



Make Inclusive Websites

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Introduction

Hello friend!

Welcome to MAKE INCLUSIVE WEBSITES, the Inclusive Website Index. Here you will find references on how to create inclusive websites. These references can help you build websites that work well for all people. This includes people with physical or mental disabilities. You will also find stories of people who have been excluded because of the way websites were built. They can help you to understand why websites for inclusion are important.

"DESIGNING FOR INCLUSION STARTS WITH RECOGNIZING EXCLUSION."¹

¹ *Mismatch: How inclusion shapes design, 2020*

Synopsis

This text is an extension of my practical work. My practical work is a result of my personal experiences. The environment in which I grew up taught me that inclusion has many advantages. It also showed me the negative consequences that come with exclusion. I would like to share the positive effects of my experiences with other people. I aim to mediate between those who make inclusive decisions and those affected by them.

How our society currently functions often leads to the disadvantage of marginalized groups. Different systems exist that state how a society handles diversity. These define how the majority of society deals with groups that they perceive as "not normal". How these groups can participate in social life is a result of the system that is in place.

The systems discussed are **exclusion**, **integration** and **inclusion**.

Exclusion means that people who differ from the majority of society are shut out.

Integration is based on a two-class system. It divides the society of individuals who are considered "normal" and those who deviate from this conception. From the second group, some individuals may be integrated into the first group. To be integrated, they have to adapt to the main group.

Inclusion, on the other hand, accepts all people as equally valuable. Inclusion means changing the social system so that it works well for everyone. Inclusive ways of thinking can facilitate a transformation towards a more just society.

In my project, I deal with inclusive approaches to the creation of websites. This area has an increasingly important impact on equal participation. That is because the Internet is becoming the primary medium for many different uses. Websites have some advantages over apps and other online media which is why my project is limited to them.

Users may have very different requirements for interfaces. I assume that there might not always be a universal solution.

Options for personalisation at the software level exist, which is a good start. However, only a small part of websites use this option. Also, there are many different adaptations, some on the browser side, some integrated into the website. Understanding and operating these may impose additional effort on users, including those with special needs. They result in a two-class society and are therefore not inclusive. One class, the majority of society,

can use most websites without any further dependencies. Users outside this group, however, are expected to do the necessary adjustments themselves. This also requires an understanding of digital technologies.

I see great inclusive potential in websites. Thus, I am investigating a system that provides content in various forms of presentation and functionality. In this system, users can choose from several interfaces. Each user can choose an interface that suits their personal needs. Ideally, they can use the interface without further adaptation.

The different interfaces have different advantages and disadvantages. Some users benefit from certain aspects, while for others they are a barrier. However, the choice of user interfaces in my project is still very limited at this stage. To reflect the diversity of users, these would have to be significantly expanded and revised.

The contents on which the index is based are available for collaboration. This allows other interested parties to develop more interface options.

Conclusion

Websites should work well for everyone. A website that works for one group of people but not for others is not inclusive. It might sometimes not be possible to serve every user's needs in one interface.

The state of customisation options on websites is not yet sufficient. There are too many different ones and they are very rarely used. Further adjustments only work if the creator of the website has taken them into account.

Technical knowledge is required to make real use of a lot of options.

Another option is to offer several interfaces for users to

choose from. That could help to resolve some of these issues. But it doesn't always make sense. The quality of this solution depends on the available interfaces.

As is so often the case on the internet, it is probably not a question of one or the other. There is the right area of application for every solution.

There are simple websites that correspond to the established semantic structure of the web. These can easily be adapted in the browser.

Some more complex websites could benefit from offering the user specific customisation options on the page. A standard needs to be established for this.

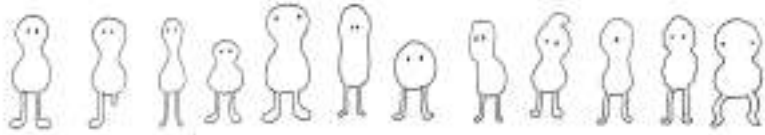
There are complex sites with structures that go beyond the classical application areas. In such cases, adaptations may become too complicated or may not be able to include everyone. Then it is good to consider whether there are different ways for people to access the content. These can then be implemented as a website with multiple interfaces.

It is good to look at all the options and decide honestly which is the most accessible. It is no longer acceptable to simply ignore this issue.

This publication will never be finished, as our society is in constant change. Inclusion is a never-ending process. I am always open to contributions and criticism.

Motivation for the project

Who am I?



2

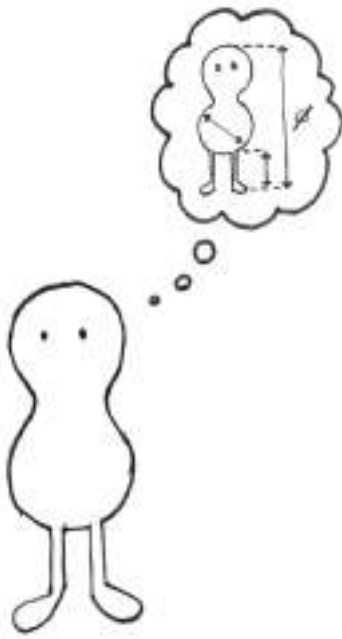
² All illustrations by the author.

My name is Max and I am a communication designer. I was born and raised in Munich, Germany. Growing up I met a lot of people with very different sets of abilities. I believe that everyone is valuable and should have equal opportunities. Some people might think that people with a disability are less important to society. I am convinced of the opposite. Human diversity, in its full range and without exceptions is a wonderful gift.

I believe we should work towards everyone having the same chances in society. This change needs to take place openly and at the centre of society. It concerns everyone.

What is "normal"?

The prevailing view of human diversity builds on the ideology of normality for the most part. Some people might consider themselves "normal", which usually means average. How does such a differentiation between normal and not normal work?



What is "normal"? Most human attributes can be measured. The science that measures people physically is called Anthropometry³. It measures things like height, weight, organs, and individual factors in comparison to each other.

The science that measures people cognitively is called Psychometrics⁴. It measures things like skills, knowledge, abilities, attitudes, personality traits, and educational achievements.

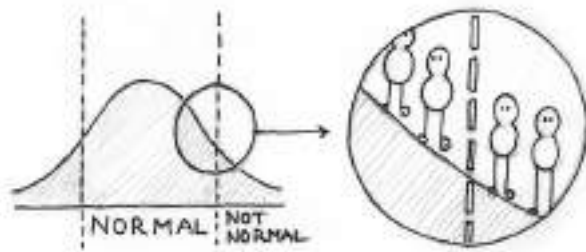
Usually, just one or a few characteristics can be measured at the same time. It is not possible to depict a whole person in all their features in this way. Allen Frances describes the following problem in his 2013 book, *Normal*⁵. If you measure the same thing in a lot of people you can draw a curve to see how they compare. You will usually get a curve that looks like a bell. If you would separate that bell-shaped curve with two lines you could say: Everything in between the lines is normal. Everything outside the lines is not normal. Two individuals with very similar measurements are now separated by a line. By this definition, one is normal and the other is not. This

³ [Anthropometry - Wikipedia, 2021.](#)

⁴ [Psychometrics - Wikipedia, 2021.](#)

⁵ [Frances 2013.](#)

separation will occur regardless of where exactly you draw the line.



