Today, according to a report by the IPCC, the International Panel on Climate Change, mankind has reached six out of nine of our planetary limits. This critical situation results from a society based on over-productivism, over-consumption and the multiplication of technological innovations that are difficult to recycle and pollute, causing disruption to the living world.  
Anthropologist and designer José Halloy describes these innovations as "zombie" technologies, making the world unbearable and amplifying social and economic inequalities, as these devices are generally manufactured in overseas countries where the population and natural mining resources are exploited.

Like the industrial revolution, the digital revolution has transformed our relationship with objects.

In France, digital infrastructures generate 2.5% of global gas emissions, including 78% during the manufacturing process.. Taking the example of the smartphone, 90 to 95% of its CO2 impact is related to its manufacture and transport. It has a short lifespan and will be replaced every 2.5 years.The regular device replacement generates a high impact linked to the manufacture of replacement devices, an invisible impact to the users who have become consumers. Across the world, the time spent in front of our screens is exponential, causing dependency and attachment to digital objects, such as our smartphones.

And when the fetish object breaks down, how does the user react? Most of the time, they will throw it away and buy a new one. But by observing the practices of specific types of users in the field, we can see that there are other ways to use a broken device. But how? That's the subject of our research.

The subject of my study was advised by researchers and designers from the research laboratory named "Limites numériques". Their work focuses on the planetary limits and the impact of our digital devices on the environment : air, water and soil pollution, over-consumption, mass extractivism... Their approach involves studies, investigations and solutions to these major ecological issues.

With the laboratory, we identified a recurrent behavior among certain users that differs from fixing a device or buying a new one. Some people adapt and continue to use their broken devices. When the device is defective, the user can no longer use it to 100% of its capacity. At this point they choose not to fix it, but to adapt to the damage and use the device, using tricks, tactics and other strategies. These new practices and everyday gestures on smartphones, computers, headphones, chargers and screens are the focus of my research…

One of my study is the lifespan extension of our broken devices. I chose this topic because I personally keep and extend the life of my digital devices as much as possible. Companions in my everyday life, I've kept my headphones and my computer for 9 years. Aware of the manufacture impact of our devices objects on the living world, I adapted my practices and my uses by taking great care of things to maximize their lifespan.

In this research, we are investigating these adaptation practices, which have a variety of motivations. They can be economic, functional, cultural, sentimental or emotional.

To understand these practices, uses and tactics to extend the lifespan of digital breakage in given situations, we conducted a semi-directive survey of 14 people. We mainly targeted neophytes and autodidacts to observe with the goal of observing their practices linked to adaptation situations, sometimes linked to technical knowledge.

Today, to fix their devices, users make use of everyday materials such as scotch tape, toothpicks, glue or string... Some of them will even use hacking, contouring and hijacking alternate solutions.

Despite the lack of technical knowledge in many cases, we note that certain skills can be acquired through the user's experience and imagination, as well as through exchanges with people around him and his manual skills.

Human beings adapt to their environment and develop different tactics of interaction to keep the broken devices alive.The breakage questions our relationship with digital devices and reveals new practices.

Let's take the example of a software bug on Cyprien's phone. This failure meant that the screen could no longer be used by touch, so he plugged in his computer mouse to be able to navigate on it. In his interview, Cyprien told us the main reason for this adaptation was0 financial.

Another example: Jean's headphones only work when he presses the jack. So, every morning, he goes through his adjustment routine. To listen to music, he turns the jack to the right, then to the left. The main reason for this adaptation is sentimental. His headphones have been with him every day for 9 years, and Jean can't bring himself to stop using them.

These two examples reflect the multitude of strategies observed during our investigation, and question the role of the designer during the conception phase of a digital device. In fact, these adaptation practices are not imagined by the object's designers, and escape them completely. This is one of the reasons why all these techniques have their limits: they are ephemeral, with a short lifespan, which is a real brake on increasing or generalizing these practices.

Users shape these practices themselves. They adapt to the complex situations encountered in the event of a digital device failure or breakdown. By analyzing their strategies, they feed my practice as a designer.

* How can we raise awareness among all types of users to these practices ?
* How can we make them more sustainable, easy to access and simple to use ?
* How can material breakage communicate with its user ?
* How can these adaptation solutions advance design research on the digital issue?

Through our study, we can highlight the relationship between the different types of breakage and the various tactics used to extend the life of digital devices. We deduce that these practices could be thought out upstream by designers in order to keep this state of breakage alive.

In other words, designers need to conceive and anticipate device breakage right at the conception phase. But even more, the designer must think about how to care for digital objects. Band-aids or care tools, like accessories, would keep the broken device functioning, hence the notion of maintaining the broken state.

By comparing user practices and the types of breakage collected, we began to imagine new infrastructures such as services, product extensions and interfaces.... Taking the example of a phone screen with a split in the lower left-hand corner that prevents the user from hanging up on a call, we can design an interface that allows the user to move the hang-up function to the healthy parts of the screen, thus ending the call. This technique, thought out in advance by the designer, allows the user to extend the lifespan of their device in a way.

Collaborative use is another way of extending a device’s lifespan. Users can share the same device.For example, when a device is too old and the system becomes incompatible with new updates, some apps won't even work anymore such as SNCF apps to validate a train ticket becomes difficult or even impossible.The solution could then be to download one's account or phone data on someone else’s phone . Similarly, in a large family, having only one shared phone, but one that is well-designed for different types of use such as music or video, represents another form of collaborative use.

Exploring the notion of shared device or digital use could considerably reduce the production of devices and strengthen social bonds, which are disappearing in the digital age.

But these new practices challenge our economic model, and to our human and social relations. Is the economic and financial society ready to transform its capitalist model, where programmed obsolescence reigns supreme?

In his book, author Steven J. Jackson talks about "broken world thinking". This means that the occidental world does not accept breakage and wear. This world does not accept that things are not new, are fragile, weak, ephemeral. Equipment is either new or it's garbage.

So, as De Certeau points out, isn't the practice of prolonging lifespan through tricks and cunning a form of disobedience, a socio-political act on the part of the user?

The various tactics we have studied represent an "art of deal with something broken or defective". They enable us to keep things alive. It questions our dependence on technological objects, which has become a form of obedience on the part of man to his device. On the other hand, this research demonstrates forms of dialogue between the individual and their device, and questions our acceptance of the error and fragility of objects.

Although these occidental practices reflect a great ability to adapt, and propose ways to reappropriate one's objects, they face several societal and technical limits that prevent their diffusion. These techniques also make it possible to limit over-consumption by extending what already exists. But is this really a sustainable solution to environmental issues?

It's up to designers to study breakage, accept it and take it into account in their design to facilitate and extend use in breakage situations.