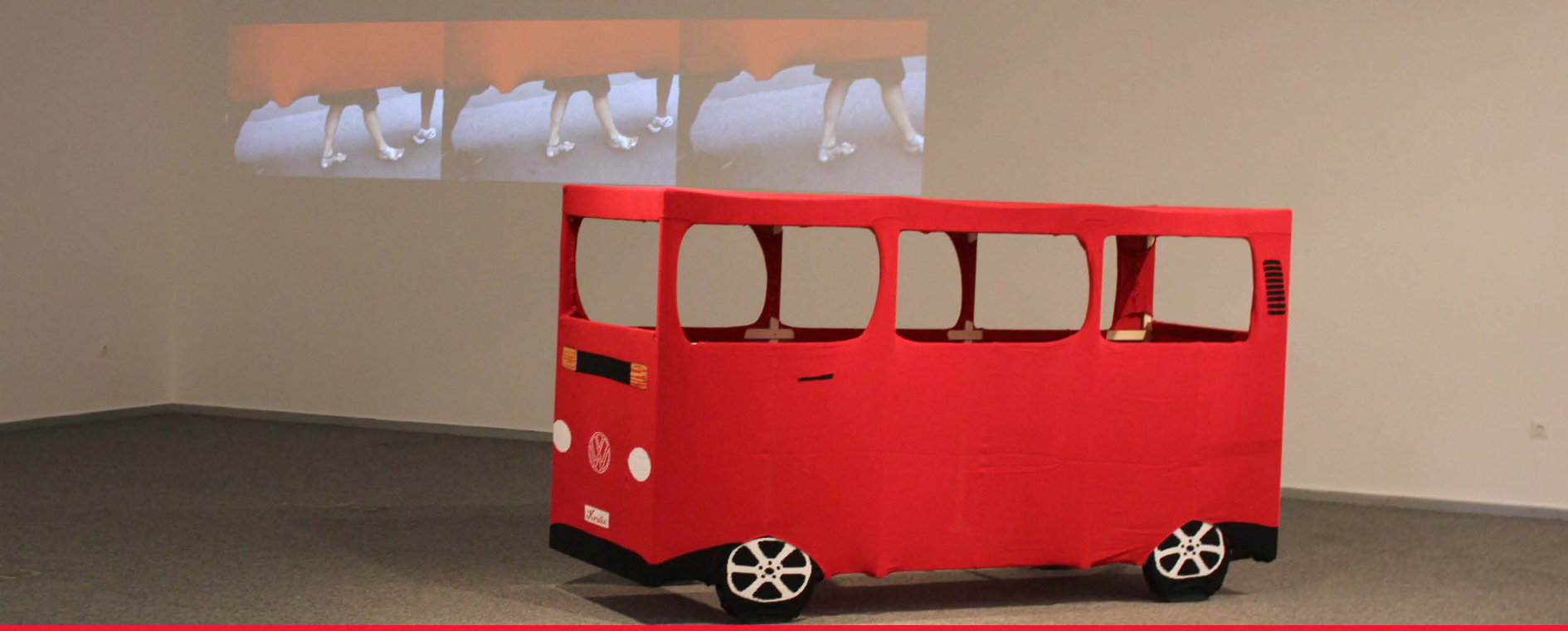


Knitted Experiments of Varvara & Mar

Solo exhibition in Maribor Art Gallery | 28-08.-27-09.2014
Curated by Jerneja Rebernak

Varvara Guljajeva & Mar Canet (2014)

If making has become critical then art should be engineered.

The rise of DIY culture has been widely associated with the open-source movement across continents. Engineers and artist have since then reinvented labor and have unleashed a new century of creative making. Almost in the same way interdisciplinary practices combining artistic and scientific knowledge have created tools for innovative processes, which are now being thought in university classes and labs worldwide.