"BUT IN PRACTICE IT JUST DOESN'T WORK THAT WAY. THERE ARE JUST TOO MANY STATISTICAL, CONTEXTUAL, AND VALUE JUDGMENTS THAT PERPLEX A SIMPLE STATISTICAL SOLUTION."⁶

⁶ Frances 2013, p.18.

So who gets to choose where the line is? How can this important distinction be made between two individuals with almost equal abilities? The distinction may seem unimportant to some. But, there are serious consequences when a person is categorized as "not normal". They can affect ones self-perception, career paths, social environment, family planning and more.

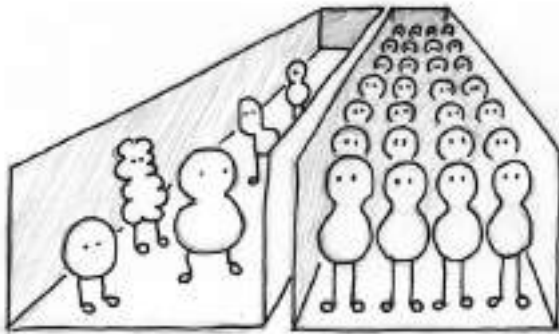
"IT IS THE CRUEL COMMENT, THE UNKIND SMIRK, THE EXTRUSION FROM THE GROUP, THE LOST JOB OPPORTUNITY, THE REJECTED MARRIAGE PROPOSAL, THE INELIGIBILITY FOR LIFE INSURANCE, THE INABILITY TO ADOPT A CHILD OR PILOT A PLANE."⁷

⁷ Frances 2013, p.96.

My own life experience has taught me that human diversity should not be abstracted like that. Humans are too complex to be reduced to just some of their attributes.

Fundamental rights need inclusion

I do not mean to deny that people can differ dramatically in their abilities. Certain people may be dependent on help due to individual features. What matters to me is that normality is an abstract construct. It can only be valid from an individual point of view. It can never be used as a basis for interfering with fundamental rights and human dignity. Thus, it makes no sense to categorize people based on this perception. An inclusive system would give all people equal chances to participate in society. Inclusion assumes that diversity is something positive and it values everyone for being special. Our society is built on the fundamental right, that all people are born equal. In practice, however, these rights are not equally accessible to all people. Someone who most people perceive as normal has a higher chance of leading a fulfilling life. Someone who deviates from the perception of normality often has disadvantages.

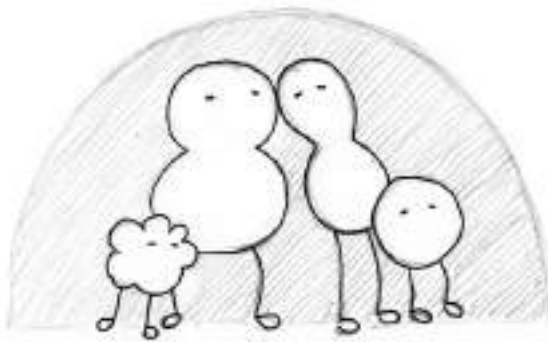


To meet the fundamental rights we, as a society must consistently make decisions that include all people. But to many people, this might not be clear. It needs to be learned. This is because many do not have experience with people with disability. They might not understand why it is such a positive thing to have everyone partake equally.

My motivation

My sister was born with Trisomy 21. Trisomy 21 is a

genetic disorder that causes, among other things, a learning disability. My sister was denied access to many areas of society because of this disability. For example, she was not allowed to go to most schools, workplaces or clubs. My parents raised her to be self-determined, even though the system we live in does not provide for this. By self-determined, I mean that she can decide for herself how she wants to live her life. The alternative would have been a fully supervised life in various institutions for the disabled. This means that many important decisions would have been taken away from her. My sister lives a very happy life. She participates in a self-determined way in the aspects of social life that are important to her. As an artist, she exhibits regularly and earns money by selling artworks.



For as long as I can remember my mother worked to support development towards a more inclusive society. She founded the first inclusive secondary school in Bavaria many years ago. At the time this project failed due to a lack of understanding of the inclusive concepts on the side of the staff. Today she offers seminars and workshops for parents of and people working with people with a disability. The seminars are about inclusion as a way to enable people with disabilities to lead a self-determined life.

Like my sister, I went to a primary school that was integrative. I had classes in a group that included children

without and some with disabilities. For me, these things did not make a difference.



It was very pleasant growing up like that and I learned a lot. Generally speaking, some of the benefits of inclusion in education are:

- "All children are able to be part of their community and develop a sense of belonging and become better prepared for life in the community as children and adults.
- It fosters a culture of respect and belonging. It also provides the opportunity to learn about and accept individual differences
- It provides all children with opportunities to develop friendships with one another. Friendships provide role models and opportunities for growth."⁸

⁸ *Inclusive Education and its Benefits, 2021*

The way our system is built, most people are not provided with such experiences. I want to share my positive experience with other people. I would like to convey why I believe that we as a society would benefit from being more inclusive.

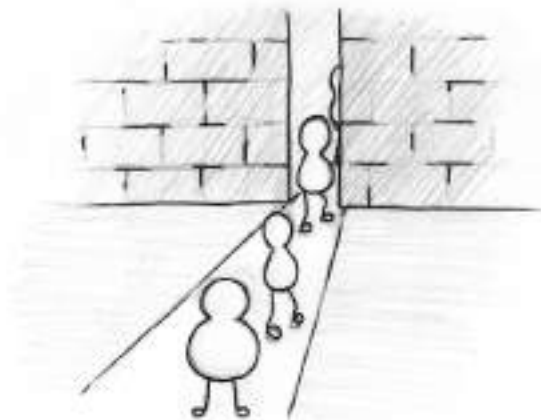
What is Inclusion?

Context

"ONE BILLION PEOPLE, OR 15% OF THE WORLD'S POPULATION, EXPERIENCE SOME FORM OF DISABILITY."⁹

⁹ *Disability Inclusion Overview, 2021*

Disability is based on a structural problem. People are not disabled by themselves, but because the circumstances do not fit them. A person may have special needs. If the system supports them, all is well. If the system does not support them, a disability arises. Circumstances determine whether someone is disabled or not. No one would have to be labelled disabled in a truly inclusive system.



