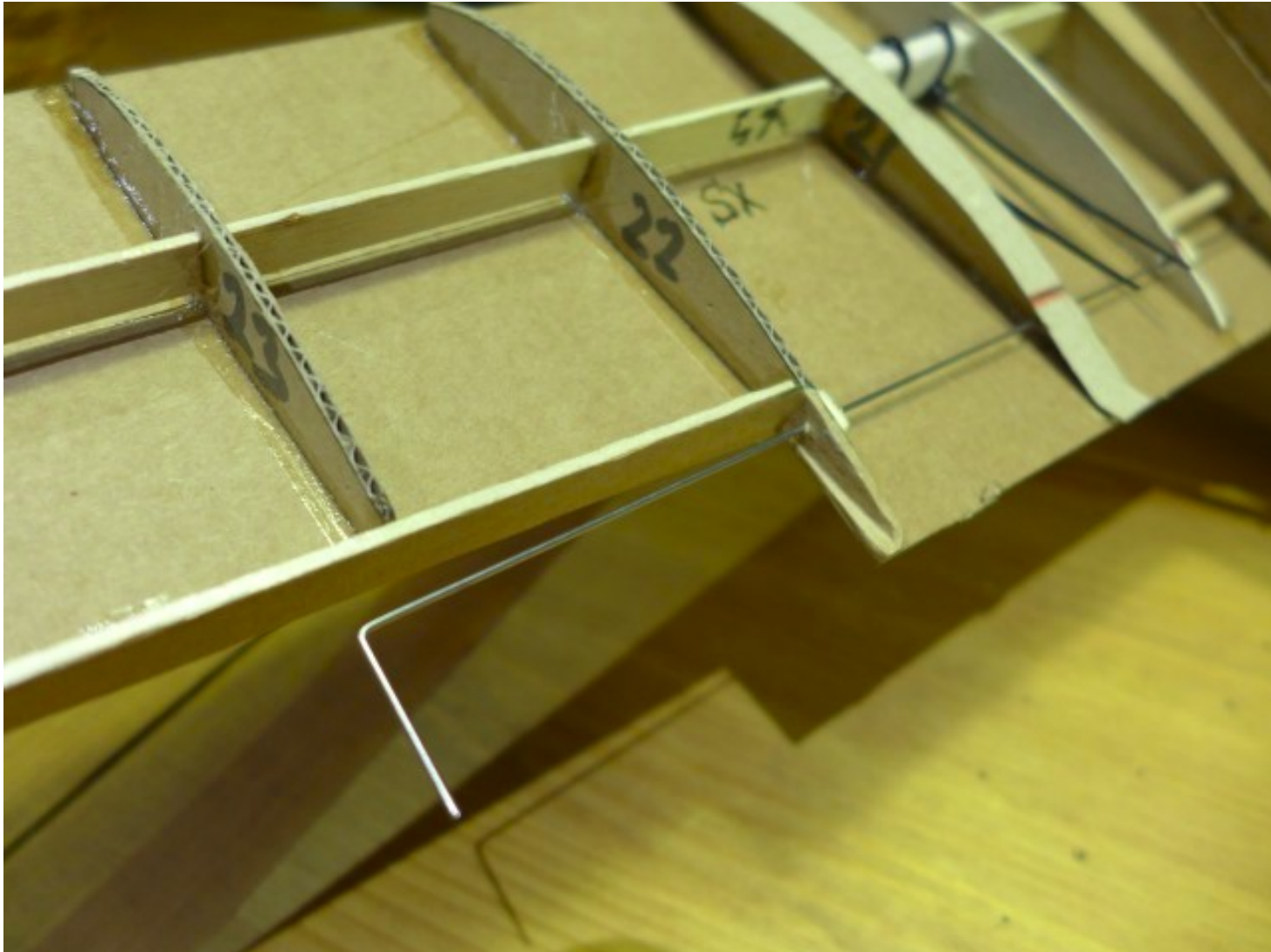


Wing central assembly





Aileron control bars





Carriage fixing without glue, fabric glued around longeron for robustness





Wing central assembly





Rivets ...





