PROLOGUE: PLASTIC AND 3D PRINTING

Montage of media-coverage about this new thing called 3D-printing, with (maybe) a printer in the middle, and without further explanation/narration.

INTRODUCTION

This is the story of a material that once epitomized our belief that we can make the future, but has now become synonymous with hyper-consumerism and globalized mass-production. From a symbol of prosperity, we now think of Plastic as a cheap, inferior material that is both pollutive when produced and when it's discharged off.

But there is light at the end of the tunnel for Plastic. And this light comes in the form of 3D-printing. 3D Printing holds the potential to transform Plastic from a material of mass production to that of singular, custom production and from an ecological threat to an ecological promise. As 3D-printing both bypasses the huge ecological footprint of transport costs from far east factories and the disadvantages of over-production with tons of Plastic left unsold, our use and even re-use of Plastic can be much more efficient. Subsequently 3D printing can change the way we consume as we become more aware of what we produce. Home-production may even foster stronger emotional links with objects, and thus make us less likely to replace them so quickly.

So 3D-printing is capable of clearing Plastic of its current bad reputation. But like the history of Plastic, the future of 3D-printing - is not neutral. The 3D-printing revolution is a battlefield with the government trying desperately to avoid anarchy, a few big corporations trying to control a fast growing market with billions of dollars at stake, and a large makers community striving for an open exchange of products and ideas, as its main adversaries.

Before we plunge ourselves in controversial particularities of these conflicting interests let's look at how, from its invention 150 years ago, Plastic has had its many shifts in the way it was conceived by society.

ACT 1: HISTORY (was formely the Introduction)

SCENE 1: PLASTIC IS BORN - A BOTTOMLESS MATERIAL

The beginning of plastic, what is it exactly, and how it was perceived as a bottomless, man made material that would never end (maybe it is important to mention here the link between the material and the technology that made it cheap and available..Good to know - the same guy who invented the the celluloid which is the first commercially viable plastic, also patented the first injection molding machine..)

SCENE 2: THE MANY PROMISES OF PLASTIC

Plastic gradually takes on an optimistic cultural role in our lives - as a material for democracy and social values, as a tool for better living, as fashion, etc.

SCENE 3: THE GOLDEN AGE OF PLASTIC

Companies like dupont have mass-communicated plastic- the raw material, until it had encumbered every aspect of our lives. (this is the dupont musical)

SCENE 4: HITTING REALITY

Today we link plastic with everything that's wrong with capitalism - it has become the face of globalisation, of excess and blind consumerism, of mass production and waste, and of man's dramatic ecological footprint on the planet. we close with the geological plastic form (in my view should be linked to the billiard ball in presentation).

SCENE 5: A NEW PROMISE

3D printing vision offers to revolutionize plastic's role, offering it a new life by completely changing the way it is being used - from a global mass production, to local singular production, from blind consumerism to active and aware making and from an ecological threat to an ecological promise.

SCENE 6: WHO OWNS THE FUTURE?

Yet, this is only a potential of an industry that is still in the making. In this industry the classic battle between market forces and bottom-up social initiative is waging with full power. Each has its own interests and own weapons. The way this industry will set itself will determine if plastic will take on the new social and ecological role that 3d printing promises or not.

ACT 2: PROPAGANDA

SCENE 7: DO WE HAVE A CHOICE?

This battle is first waged to win the heart and mind of the consumer. 3D printing is an industry in the making. While in some opinions it holds an open, socially revolutionary potential, the businesses that run the industry, structure their communication on traditional commercial methods. The Jargon the industry adopts is very influential. it determines the difference between knowledgeable, active users and passive, detached consumers. Weather we print at home or at a service provider - we choose our material. What will we know about it? will we be invited to play with it? will we be given a choice of a vendor? will it be standardized by

regulation, by the public, or by big business? Who's interests will it serve?

SCENE 8: NEO-LIBERALISM MEETS REVOLUTION

The idea of a revolution is being appropriated by commercial forces and attached with traditional commercial style and heroes (pop icons). Thus, a revolution turns into a marketing trick, and turns the potential of new user into a new "lifestyle". in between, fine prints like how does this work, who earns or who sells me plastic, etc. are faded into the distance.

SCENE 9: DUMBING DOWN

While we are faced with a decadent and happy image of a new way of consuming, we know less of what we consume. plastic is being appropriated by brands, or sold by its attributes like "strong and flexible". When we google such terms, we can't know what is being sold to us. Plastic for 3D printing is not standardized or supervised. We actually know less than in traditional and less "democratic" plastic.