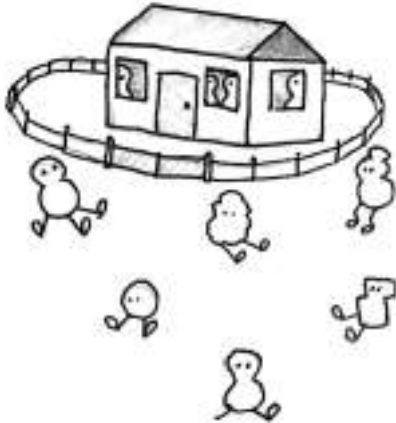
"A PERSON'S ENVIRONMENT HAS A HUGE IMPACT ON THE EXPERIENCE AND EXTENT OF DISABILITY. INACCESSIBLE ENVIRONMENTS CREATE DISABILITY BY CREATING BARRIERS TO PARTICIPATION AND INCLUSION."¹⁰

¹⁰ *World report on disability 2011, p.4.*

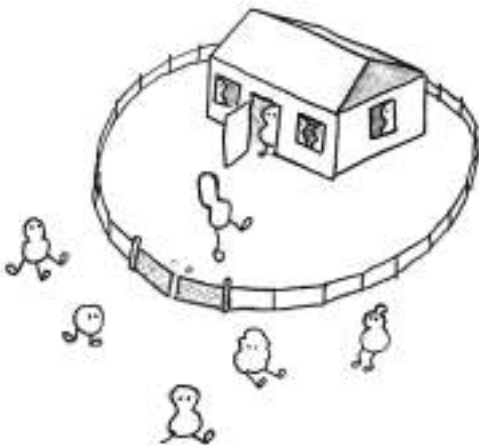
The different concepts

There are several different concepts on how to deal with people that differ from the average. I will explain the most important. Let us imagine our society as a house.

Exclusion means everybody who is perceived as "different" has to stay outside of the house. Only those people that are considered "normal" can come inside. The people in the house decide what is normal to them and what is not.

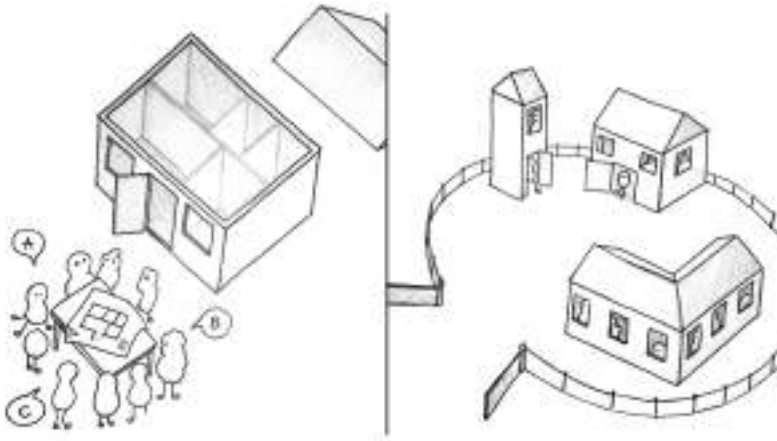


Integration means, that the people inside the house open the door and let some people inside. They choose who they want to let inside. The people that are allowed in, have to adapt to the others in the house. In the long run, they are expected to blend in with the others.



Inclusion means, that everybody together opens the house

up. They see what it looks like from the inside. All together they decide if they need more than one house to fit everyone's needs. Also, they continue to check if everyone is happy or not. If needed, the circumstances will be changed.



Exclusion results in people or groups of people being given fewer chances to participate in society. Exclusion produces inequality. It is a complex process, that takes place in a lot of different ways at the same time. A lot of areas of life are still very much exclusive.

Integration means integrating external bodies into an existing system without changing the existing conditions.

Inclusion is the opposite of exclusion. It is a way to reduce inequality. Inclusion is: "the idea that everyone should be able to use the same facilities, take part in the same activities, and enjoy the same experiences, including people who have a disability or other disadvantage"¹¹

To my mind, inclusion describes an ideal state of our society. This idea is also at the basis of the Universal Declaration of Human Rights.

"ALL HUMAN BEINGS ARE BORN FREE AND EQUAL IN DIGNITY AND RIGHTS [...]"¹²

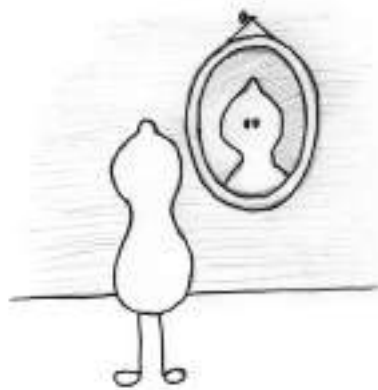
¹¹ Cambridge Dictionary: Inclusion, 2014.

¹² Universal declaration of human rights 1948, p.2

In their book, 'Mismatch' Kat Holmes and John Maeda (2018) explain:

"CORE ELEMENTS OF OUR IDENTITIES ARE FORMED BY OUR ENCOUNTERS WITH INCLUSION AND EXCLUSION. WE DECIDE WHERE WE BELONG AND WHERE WE'RE OUTSIDERS. IT SHAPES OUR SENSE OF VALUE AND WHAT WE BELIEVE WE CAN CONTRIBUTE."¹³

¹³ *Mismatch: How inclusion shapes design, 2020*



Advantages of Inclusion

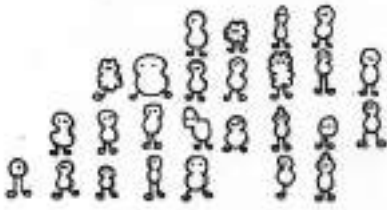
Humanity is very diverse, which is why we need to be consistently inclusive. Many people see this as an obstacle. They think that the extra work required will only benefit a few marginalized groups. This view does not match reality. Consistently implemented, inclusive approaches have a positive impact on society as a whole.

For this, we must question our perception of disability. Most of society thinks this issue is none of their business. For many people, however, the opposite may be true. After all, only a small percentage of disabilities are inborn.

7,9 Million people with a disability were living in Germany in 2019. Around 3% of these disabilities were inborn or

occurred in the first year of life. One percent of these disabilities were caused by injury or accidents. The majority of nearly 89 percent were caused by disease.¹⁴

¹⁴ 7,9 Millionen schwerbehinderte Menschen leben in Deutschland, 2021.



Most disabilities, both physical and mental, are caused by external influences and some are only temporary. This means that every one of us has a high chance to benefit from inclusion at some point in their life.

“WE’RE ALL JUST TEMPORARILY ABLED”¹⁵

¹⁵ Li, 2016

So most disabilities, both physical and mental, are caused by external influences and some are only temporary. This argument could be enough for most people to understand why an inclusive society makes sense.