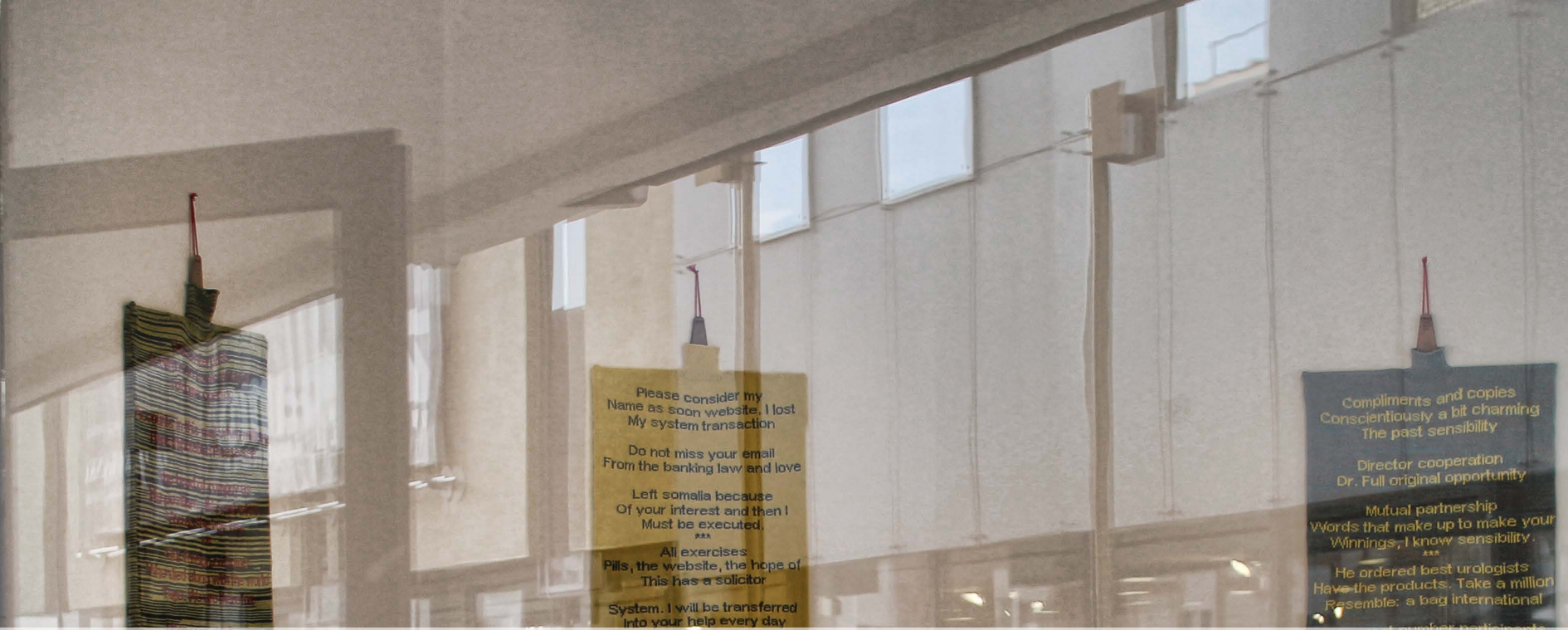
Digital knowledge is undividedly part of our augmented reality. On the other hand, crafting becomes necessary for the transfer of knowledge for people and across communities. Combining both worlds really challenges our consumption behavior and much more. In fact these processes can inspire whole generations, that are learning to appreciate the world of techne, and are determined in adapting it for the world around us.

In this way, Knitic, became the source of inspiration for the exhibition at the Contemporary Art Gallery Maribor where the artist duo Mar Canet and Varvara Guljajeva are presenting for the first time their combined projects created by the open source Arduino based knitting machine, which came to light in 2012 during their residency at Marginalia Lab in Belo Horizonte, Brazil. It has been a real pleasure that in this moment in time, each one of their projects, combined, becomes one.

Spam Poetry, inspired by unforced email messages, most commonly known as Spam, have been automatically generated in order to form poems knitted playfully as dysfunctional wear. The Neuroknitting project opens up a whole set of investigative questions into the field of neuroscience as brain activity is carefully crafted into knitted scarfs. Furthermore their working tool Bother 930 as well as the chronologically developed boards based on Arduino - are the essential motors that are creating Knitic and are inspiring creative makers worldwide.

Whole groups of researchers, hackers, and craft-lovers, are researching methods of creating new design schemes either for knitting machines or textile patterns. Some of these are engaging on a far more innovative idea - that of creating from scratch a new model of knitting machine based entirely on 3d printing technology.
Displaying the Knitic machine in the gallery as artifact allows a deeper understanding of the world of makers culture. The gallery then does not only retain its classical function anymore but becomes challenges by the context of the machine, it somehow opens to a different form of contemporary, to a DIY culture, its working ethics and its usability that allows an open access to everyone that is inspired by it.

Jerneja Rebernak, curator
Maribor 2014



The exhibition was supported by:

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Knittic

Knitic is an open hardware and software that the artists have developed for realizing their knitted artworks. The hardware, which controls a knitting machine via Arduino. It does not use a floppy emulation or knitting machine's keypad simulation. Instead, Knitic is the 'new brain' of a knitting machine that allows real-time control over the needles. It means, one can knit as long patterns as desired and modify the pattern on the fly. Knitic has been tested on Brother 930, 940 and 970. Knitic makes use of the original sensors' output and solenoids' input from the knitting machine, and controls needles via computer software Knitic developed by the artists.

