Educational imaginaries
— a genealogy of the digital citizen

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All Watched Over by Machines of Loving Grace

I like to think (and the sooner the better!)
of a cybernetic meadow
where mammals and computers
live together in mutually
programming harmony
like pure water
touching clear sky.

I like to think
(right now, please!)
of a cybernetic forest
filled with pines and electronics
where deer stroll peacefully
past computers
as if they were flowers
with spinning blossoms.

I like to think
(it has to be!)
of a cybernetic ecology
where we are free of our labors
and joined back to nature,
returned to our mammal
brothers and sisters,
and all watched over
by machines of loving grace.

Richard Brautigan (1968, p. 11)
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List of papers


**Paper III.** Rahm, L. (submitted) Computing the Nordic way: the Swedish labour movement, the computer and popular education from the post-war period to the turn of the millennium.

Part 1
Att registrera data

Hur data registreras beror på hur de ska användas. Data som ska behandlas av datorer registreras på ett sätt – data som lätt ska kunna uppfattas av människor på ett annat. För data som ska lagras använder vi en annan metod än för data som bara behövs för tillfället.

Illustration 1, Excerpt from course book: *Datörer - på våra villkor* (Björk & Saving, 1975, p. 29)
Introduction

Today our political, social and economic contexts are permeated by the digital imperative—the idea that digitalization is the solution to all problems (Snickars, 2014). Put simply, digitalization is a process where information, artefacts, and even people are converted into computer code for different purposes. The digitalization of everything is presented as an answer to many diverse issues, both contemporary and future, ranging from social exclusion to issues concerning the environment or housing (European Commission, 2014; Ministry of Enterprise and Innovation, 2015).

This all-encompassing process of digitalization naturally also impacts on citizens. That is, it is increasingly seen as necessary for citizens to become digital and to enact digital citizenship. For this we also need digital competencies, specifically in order to be(come) part of the digitally included—a state which, in itself, is becoming a precondition for societal inclusion. But the digital citizen is also repeatedly promoted as a qualifier for the continuous and complete digitalization of society (and all its services, e.g. healthcare, social security, job training, housing, community management). What is now termed digital inclusion can thus increasingly be seen as an inevitable precondition for a complete citizenship.

Education has often been imagined as the means by which the best future can be created, and as the best way to prevent potential threats. From such a perspective, the struggle over the goals of digitalization can be seen as a governing of (different groups of) citizens through education. This governance ideally construes citizens that are well-suited to face the foreseen future, or as it is expressed today, citizens that are digitally included. The fact that citizenship and (knowledge of) digital media technologies are now so tightly connected is seldom regarded as a result of a long history of (political) decisions on different levels. Rather, there is a tendency to see it as a fortunate coincidence, or a complex effect of actors just happening to work in the same direction. For example, the fact that the Swedish population is so computer savvy (and such heavy users of technology) is often seen as separated from the fact that there is an underpinning political and economic rationale in moving social
and societal functions to the digital sphere. The digital citizen is just one of the instantiations of the digital imperative. However, from the perspective of this thesis, the digital citizen should be understood as more a result of contemporary and historical educational imaginaries, where solutions and problems have shaped each other.