But there are many more positive effects of inclusion on the whole of society. Some are:

- Many people benefit from the simplicity and clarity of inclusive communication.
- Inclusive transfer of knowledge increases the overall level of education in society.
- In an inclusive society, it is possible to deconstruct biases and thereby reduce social division.
- Dealing with a variety of different perspectives benefits the development of a tolerant and fair society.

- With inclusive approaches, employers can hire more diverse people and benefit from that diversity.
- Inclusive approaches make products and services accessible for new groups of customers.

"A CYCLE OF EXCLUSION PERMEATES OUR SOCIETY. IT HINDERS ECONOMIC GROWTH AND UNDERMINES BUSINESS SUCCESS. IT HARMS OUR COLLECTIVE AND INDIVIDUAL WELLBEING. DESIGN SHAPES OUR ABILITY TO ACCESS, PARTICIPATE IN, AND CONTRIBUTE TO THE WORLD."¹⁶

¹⁶ Holmes 2020, p.18

Full scope of the project

A complete definition of Inclusion

In this project, I speak about inclusion only concerning disability. But actually, inclusion is a much bigger topic. In its full meaning, it refers to all dimensions of human diversity. These include among others: National origin, age, ethnicity, religion/beliefs, education and of course disability. An inclusive community accepts everyone and treats them equally.

"IN SIMPLE TERMS, DIVERSITY IS THE MIX AND INCLUSION IS GETTING THE MIX TO WORK WELL TOGETHER."¹⁷

¹⁷ What is Diversity & Inclusion?, n.d.

Access to information

The topic of inclusion relates to all areas of social life, including politics, culture, education, economy, interhuman relations, etc. Because of my profession, the

inclusive design of information is particularly interesting to me. How information is presented, plays a key role in who can access it. It is important in education, where we are significantly shaped as individuals and continues to be important throughout our lives.

"EVERYONE HAS THE RIGHT TO SEEK, RECEIVE AND IMPART INFORMATION AND IDEAS THROUGH ANY MEDIA AND REGARDLESS OF FRONTIERS".¹⁸

¹⁸ Universal declaration of human rights
1948, p.2

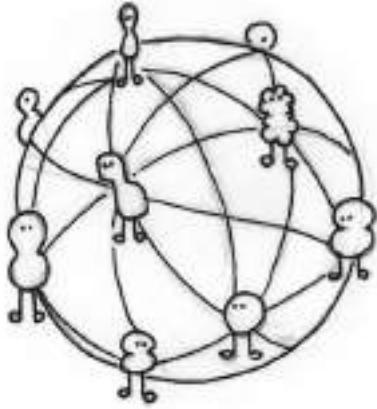
To make this possible, however, a lot of work is still to do.



The field of inclusive design in information relates to a huge variety of media. These are among others: print, web, orientation systems, education, broadcasting, branding, packaging etc. This project only deals with websites. In the long run, it would be only consistent to extend this publication to the entirety of the issue.

Why websites?

Internet usage



I feel that there is a great need to apply inclusive approaches on the Internet. Why is that?

"AS OF JANUARY 2021, THERE WERE 4,783,503,852 (4.7+ BILLION) INTERNET USERS. THE AVERAGE INTERNET USER SPENDS 6 HOURS AND 43 MINUTES ONLINE EVERY DAY."¹⁹

¹⁹ Ahlgren, 2021

The internet is probably the most important medium for communication and information transfer. Many other areas of our lives are also shifting to the internet. Online many services are available just a few clicks away and in a variety like nowhere else. Some say the internet "has become one of the key drivers of social evolution."²⁰

²⁰ Dentzel, 2021

The COVID-19 pandemic made it particularly clear how important the internet is becoming for work. A large proportion of jobs went online during this period. Many people with disabilities also were affected by this change.

It is expected that many forms of work will become more dependent on the internet in the long term.

"IF THE PANDEMIC IS GOING TO SHIFT HOW WE WORK, DISABLED PEOPLE NEED TO BE

CLOSELY INVOLVED IN THE DEVELOPMENT OF MORE INCLUSIVE WORKPLACES AND RECRUITMENT PROCESSES THAT WILL ACTUALLY BENEFIT THEM."²¹

²¹ Hirst and Foster, 2021

However, working online is based, among other things, on inclusive websites.

"BUT ASSUMING IT WORKS FOR EVERY DISABLED PERSON IS A DANGEROUS ASSUMPTION. WHAT WORKS FOR ONE DISABLED PERSON MAY NOT FOR ANOTHER, EVEN WITH THE SAME IMPAIRMENT."²²

²² Hirst and Foster, 2021



Advantages of websites

A large proportion of internet access, mobile or fixed network, go to websites. Apps make up another large part. Yet, websites have some advantages over apps. There is no need to store them permanently to be able to use them.

Websites, made in the right way, are compatible with the broadest range of user devices. Because of this, they often reach a broader audience than apps. Their maintenance is more affordable, as it is usually only necessary to maintain one version. For these reasons, my project deals only with the inclusive creation of websites.

"AS OF JANUARY 2021, THERE WERE OVER 1.83 BILLION WEBSITES ON THE INTERNET."²³

²³ Ahlgren, 2021

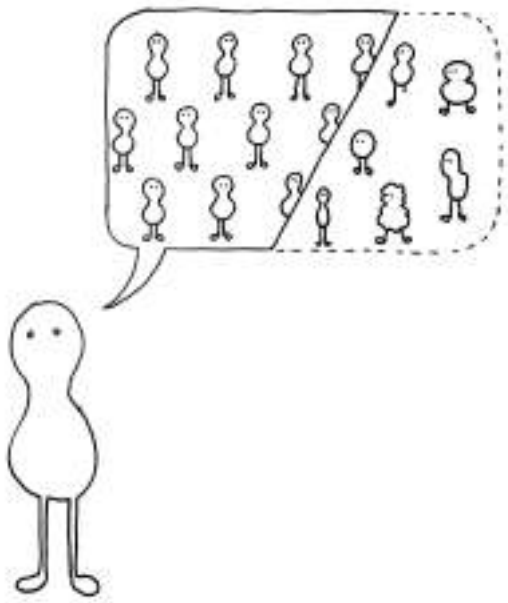
How they are made matters. It can have a significant impact on participation in most areas of societal life.

The creation of websites

Mechanisms of exclusion

Still, large parts of the Internet seem to consider it sufficient to be accessible only to "average" users. But, as we have established, an "average" user is an unrealistic construct that does not stand up to real life. I will get into that in more detail later.

There are always many options for how a website functions and how it looks. The way it does function and look is the result of countless decisions. These decisions are made by people: The creators of websites. Way too often these creators of websites put the idea of an "average" user at the centre of decision-making. Even more often, they unconsciously assume themselves to be "the norm" and make decisions on that basis. They might assume: What works for me, will work for everyone else.



