

If Things Grow Wrong | Application | Ana, the 3D-painting machine

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Problem

We live in a world which has become increasingly digital. It has come to a point that it negatively affects our physical experience and health. Basically our relationship to physical reality has changed.

I am writing this with an injury caused by too much work behind the computer. As a result my body now has a stress reaction when I force myself to sit behind my laptop at a desk. It is a direct result of a society that strives for bigger, better, faster and more without it leading to a high quality life.

Getting lost in computer work is especially harmful when you are in a creative process. Being inspired and getting into a flow is hard when software limits us, or the only tool to draw and design is a mouse, keyboard or trackpad. The relationship with scale, material, texture, light and feeling is lost. Often this results in standardised products, copy paste aesthetics and monotonous design.

Solution level 1 - Now

A few years ago I pioneered a solution for this widely experienced issue. I developed a 3D-painting machine called Ana, short for analog, which enables me to make and create at the same time, with my hands, while melting recycled plastic is being extruded. It is a plastic extrusion machine hanging from a balanced mechanism. The method is inspired by 3D-printing process, but proposes more freedom of movement. Instead of an X-Y-Z axis, and vertical layering, Ana allows me to create in all directions, just like the human body. By removing the digital file I don't need to sit behind my laptop to make a 3D-drawing with CAD-software.

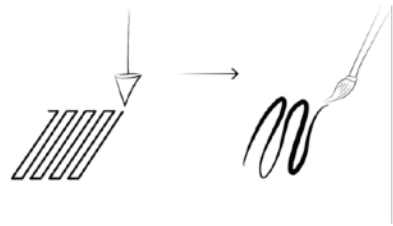
The machine was a result of an extensive research during my Architecture graduation in which I researched how 3D-printing can become like painting. In this analogy I see plastic (the building material) as paint, the nozzle as the brush, the machine as the painter and the city as a canvas. I studied bodily movement of painters in different painting styles such as expressionism, impressionism and pointillism and translated this knowledge into a new type of 3D-printing process. With this concept I bridge the gap between art, science and architecture and at the same time search for an artistic application with added value for recycled plastic.

See visual explanation on the next page.



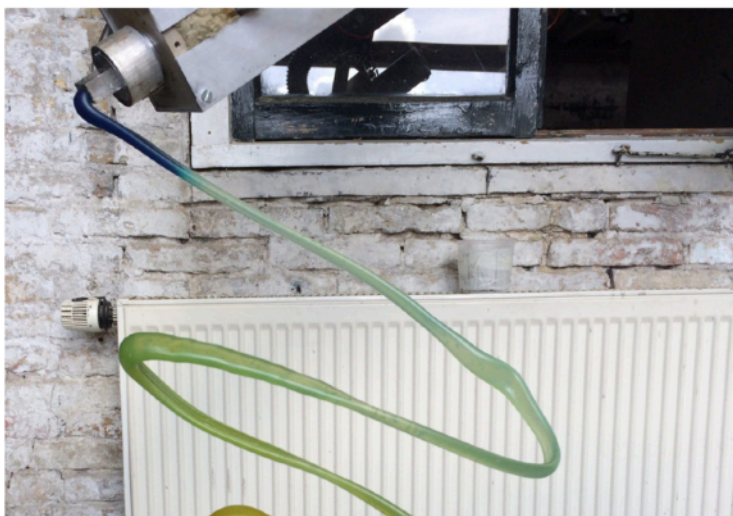
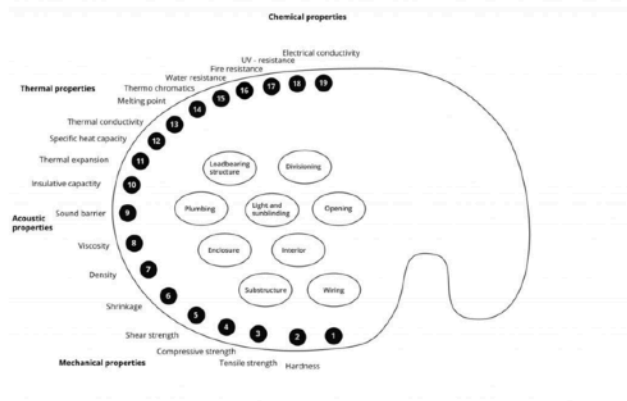
The Machine as The Painter

By designing a large-scale 3D printer with greater freedom of movement, the machine can paint with plastic in mid air.



The Building Material as Paint

Plastic is a highly engineerable material therefore it can take up various properties.



The Nozzle as Brush

The goal is to make different nozzles which work like a brush.



Now, if I have a shape or structure in mind I draw the lines in mid air right away and immediately I find a new interaction with the fluidity of the plastic material. I experience how gravity affects it, how temperature, color and movement affects its texture, thickness and aesthetics. The artist suddenly has the power to intervene and intuitively react or change the direction of a line. It gives a new sense of control and letting go of control at the same time.



Solution level 2 - Next step

Up until today, I developed a low-tech machine (see pictures above), which I have been using and learning from for 4 years. I started with smaller sculptures inspired by dance movements (below on the left) and now focus on an architectural scale for installations (right).



My ultimate goal is to make actual architectural spaces in a way that by moving your body, arms and hands through space, you can tell the machine what to do. The making process then becomes a literal ballet of a (wo)man and a machine. To reach this goal a next step is necessary for Ana. Ana needs to be updated in such a way that larger objects can be created with more precision. This means direct bodily movement will be replaced with bodily movement as a control system.

What will the production budget be used for?

- Kinetic sensors
- Low-tech robotics
- Development of movement translating software

Exhibition

With the production budget I can make a first prototype for this machine. Which will be part of the exhibition at Museum Lakenhal as an interactive installation.

The visitor will experience the slowness of melting and extruding plastic and the excitement of moving the machine without touching it. While still maintaining a direct relationship with the material, the physical space in which they are moving and the surprise of the end result: a growing sculpture made by visitors, showing the variety of handwriting and identities

Message

If things don't grow wrong, they evolve and improve.

If things grow well, humans thrive while nature thrives.

If things grow well, we maintain our unique identity while being aware that we are part of a larger whole.

The sculpture and Ana highlight this by facilitating each individual to express and experiment whatever they want in a real physical environment. No more pixels on screens, no more erasing imperfections, simply building on past work and intuitively reacting with our body to what is in front of you.

Future

If this machine can be developed further, it provides a new option for machines that are used for creative expression. In line with applications such as the TILT Brush it opens up an entirely new sense of freedom of expression. However, instead of drawing in virtual reality, you draw in physical reality. If Ana grows into a machine that can be used by artists, creatives, designers and makers effectively, then we can start to move away from a world in which we get lost in digits, 0's, 1's and virtual reality.

I plea for the reinvention of the tools we already created, in order to transform them into tools that bring us back into contact with our bodies and materials around us.

For, if the tools we made do not work to aid us anymore, we must create new tools.