SCENE 10: AND ON THE OTHER HAND

While commercial players take a leading role in the formation of the way 3D printing and the new uses of plastic are communicated to the public, other forces are trying to transform consumers into users, and empower them with the understanding and invitation to play with materials. These academics, makers, and individuals see the social potential of the industry not only in opening products, but in opening production and its elements to the general public.

ACT 3: POLICY

SCENE 11: ANGST AND ANARCHY

The way we are communicated is only the surface. when we dig deeper we find much more ominous stakeholders - the government, the military, the lobby group, their fears and their ambitions and the threats they face.

SCENE 12: A MILITARY INDUSTRIAL COMPLEX

New industries have been traditionally linked and have been evolving through government and military support, and the ability of the two to cooperate (dupont parachute example). The dangers of that link had been eloquently put in the farewell speech of president Eisenhower. Now, 3D printing is trying to form those links, and military, government and business join hands to find shared interests.

SCENE 13: WE DON'T NEED YOU ANYMORE

But control of technology is no longer in the government's hands.How civilian drone culture has developed outside this loop, it's growing intensity especially in the maker movement, and in 3D printed plastic specifically, and the threats it holds, on a regulatory and legal level.

SCENE 14: THE HOME CANNOT BE REGULATED

This touches on the core of the problem. we can not really regulate what happens at home. at the internet has brought this to light. the regulatory process of the 3D printed gun for getting a license to be produced, and its unstoppable distribution through the web are marking how the legal system is unequipped to deal with such issues. this is true not only in guns.

SCENE 15 : LETTERS FROM LAWYERS

The system fights back the only way it knows. We find ourselves in courts where money can be made, as a direct link to the dramatic copyright battles that were and are still waged in the music industry, which led to changing the financial model of music.

ACT 4: MONOPOLES

SCENE 16: OPEN VERSUS CLOSED

In the core of the industry, two companies control the entire market. This companies not only purchases and mergers at an extreme pace with many small companies out there, but gradually also control the full cycle of services, whether they are profitable now or in potential.

These companies are working hard at defining the standards of this industry, and to make them profitable. in the process, the vision of distribution of the means of production slowly fades away.

SCENE 17: A MONOPOLISTIC INDUSTRY

The 3D printing industry is projected to be a multi-billion dollar industry, some say bigger than the internet. Major players in the industry, namely the two biggest companies - 3D systems and Stratasys - work to control the industry, in all of its aspects. These two companies are in a journey of mergers and acquisitions on a massive scale. They purchase materials, machines, software and service providers. These companies threaten to become a duopole of an entire industry still at its infancy.

SCENE 18: CLOSING AN OPENING

But it is not enough to own, you also need to make sure that others don't.
The desktop printer, which is in the center of the democratic potential rhetoric, was birthed in the ambitious reprap project at Bath university - an open, self replicating 3D

printer, after the expiration of the FDM patent. MakerBot, Starting its way as an open source project which spawned out of the RepRap project, was recently purchased by Stratasys for 450M$. After eagerly promoting open source, its 2013 replicator 2 model marked its change into a closed source strategy, angering much of the community, who saw this as taking use of the communal knowledge.

SCENE 19 : PROTECTING YOUR INVESTMENT

Next came patent battles, and the use of the lack of standards in the industry to make facts on site, like using RFID tags or unique sized printers to force consumers to buy the plastic from the company that made the printer, or sewing smaller companies for use of your technology, pushing for centralized production, etc.

SCENE 20: AND YET...

The makers attack back. They share knowledge, they build machines to recycle plastic at home. When the standards shift they follow. and they attack on all fronts. They have active circles, and they fight for open technology.

EPILOGUE

How will this industry set? what role will plastic take in our lives? Will we be consumers of raw plastic with brand names, or will we make our own plastic at home?
Will we know more about what we consuming or less? Will we lead or be led? In this tug-rope between maker and market, we still have an influence. Plastic is a young material which can still be shaped. It will be shaped by the standards these industry will adopt, and it will adopt the standards we ask for - by the models and products designers suggest. by the support we give to those models which work in our benefit and those that aim at our pockets. The idea of home production is bigger than a theoretical discussion. It is our home we are talking about - we are the ones to take charge.

After the Epilogue you enter a space with 3D-printers were the visitor is invited to experiment with this medium. To take charge!