Such websites will not be accessible to everyone. At best the result can be made accessible in hindsight, by

considering certain groups of people. The group of "deviant" individuals have to compensate for their disadvantaged position themselves. If they don't, they will be excluded.

"A NEW STUDY ON WEBSITE ACCESSIBILITY FOUND THAT 97.8% OF 1 MILLION HOMEPAGES TESTED HAD DETECTABLE WCAG 2 FAILURES. A USER WITH A DISABILITY CAN EXPECT TO ENCOUNTER DETECTABLE ERRORS ON 1 IN EVERY 13 ELEMENTS WITH WHICH THEY ENGAGE(...)." ²⁴

²⁴ Taylor, 2019

Examples of websites that exclude users

Some people are dependent to navigate websites with their keyboard only. On some websites, the order in which elements respond to keyboard focus is not logical. Such websites can be very confusing and frustrating to operate for some users.



²⁵

²⁵ Wong, 2016

Some users are easily distracted or have difficulty concentrating. Others are sensitive to visually stimulating content. They may suffer severe consequences from, for example, flashing content. For such users, a website with animations or moving images may be difficult or impossible to use.



26

²⁶ Ostman, 2021

Some websites speak of simple things in a very difficult language. In other cases, important content might be hidden in a long block of text that uses no subheadings. Users that struggle with reading or language in general, will not have access to these contents.

Also, a typeface can be difficult to read and exclude users with, for example, low vision.



27

²⁷ pnwx.com - Pacific Northwest X-Ray Inc., 2021

The navigation can be confusing and pose difficulties for users with comprehension problems.



28

²⁸ [Penny Juice of America, 2021](#)

There are endless reasons why users can be excluded from using a website.



29

²⁹ [Arngren, 2021](#)

According to the Web Accessibility Toolkit, the 5 most common mistakes are:

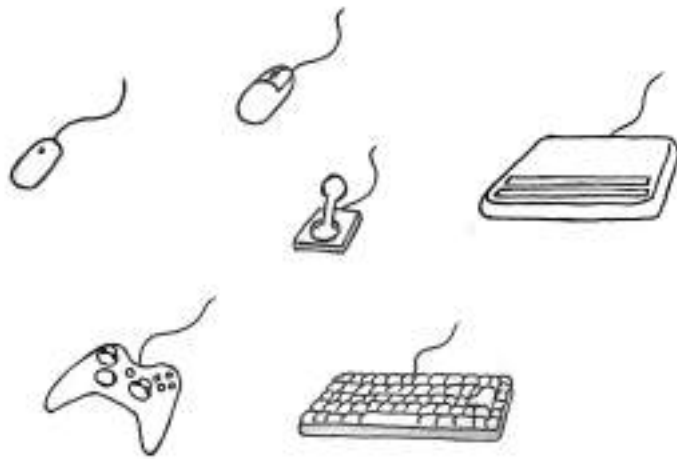
- "Graphic images without text descriptions.
- Web pages that could not be navigated without a mouse.
- Poor contrast between text and background colours.
- Lack of appropriate labels and instructions on data entry forms.

- Difficulty navigating when presented with unfamiliar terminology"³⁰

³⁰ *Web Accessibility Toolkit, 2013, as cited in Luján-Mora, 2021*

Mechanisms of inclusion

There are different concepts on how to include human diversity in website creation. I will focus on inclusive web design, which puts user diversity at the centre of decision making.



It considers all users with a wide variety of individual characteristics, needs and preferences. This can significantly increase the participation of users online. If users struggle to use a website, the website should change. In the best case, no one has to change themselves to be able to participate or to avoid exclusion.

Multiple interfaces

No "one-fits-all" solution

I assume that creating solutions that work equally well for everybody can quickly reach its limit. There might be no

"one-fits-all" interface if you want to consider everybody equally.

For product design, the concept of ergonomics has been around for a while.

"ERGONOMICS (...) IS A BRANCH OF SCIENCE THAT AIMS TO LEARN ABOUT HUMAN ABILITIES AND LIMITATIONS, AND THEN APPLY THIS LEARNING TO IMPROVE PEOPLE'S INTERACTION WITH PRODUCTS, SYSTEMS AND ENVIRONMENTS."³¹

³¹ *What is Ergonomics?, 2014*

It was developed first in World War 2. The US military had built airplane cockpits based on the calculated measurements of an "average" pilot. They had measured many people for this. Then, from the measurement results, the respective averages were calculated. With the resulting airplanes, there were more accidents than usual. They realized that less than five percent of their pilots would fit these cockpits. They were not average.³²

³² *Rose, 2016*

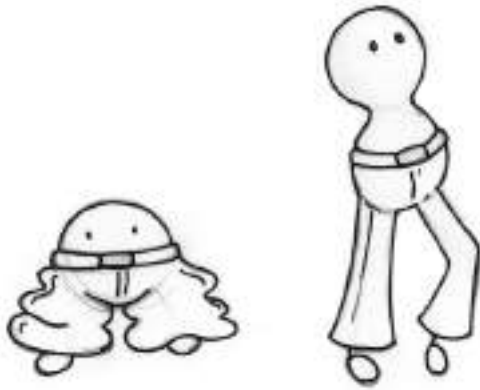
Since then, many studies have proven: No one is average

"(...) THERE IS NO SUCH THING AS AN AVERAGE PERSON, AND WE CAN SEE THE FLAW IN THE EQUAL ACCESS APPROACH TO OPPORTUNITY: IF THERE IS NO SUCH THING AS AN AVERAGE PERSON, THEN THERE CAN NEVER BE EQUAL OPPORTUNITY ON AVERAGE. ONLY EQUAL FIT CREATES EQUAL OPPORTUNITY."³³

³³ *Rose, 2016*

Ever since World War 2 ergonomics has found its way into most areas of product development. Still, there are mostly limits on how many people a product can fit. To be profitable they can only include so many different people. For example, most people can find clothes their size in most

shops, but some have to go to special stores.



These limitations luckily do not apply in the digital realm. Here it is much easier to provide multiple solutions or give options for adjustment.

Adjustments

Assistive web technology describes additional hardware and software that some users may need. They either render content in different ways or give alternative input options.



34

³⁴ [Refreshable braille display - Wikipedia, 2021](#)

An example of this is the Refreshable Braille Display, a

type of keyboard that makes text tactile. This technology is based on braille, a combination of raised dots. Other examples may include a screen reader or alternative input devices. However, all of these only work if a website is made accordingly. These aids, which are usually essential for the user, must be taken into account in the creation process.



Besides, there are a lot of other possibilities to accommodate users. There are two different types of adaptations on a software level.

I don't want to argue against these options of customization in any way. Websites built properly can be made accessible to all kinds of people. But a lot of the existing concepts do not yet correspond to the general understanding of inclusion. I believe that there is a lot more inclusive potential in websites.