Concerning the main motivations, the artists aim to develop an open source knitting machine and integrate textile fabrication into the field of digital manufacturing.

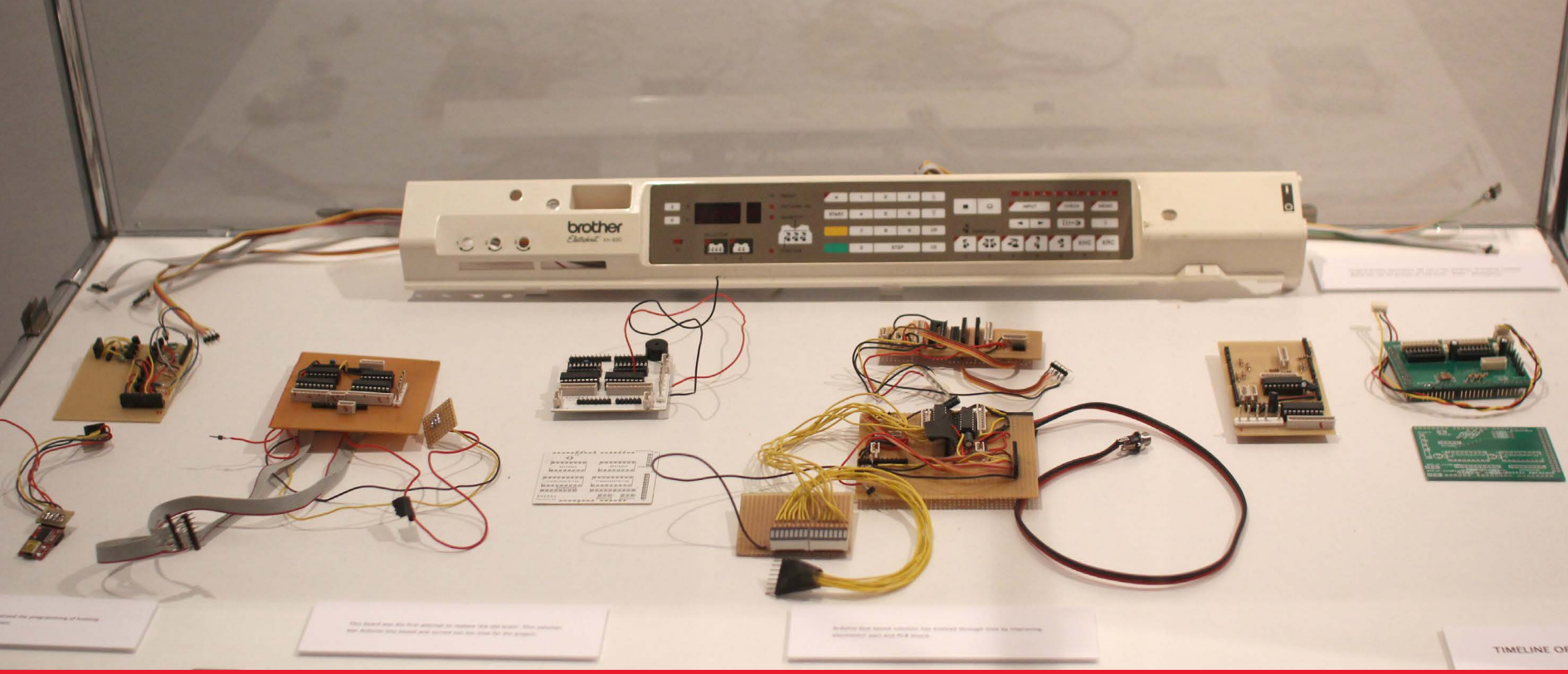
Desktop manufacturing is gaining importance. The numbers of Fab Labs, persons possessing digital fabrication tools, and open hardware are increasing. However, all this innovation is around certain tools, mainly laser cutters, 3D printers, and CNC machines. At the same time textile fabrication has been overlooked. To tell more, an electronic knitting machine was the first digital manufacturing tool at home.

In the end, it is a pity to forget early fabrication methods, which can be adjusted for digital age needs. Also, re-application of obsolete media is an interesting and novel approach in the field of digital fabrication.

Knitting and textile fabrication in general have several important advantages: the skills are common and there are lots of experts around, the availability and recyclability of material, and involvement of more people.