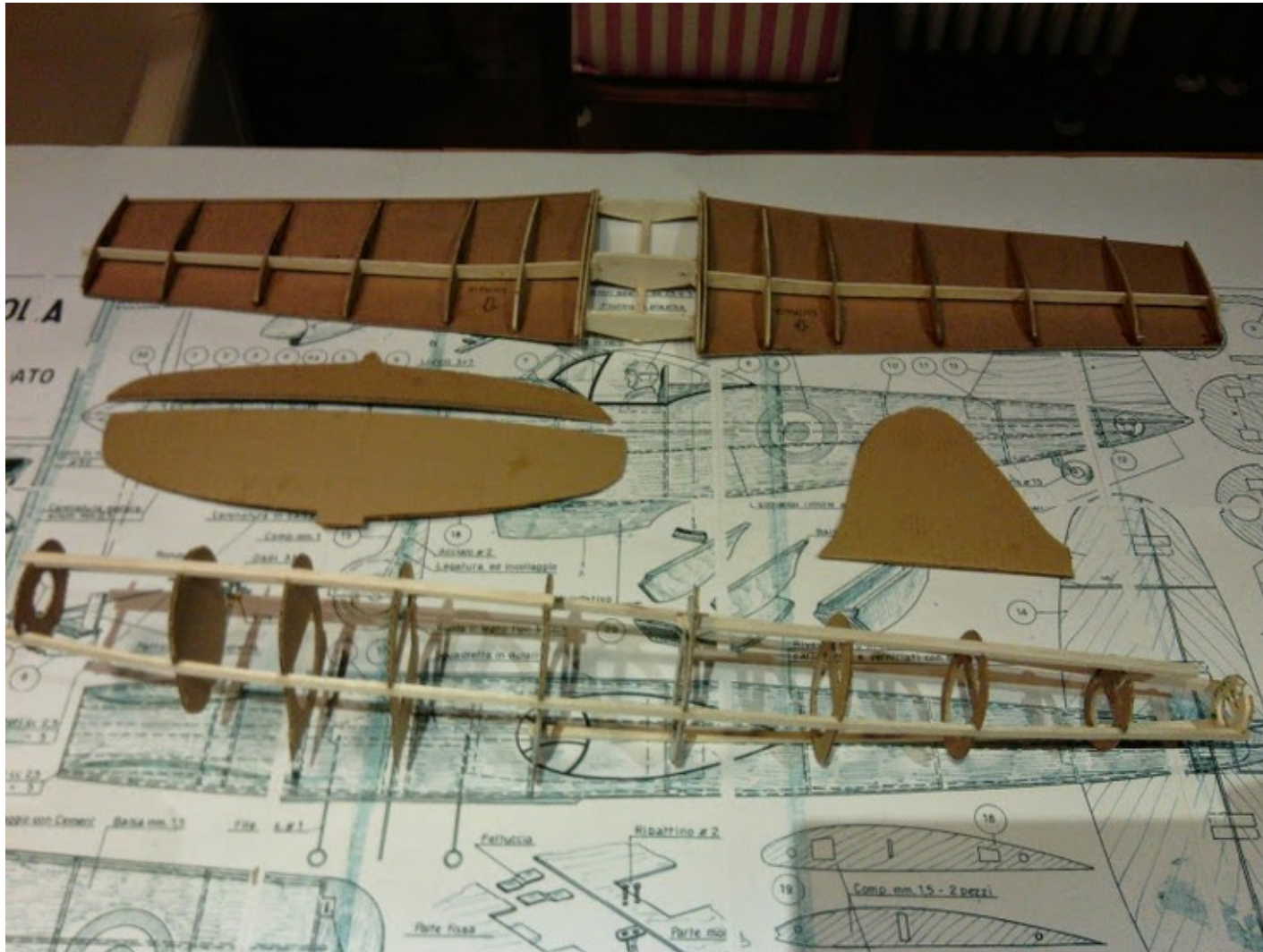
Fuselage details

Fuselage building was a real challenge as the required symmetry is difficult to obtain: it ended up in a trial and error exercise also because the fuselage frame was a bit warped

Final assembly will require multiple adjustments for ensuring that wings and tail surfaces are well lying on parallel plans