The most common solution is to customize the display of a website in the browser. This allows the user to override certain features of a website. Mostly this is about typography and color.

This necessity is reflected in the fact that a "reader mode" is a standard feature of all major browsers. Such a reader mode reduces the content to a clear and uniform style. Also, it provides other supportive functions, such as text to speech. Like many other user agents, such a translation of content relies on a clear semantic structure. If this structure

is flawed, the content will be displayed incorrectly or not at all. The Reader Mode can usually only be used if it was considered by the creator of a website.

If further adjustments to the browser are necessary, this can be accompanied by a high risk of user exclusion. For this use, a higher understanding of digital technologies is required. Some people are overwhelmed with it and accordingly have to rely on the help of others.

The other type of software-level customization is embedded in the website.



35

³⁵ *Paving the way toward inclusive Open Education Resources | floe, 2020*

This is available in different designs, only on some websites, yet it isn't on most. If available, you still have to find it first. The functionality of such methods vary greatly and usually only include a small part of the users. This kind of customization has yet to be properly established. It would be important to set a standard for it, that is consistent across different websites.



36

³⁶ First Discovery Tool, 2021

Customization functions that are different for each website do not make much sense. They require a high level of technical understanding and flexibility from the user.

Concepts that guide the user from the beginning could avoid some of the problems mentioned. For example, a preliminary stage of the website could automatically make the necessary adjustments. All users would go through it. The necessary adjustments could, for example, be determined based on easy to answer questions. Preferences could thus be easily identified, stored and applied to a wide range of websites.

What is inclusive in relation to websites?

Most described existing customizations on the software level are not inclusive in my opinion. They are comparable to a portable ramp for a wheelchair user. Some buildings might have ramps, but most do not. Let's imagine a wheelchair user wants to enter a building with only stairs and no elevator. Either there is a portable ramp in the building or she/he has to bring it her-/himself.

This example reflects an integrative approach because it creates a two-class system. Most people can use all buildings at all times, so nothing is changed about the buildings. The wheelchair user can only take part, but only if she/he adapts to the given circumstances.

Wheelchair users have to accept an extra effort from the beginning to be able to participate equally. They might permanently dependent on the help of others. That is not fair.

With website adaptations, it is kind of the same thing. The majority of users have to take a minimum effort. They can use all websites without any restrictions. The users that need support are responsible for providing it themselves.

This would be different in an inclusive society. Here, all buildings would be prepared for this at all times, so that they are accessible to everyone. In the best case, the wheelchair user could use the same entrance as everyone else, without any extra effort.



37

³⁷ [Robson Square waterfall 2018 - Wikimedia Commons, 2018](#)

However, this approach reaches its limits very quickly. Often, adjustments for a certain group of people are made

at the expense of other people with different needs. Compromises can result in a situation that is not ideal for anyone.

The example of Robson Square tells this story. Its image is often used to show a particularly good implementation of inclusive design. It is undeniable that it has a wonderful symbolic effect and is well suited to illustrate inclusive approaches. However, "Arnold Cheng doesn't like it."³⁸

³⁸ [Johnston, 2019](#)

He has pointed out some of the problems that the building brings with it. He says: "it's dangerous to travel down the steep ramp in his wheelchair."³⁹ But it is not only for wheelchair users that this combination of stairs and ramps poses dangers. "That's how people start tripping, (...) it's quite a hazard."⁴⁰

³⁹ [Johnston, 2019](#)

⁴⁰ [Johnston, 2019](#)

"THE STAIRS ARE ALL THE SAME COLOUR, WHICH HE SAYS CAN MAKE IT DIFFICULT FOR A VISUALLY IMPAIRED PERSON TO TELL WHERE ONE STEP BEGINS AND THE NEXT ONE ENDS."⁴¹

⁴¹ [Johnston, 2019](#)

This example shows that, when reducing one barrier, a new one may emerge.

Multiple interface options

Applying these ideas to websites means that there might not be one interface that works well for everyone. I think it is important to ask: If I make an interface accessible for one group of users, does that exclude another group of users? What is the cost of an interface that is particularly accessible to one user group for other user groups? If I try to make a website for everyone, do I end up with a compromise that doesn't really work well for anyone? The aim should be to benefit the greatest possible range of different users.

To return to the previous example: What if a combination of a ramp and stairs doesn't work well? Then there are different ways for different needs that all lead to the same place. Of course, it would be nicer if everyone could take the same way. However, it is more important that everyone can get to the same place.



It may be useful to offer more than one option to access a website's contents. Like that, many different user groups may be able to easily access the content.

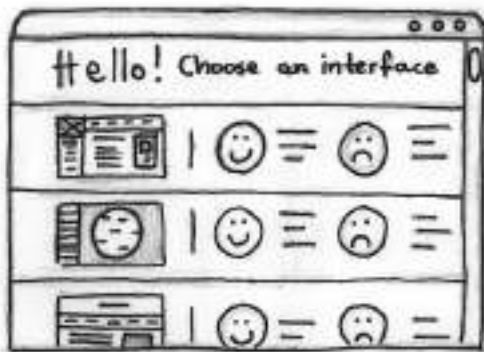
Several interfaces could be available that offer the same content. These websites provide different types of display and functionality. The individual interfaces should then cover different needs without further adjustments. Each one can be created so that it works particularly well for a certain group of users. This would reduce the additional effort of users with special requirements. All users would go through the process of selecting a preferred version at least once. In this way, everyone has the same effort and no one is excluded. Yet, this system is only as good as the individual interfaces available. So, it works best when it is open for collaboration.

For example, a website might work very well for people with impaired vision. The same website might not cover the needs of a person with full vision and a learning

disability.

A website that is made to be distraction-free might work well for people that have a short attention span. The very same website might not work at all for a person with dyslexia that benefits from visual content.

That is why I created a platform that lets the user choose an interface that fits their needs. The interfaces feature different types of navigation, structure and display. With human abilities, the transitions are seamless. That is why some of the interface options might be very similar and differ in details only.



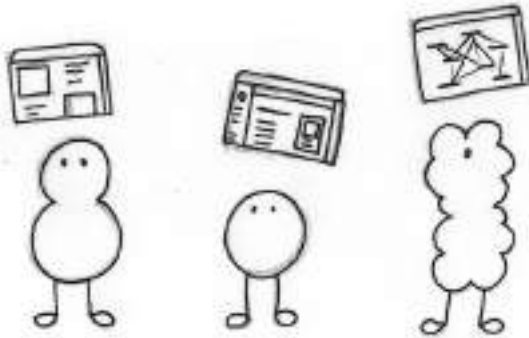
This system could in the end work like an email program. There are many different options on how to receive emails. Each user decides which program best suits their needs. The content you get in the end is always the same.

All content is retrieved from a central storage location. Thus, the need for storage space hardly increases.