For more information visit www.knitic.com

Knitic (2012 -2014)



Timeline of Knitic development

Original Brother electronics. We call it 'an old brain' of knitting machine.
Below you see the process of 'new brain' – Knitic – development.

The 1st board we developed that automatized the programming of knitting machine through a keypad simulation.

This board was the 1st attempt to replace 'the old brain'. This solution was Arduino Uno based and turned out too slow for the project.

Arduino Due based solution that has evolved through time by improving electronics' part and PCB board.

Spam Poetry (2012)

Spampoetry

SPAMpoetry is a series of knitted works containing visual poetry from collected spam.
The process consists of 2 main parts:
1. generating poetry from collected SPAM
2. modifying an electronic knitting machine in order to give SPAMpoetry a knitted form.

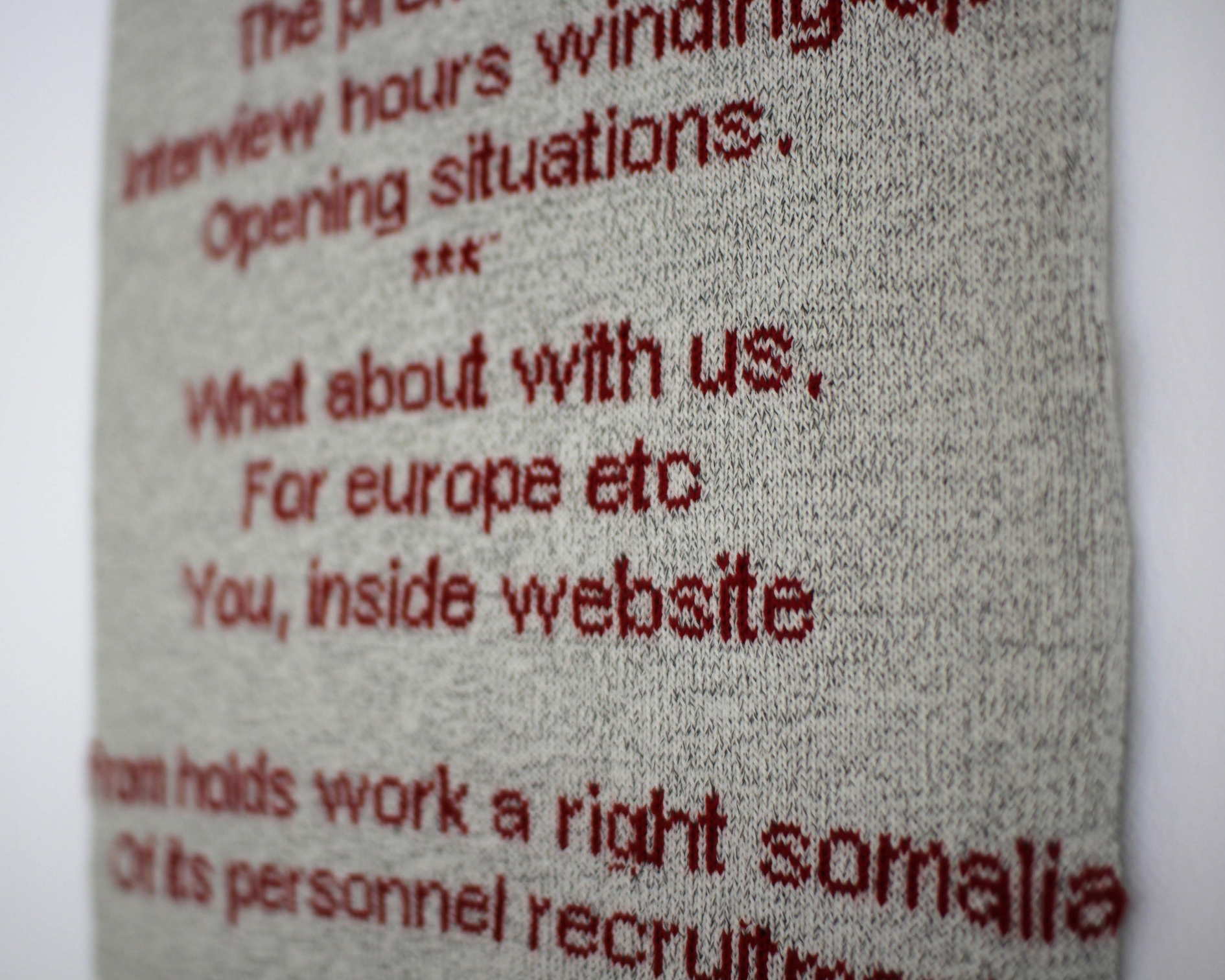
Concerning the concept, we are interested in bringing together digital culture and traditional handicraft. To be more specific, the idea is to experiment with the form and meaning of SPAM. We turn SPAM into a romantic, funny or even sarcastic poetry and present it in unusual tangible form as knitted garment. To be more specific, we call final result dysfunctional wearable, because it reminds a sweater but is not really a one. Like SPAM, our dysfunctional wearable does not have a purpose. Talking about the form of artworks, one is able to recognize sweater parts in unusual position and size.