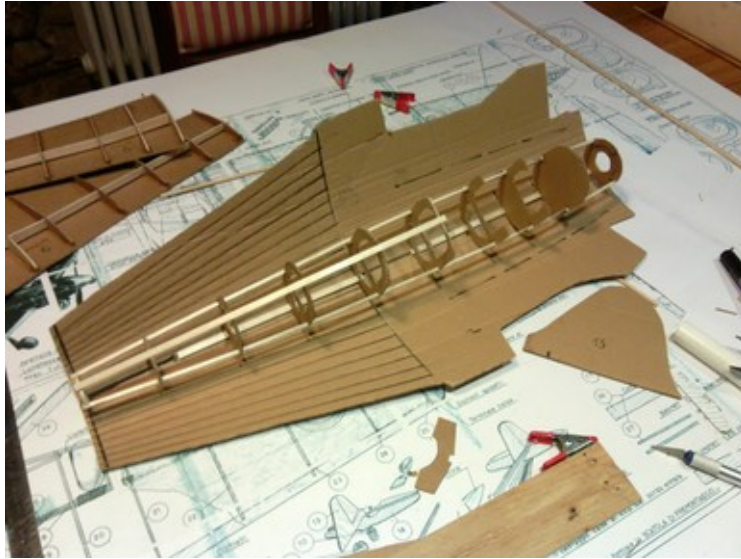


Here we go ... fuselage frame, wings and tail surfaces ...





Fuselage frame and covering ... almost 5 kg on frame !





Tail made out of balsa scrap parts





Tail assembly



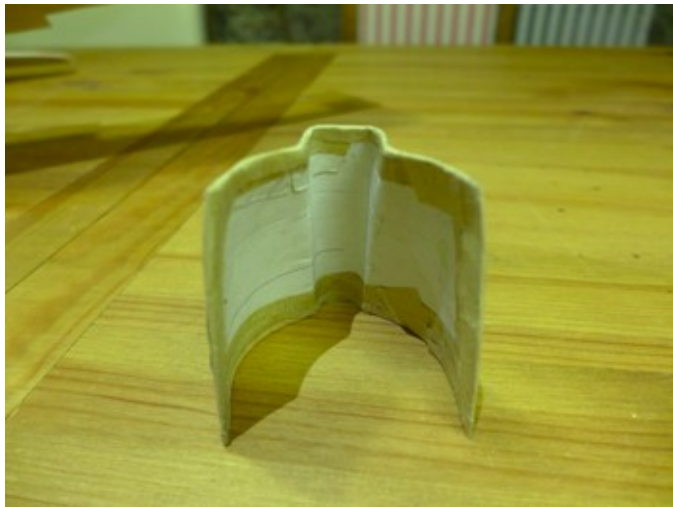


Tail assembly





Engine cowl made with paper mache



Having access to the original aluminum cowl I decided to replicate it with paper ...

I am pleased with the result although I am also aware about its fragility

I still have to finish it ...

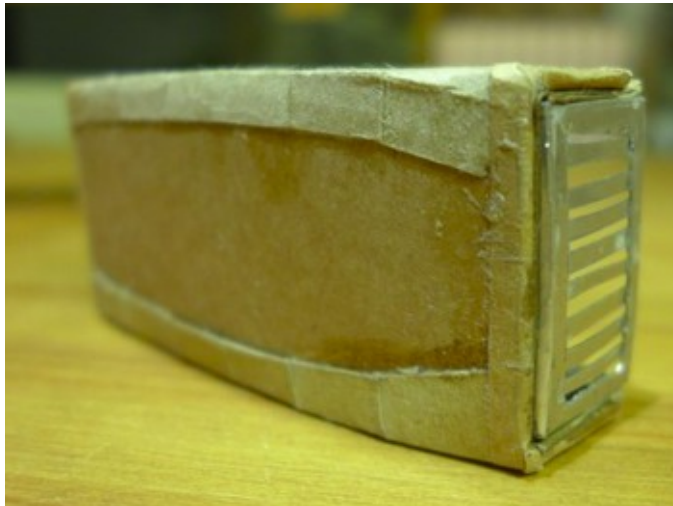


Oil cooler cowl ... cardboard, paper and aluminum



Here again I have used a lot of cardboard

I still have to cover it with paper and make adjustments to fit with the wing and fuselage contours