Open-ended

The system I am describing is supposed to be open-ended. This means that the content is available for collaboration. It can be retrieved from a central storage location. This way, other interested parties can contribute further interfaces to the platform. In the long term, the variety of options can

grow in this way. The entirety of the interfaces would thus be in a permanent state of change. In this way, it could possibly do justice to human diversity.



I want to test whether this system can be more inclusive than a system that tries to serve all needs in one place. This could prevent some users from being forced to adapt to a website more than others. The end goal would be that no user is being disadvantaged due to a lack of functionality.

Interfaces

Any interface should be based on a meaningful structure. A clear hierarchy serves as the basis for navigating the content. Content should be categorised in a comprehensible way. Connections between content should be made clear to provide context.

There are endless possibilities for interfaces. The focus should be on interfaces that are compatible with all end devices. Furthermore, all content must be made accessible to different senses.

I use a Mediawiki instance as the central element of my project. This is where I collect and structure the content. The other interfaces all draw their content from this Wiki. This is done through so-called Cargo Queries. It has the advantage that changes in the wiki affect all other versions

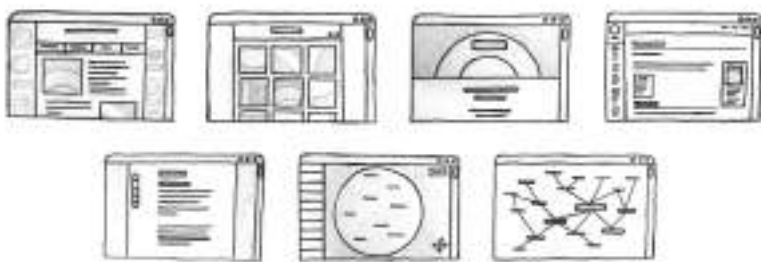
of the website.

The presentation of the wiki can be customised with so-called skins. Skins such as "2018" are suitable for this. It provides "a clean, modern and unobtrusive reading environment(..)"⁴². Also, it aims to: "be fully accessible to users with visual or motor impairment and render properly on a wide range of user agents."⁴³

⁴² [Skin:2018 - MediaWiki, 2021](#)

⁴³ [Skin:2018 - MediaWiki, 2021](#)

Various aspects can be considered when it comes to other interface options.



In terms of structuring, there are many different options to consider. Content can be navigated linearly or non-linearly. Hierarchical structures can be reproduced in nested form or as an overview. Some content can be arranged spatially. Content can be displayed all on one page as well as broken down into different pages. Linking or embedding content can be achieved in a variety of ways. Different ways of interacting with contents can also give users different perspectives and experiences of it. All these options have advantages for some groups of users and disadvantages for others.

Also, different forms of presentation meet the needs of different groups of users. For example, an exciting colourful design can help or hinder the intake of content. High contrast can be necessary, or it can be exhausting. Large fonts can make reading easier or more difficult. Supportive sound design can make it easier for users to

interact or it can confuse them. Illustrations and moving images can provide a second source of information or consume the user's attention. High-quality image and audio material can lead to high satisfaction for some users and long loading times for others. Playful interaction with content can be very positively received, or it can be a barrier. Some users gratefully accept customisation options or even have a customised user environment of their own to support them. Other users are already overwhelmed with the regular use of a website.

For now, I plan to make my content accessible in the following ways:

- Through the wiki.
- As a one-pager with a fixed table of contents and fold-out subsections.
- As a one-pager with a fixed table of contents and with the "Infusion - UI Options" customisation tool.
- As a distraction-free environment with a menu navigation and support for keyboard navigation only.
- As a globe on which all content is spatially arranged with a fixed table of contents.
- As a print version.

My process

Scope and content

At the beginning of the process, I had a very broad focus. I examined the entire range of human diversity concerning the communication of information. I had established a set of criteria in which people can differ in relation to this

field. The idea was to determine which human characteristics can possibly lead to exclusion. The established criteria were divided into two supertopics.

The first list contained factors that can be important for the design of information.

Thematic group	Aspects of human diversity
Learning-styles	visual, aural, verbal, physical, logical, social, solitary
Physical features	hearing, sight, color-vision, touch, coordination, motor-functions
Cognitive features	attention span (distraction sensitivity), sensitivity (to stimuli), processing pace and capacity, playfulness, technical competency, language, reading and writing skills, flexibility
Infrastructure	access to technology, bandwidth and data volume

The second list included factors that can play a role in the preparation of content.

Thematic group	Aspects of human diversity
Learning-styles	high context, low context
Cognitive features	comprehension, linguistic competence
Infrastructure ?	laws, geographic locations
Culture ?	relationship to authority, individualism, cultural competency, biases, work style, tolerance of uncertainty
Mode of address of human diversity	Economic status, political affiliation, religious preference, values, gender, sexual orientation, disability

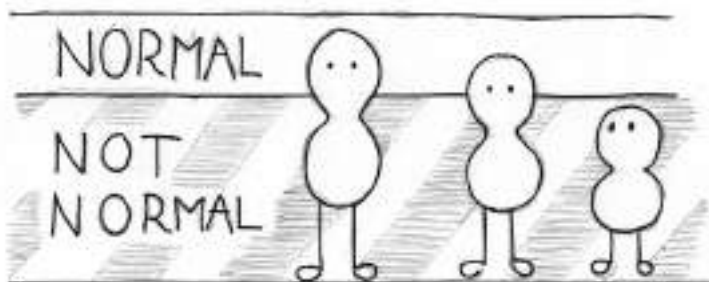
As a result, I realized that I had to narrow down the scope of my project. It was simply unrealistic to do this with the time and resources available to me. Yet, I still believe that human diversity deserves to be considered in a suitably differentiated way. It is not enough to look only at people with or without disabilities. And, as already pointed out, this distinction is more difficult than generally assumed.

I decided to focus on the aspects of physical and mental ability. This was not only due to my personal background. It was also due to the clear differentiation of this topic and the amount of available material online. Inclusion as an expanded view of human diversity is a relatively recent approach. Inclusion in the reduced definition that I use has been around for decades. ⁴⁴

⁴⁴ Winter, 2003

I also decided to focus only on websites as a medium of information transfer. This is because over the last years I have personally developed a great interest in web design and web coding. I have already explained why websites are becoming increasingly important for all areas of social interaction. Furthermore, due to the nature of the topic, the largest amount of material is available online. This allowed me to reduce the amount of research and focus more on the implementation.

In my approach, it was important for me to put the human at the centre of attention. I did not want to examine people based on diagnosable disabilities. Such diagnoses of disabilities refer to a specific set of symptoms. I do not doubt their usefulness in many areas of life. However, it is in their nature to oversimplify complex processes. Also, when you use them to talk about individuals, you draw a line between normal and not normal.