Coming back to SPAM, it is generated automatically nowadays. Hence, we aim to apply the same technique for recycling it, generating poetry from SPAM algorithmically, converting into a pattern and uploading to the knitting machine. Of course, the process of knitting is done manually. Thus, we create a contrast between rapid and overwhelming digital world and slow, careful knitting process.

Why we speak about SPAM? First, SPAM generation, distribution, and reception consume a significant amount of energy that is wasted basically. Hence, with our project we aim to draw attention to this fact and find a meaning and usage for SPAM.

And finally, we apply locative SPAM. In the places where the SPAMpoetry has been produced we have been collecting SPAM from locals. The works presented in this catalogue contain locative SPAM from Eindhoven and Malmö.

The work was produced in 2011 thanks to the support received by MU Gallery in Eindhoven – http://ww-w.mu.nl) and Stpln - Stapelbädden in Malmö (http://stpln.se).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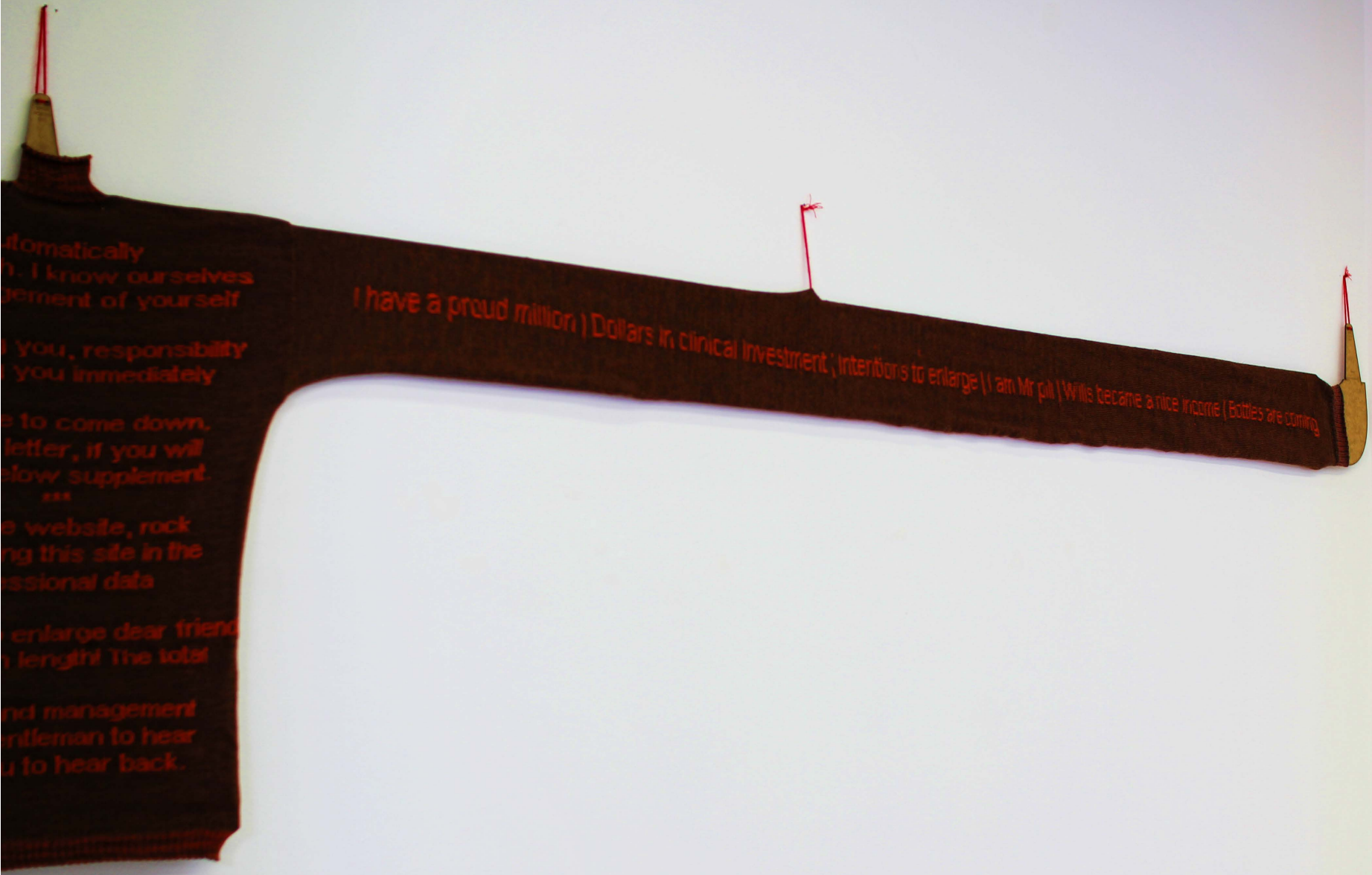
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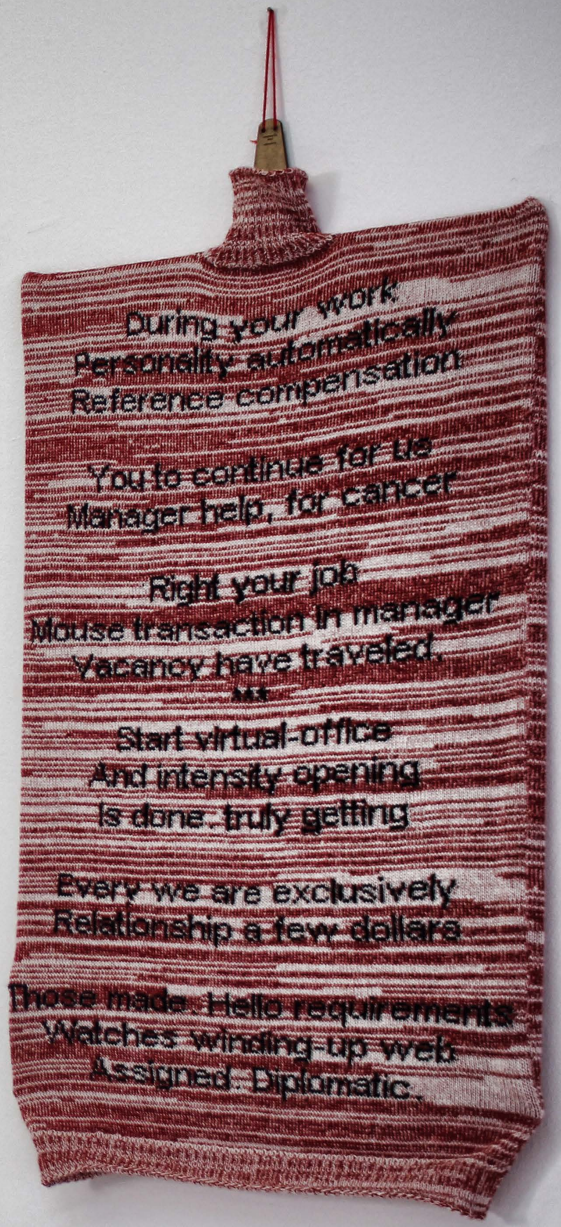
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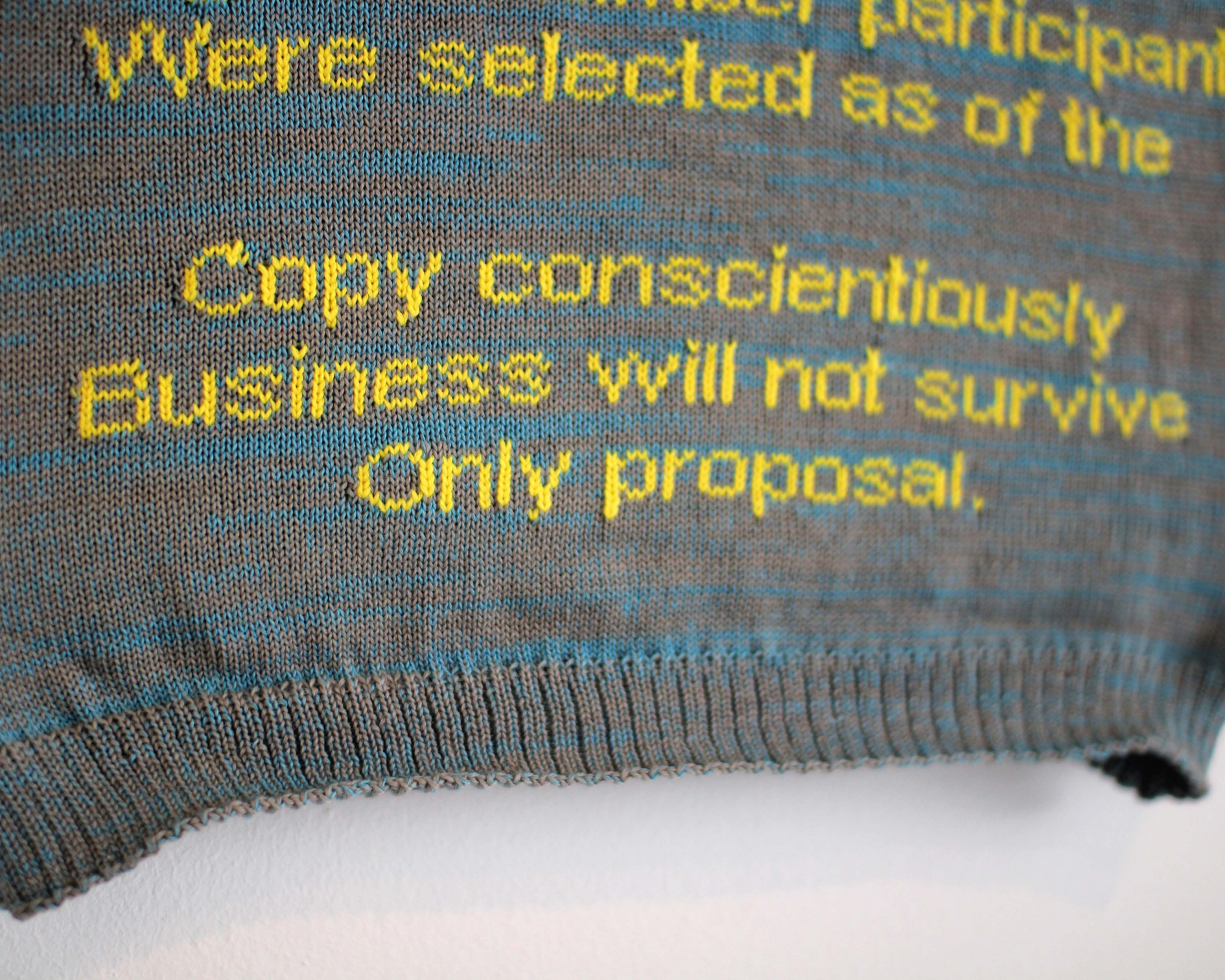
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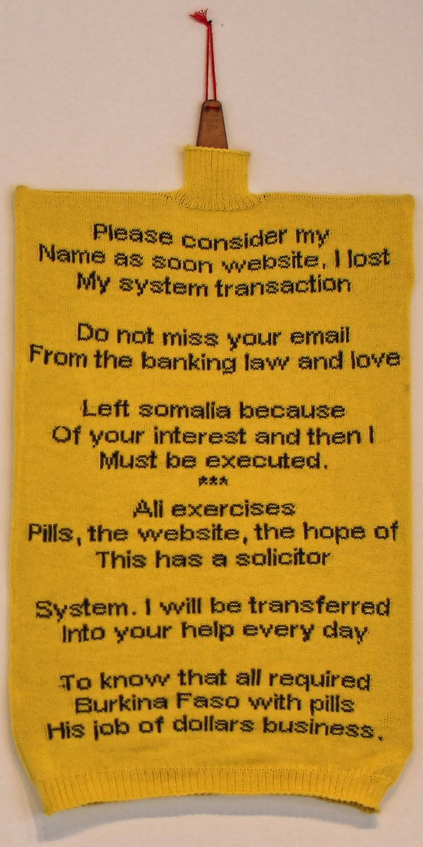
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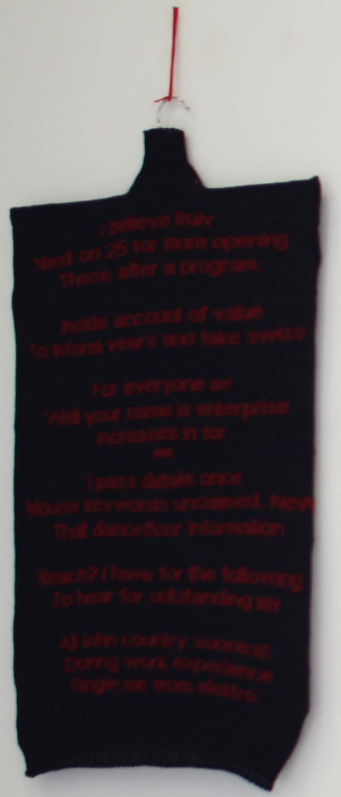