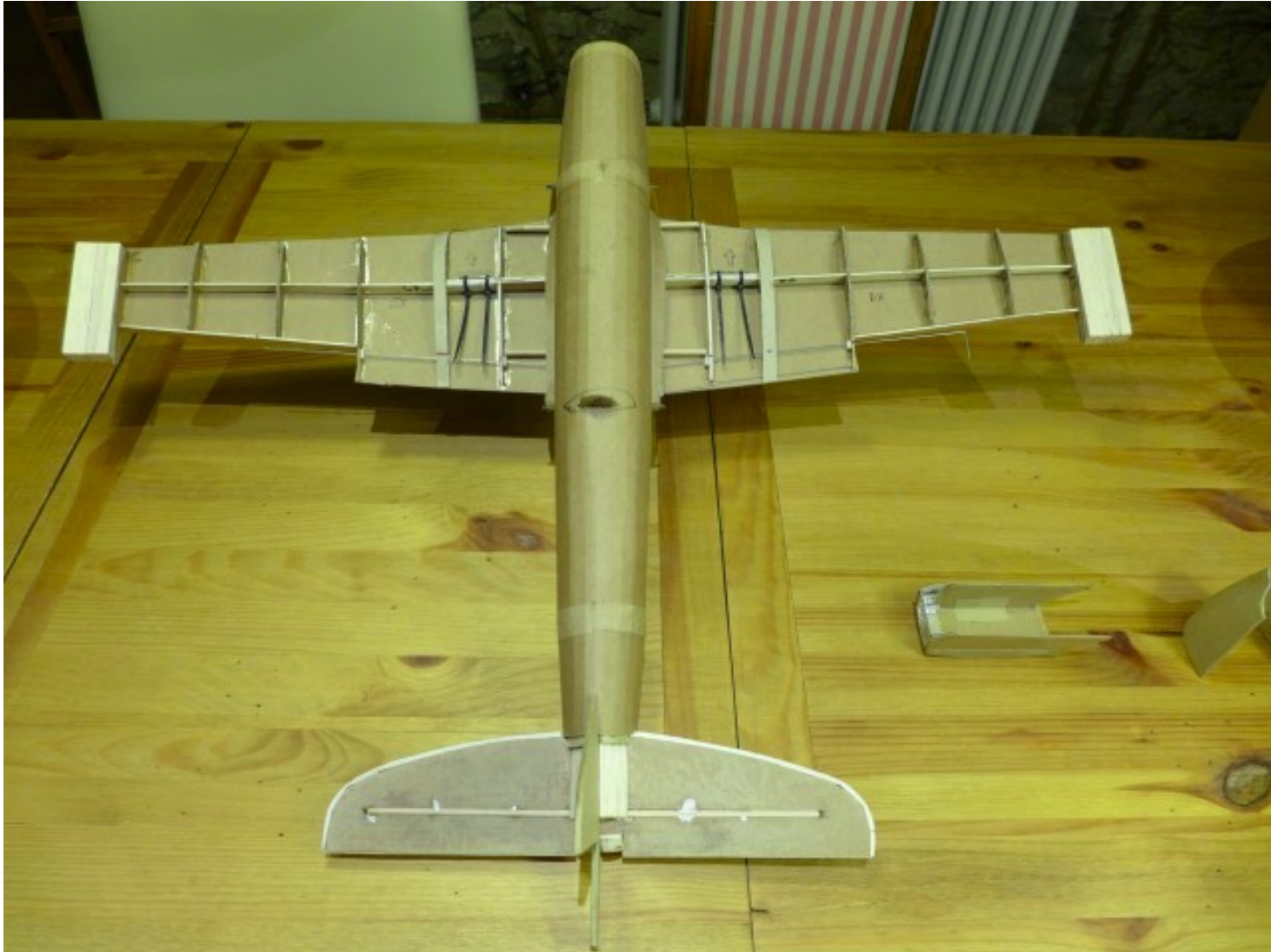


Head ...





First final assembly tests ...





Putting it all together ...





My experience so far ...

- 1) Very rewarding and funny but a lot of work ...
- 2) Do not be afraid to experiment and doing stupid things ... you can always rip and replace parts ...
- 3) Try to think ahead as much as you can before committing on decisions



... to be continued ...