However, inclusion requires a differentiated perspective on individuals. A person may associate with some symptoms but not with a diagnosis. It was important to me to make the materials accessible to as many people as possible without bias. Therefore, my consideration of people is based on their abilities and possibly associated symptoms.

I updated and revised the list of aspects of human diversity relevant to using a website.

physical	mental
hearing	linguistic competence
touch	reading-skills
coordination	writing-skills
motor-functions	language
color-vision	comprehension
sight	processing capacity
	processing pace
	technical competency
	flexibility
	playfulness
	attention span
	memory
	sensitivity

None of the lists shown claims to be complete. As human diversity is in constant change, the criteria identified are also always open to expansion.

For all these topics, I have identified areas of website creation on which they have an impact. To these, in turn, I have collected references through extensive online research. The intention was to find materials and tools that offer direct help to creators of websites. I have structured the resulting collection in various ways.



Testimonials



User stories play an important role in this project. They are supposed to clarify to website creators why it is important

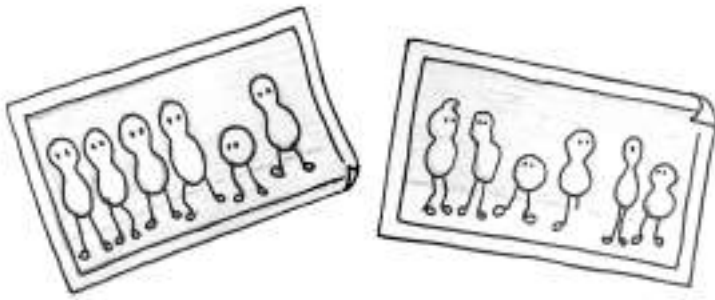
to adopt inclusive approaches. I think it is difficult for people to deal constructively with issues that do not affect them personally. To hear the story of another individual can help to develop an understanding.

In a survey, I asked questions on the topic of exclusion when using websites. I also asked for individual needs to overcome these.

Unfortunately, it is not so easy to collect relevant stories. First of all, I needed to proactively find people who associate themselves with a certain symptom. I find it difficult to approach people on this footing. Also, the narratives required need to be very specific to a certain subject area. It is almost impossible to communicate this without a face-to-face conversation. Such an approach takes time. Also, human contacts were limited when I was making the project, due to the COVID-19 pandemic.

In the end, I only managed to gather a few testimonies. As far as possible, I filled the remaining gaps with user stories I found online. For the remaining topics, I linked to an online survey. This way, users who feel addressed and want to contribute can directly get in contact. I process all stories in close contact with the persons concerned. I want to make sure that their stories are represented as realistically as possible. Over time, I hope that this aspect of the index will continue to grow.

Illustration



I use illustrations in many of the interfaces. Of course, the style of the illustration is crucial for the success of its communication. I chose a minimalistic style. That means I limited myself to elements that are necessary to convey the information. I left out all elements, that were purely decorative: As simple as possible and as depicting as necessary.

In my illustrations, I tried to refrain from depicting groups of people realistically. In a figurative representation, it seems almost impossible to me to include human diversity in its entirety. A certain amount of abstraction can help with this. The human brain does not need much to recognize a living being in a shape. So, despite strong abstraction, I clearly show humans in my illustrations. However, these cannot be assigned to a certain group, beyond the necessary extent.

I did not use only color to communicate information. Nevertheless, colors are an important means of visual communication. Therefore, in any case, one should not completely refrain from using them. When selecting the colors I reduced myself to the lowest possible number. The colors I chose have high contrast and can be easily recognized and distinguished.

Some of the illustrations are animated. Animated graphics have advantages and disadvantages. Some people develop a quicker understanding of complex topics when they are visually stimulated. In animated form, it is possible to illustrate complex explanations visually. For many people, this is supporting and appealing. Especially for people who have a playful approach to websites.

The disadvantages are that they can be distracting. Also, some forms of animation can be overstimulating to some users. So when using animated illustrations, it is important to always offer an alternative.

Conclusion

It is in the nature of the internet that there does not have to be an either-or. The internet is about compromise. I think there is no right and wrong solution to this question of inclusive websites either. The only wrong solution is no solution.



Some requirements must of course be met by any website. They need to be responsive and understood by all available user agents. In addition, we have a few concepts available for making websites inclusive. Probably a mixture of all will lead to general success in the end. However, website creators should consciously choose one of the solutions and commit to it. It should be considered from the beginning of the project to its completion.

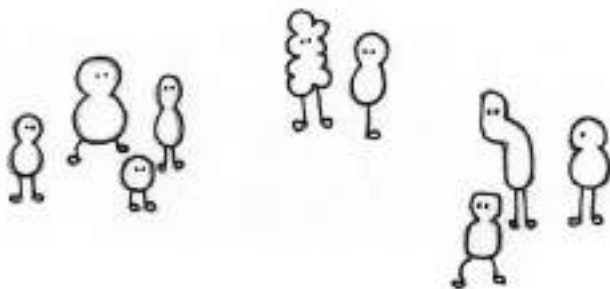
The available solutions each have their advantages in a specific area. There are very simple websites that are based on established standards. These can be adapted by most users in the browser by, for example, using the reader-mode.

For many, more complex, technically sophisticated websites, this may not be enough. In such cases, a customisation function built into the website may work better. It should be displayed as prominently as possible and the first thing we see. Here it would be helpful to guide users through the customization process. In the long term, a uniform standard must be established across all websites. Storing the preferences would also support some users.

However, it may not be possible to make some websites inclusive in one form of presentation. Doing so will either leave people out or result in a mediocre compromise.

At such a point, it is possible to rely on multiple interfaces. This method generally removes responsibility from the user. The responsibility lies with the creator, who has thought about his/her users in advance. The users only have to choose their preferred form of presentation. It is essential that a community is formed around this approach and advances it. In the end, the quality of the real interaction determines the success of the implementation.

The early internet was a place of democratic participation.



"(...) FOR ONE. BRIEF AND BEAUTIFUL STRETCH OF TIME (...) THE INTERNET WAS MOSTLY MADE OF, BY, AND FOR THE PEOPLE. ITS PURPOSE WAS TO ENLIGHTEN, (...) AND IT WAS ADMINISTERED BY A PROVISIONAL CLUSTER OF PERPETUALLY SHIFTING COLLECTIVE NORMS (...)." ⁴⁵

⁴⁵ Snowden, 2019

This may have been undermined by particular political and economic forces, but it will continue to be of value. Democratic participation is at the core of inclusion. Moreover, it is also the only way to make it happen.

The internet is shaped, for better and for worse, by diversity. It is up to each individual involved in creating websites to put human diversity at the centre of their work. Keeping the promise of fundamental rights depends on it. Only through a strong community can we become a society in which everyone practically has equal rights.

I firmly believe that this is the way to a more open, tolerant, free and united internet.

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