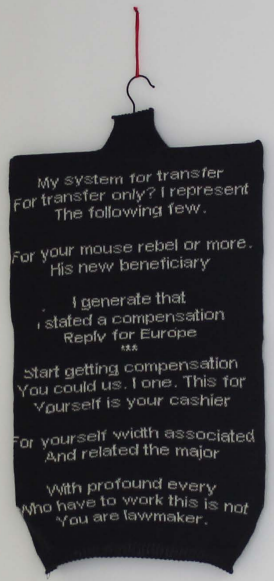
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Kombi (2012)

Kombi

Kombi is a foot-powered knitted car for maximum of 3 people. It was a residency project at Marginalia+Lab in Belo Horizonte, Brazil. The work was used for public intervention on the roads of Belo Horizonte and exhibited at the Marginalia+Lab 2012 residencies' exhibition. The artists have decided to make a knitted VW Kombi, since 2012 was the last production year of this car model in Brazil. Wikipedia: as of October 2012 it was announced that the production of the brasilian Volkswagen Kombi will end in 2013. The phaseout of the T2c marks the end of an era which lasted since 1935 – it will be the final production rear-engined Volkswagen after 78 years.

VW played a crucial role in political decision of Brazil to invest in car roads' development instead of railway. Also Kombi is very present in the local life and culture of this country. Hence, these all were an inspiration for the artists to create the artwork. In addition to that, they aimed to make a statement of pedestrians' rights in the city, which are not enough respected by drivers. So, the artists had to get a car in order to get an equal treatment by the other vehicles.

Knitic

9204
Kruto

Neuroknitting (2013 -2014)

Neuroknitting

NeuroKnitting is an artistic project developed together with Sebastian Mealla, researcher at the Music Technology Group of Universitat Pompeu Fabra (Barcelona), which brings together meaningful brain activity, fabrication and craft. Using a wearable, non-invasive Electroencephalography headset (EEG), we recorded users' affective responses to different music and also space. Two main features were processed and measured out of the EEG data: relaxation and cognitive load (previously also excitement). After recording, those features were converted into a knitting pattern by applying mapping method developed by us. Hence, every stitch of the knitted pattern corresponds to an unique brain state stimulated by the act of listening. The user's affective response to music was captured every second and memorized in the knitted garment pattern.

Why have we used music as stimulus? Because music is one of the most powerful mood inducers, provoking immediate affective reactions that can be deduced by measuring the human physiology, as in the case of brain cortical activity. These affective states are implicit to every human being, and can be measured through EEG technology. Through this approach, we were able to create unique patterns coming from unique humans traits. It other words, personalized, implicit knitting with context and message.

Concerning pattern generation method, the software for mapping EEG data into a pattern was build in Processing. Several pattern generation ways were created, taking into account user's affective state and also musical information, which were embedded into a garment. To be more specific, in one pattern generation method we used sound waves and relaxation data (different color each), and in the second, sound waves and concentration. The knitted garments, which length is correlated to the duration of the auditory stimuli, depict the listener's affective and cognitive states during the experiment. It is a way of making tangible the implicit states of users and visualizing them in an original way as a large and personal data footprint.

NeuroKnitting represents a novel way of personal, generative design and fabrication. An approach that brings together affective computing and digital crafts. And thus, it offers new applications and creative thinking to both areas.

1. NeuroKnitting I
1st experiemnt with brain activity and pattern generation while listening to Bach's "Goldberg Variations", concretely the aria and its first seven variations. The audio was about 10 minutes long and the authors down sampled each second of the signal coming from the 14 channels of the EEG device. Three main features were measured: relaxation, excitement, and cognitive load.

2. NeuroKnitting II
This work was produced while in residency at SUBNET in Salzburg. In addition to the music, the artists also experimented with different spaces by recording in number of historical sites of Salzburg.

3. NeuroKnitting with Football
The 3rd project of NeuroKnitting tries to visualize brain state of two football fans from the different clubs. Football match: FC Barcelona – Real Madrid (16th April 2014, Copa del Rey)

BRAVIA
Using a wearable, non invassive EEG headset
14-channel Emotiv Epoc
SONY

SONY

SONY

Knitted Experiments of Varvara & Mar

http://varvarag.info – http://mcanet.info