The emergence of the digital citizen

The interstices between citizens and digital media technologies are both discursive and material. This entanglement enacts power and has effects on the everyday lives of citizen, as well as on societal structures. For example, computer code determines which news flows we are reached by, which information is made available to us, and even our credit ratings (based on for example search history or even choice of web browser) (Deville & Velden, 2016). As such, the computer code that envelops the digital citizen is not neutral and has distinct effects on our lives. It has impacts on everyday activities (Fast & Kaun, 2014; Kaun & Schwarzenegger, 2014), re-shapes spaces (McQuire, 2006) and accelerates our experience of time (Crary, 2013; Rosa, 2013). It affectively sorts, orders (L. Bodén, 2016), and prioritizes people based on both sexist and racist logics (Noble, 2018); it protects borders through biometric ordering (Dijstelbloem & Broeders, 2015); and it controls which information we can access (Burell, 2016). Digitalization—all its protocols and interfaces—is infused in all our mundane activities, but the concealed functionality and information is controlled by the companies and governments that have designed the platforms, the gadgets and the services. As such, socio-digital systems are central to the structures of contemporary imperialism (Fuchs, 2014). The material asymmetries that made them feasible (Hornborg, 2013) are obscured, and the social and ecological costs attributable to the life-cycle of digital technologies are hidden (Taffel, 2016). As such, new types of accidents (Virilio, 2007) and risks (Beck, 1992) have also been generated.

In the complex networks of people, policies and practices, everyday life is increasingly permeated by computer code, where governance is made ubiquitous via an embedding in normalized technological materiality. The competencies demanded of the digital citizen are co-shaped by how the digital ecology of the digital citizen
is designed and regulated. The development of even newer skills is thereby imagined as a way to deal with the problems of regulation (as well as functioning as a central design method). The empty search box of Google has been described as the most striking example of what digitalization entails. Everything is within reach, but you must yourself take responsibility for, and be active in, your choices (Snickars, 2014). Thus, the digital citizen is a dynamic citizen, strongly entwined with entrepreneurship and innovation. However, while the search box needs to be filled with something, it is also not entirely empty. It may look empty, but there is algorithmic governance built into it. Citizenship is shaped by digitally material discourses, such as computer code, which determine the repertoires of action for citizens. When you use your computer or smartphone (and are connected to the internet), the programs you run covertly call upon different servers around the globe—your consent to this can be found in the end user license agreement you already agreed to. Not only companies, but also public authorities, are constantly searching for new ways, using different algorithms, to automate task management (Andréasson, 2015). Likewise, new digital archives enable (and disable) access to (certain) information and memories—information and memories that can be packaged and sold to interested buyers.

From a historical perspective, it could be argued that computers have, in themselves, changed so much that they are hardly the same thing today as they were 70 years ago (and that they are therefore not comparable). But maybe the computer was never one phenomenon. Its capacities have, over time, followed many trajectories, taken detours, crossed paths, diverged and so on. Perhaps even more interestingly, we have not only lived with materially existing technologies, but also always with imaginaries of how future technologies will impact on our lives—i.e. how we imagine that the sociotechnical future will take place.

The dream (or sociotechnical imaginary) of the good digital society takes its start in the mid 1950s. Over the subsequent 70 years, computers will go from being massive calculators, the size of rooms, to being so small that they are embedded in all kinds of everyday objects—but the public discussions about them, then and now, are surprisingly similar.
Different media and machines have, at different points in history, brought radically different needs for citizen education, and have at the same time changed the preconditions for citizenship. With each new (media) technological era, follows discussions about the increased potentials and growing dangers—but also new needs for education. The television, the radio, the car, and the printing press, to name just a few of the most noticeable technologies, have all required thoroughly new aptitudes from citizens, and have all had radically liberating potentials ascribed to them (Winner, 1980, 1986). Compared to these older technologies, digital technology is still described as something completely independent of time and place—as something new and apolitical—almost a heroic ideology of itself (Johansson, 1997). As such, the utopian potential of the computer is different from that of the car or of nuclear power for example, in that it has not diminished, but only increased (Johansson & Nissen, 2001). The sociotechnical imaginary of machines as citizen-devices has deep roots. What we regard as thoroughly new at one point in time, may not be as new as we think. Importantly, while we all imagine the future to some degree, a social imaginary is also politically (and potentially also materially) constructed, and thereby made and unmade in different constellations and contexts.

Discussions of things digital often end up in entrenched polemics, where extreme downsides are weighed against extreme paybacks. In relation to education, some researchers point to a pedagogical and didactic anarchy, where notions of scrutiny, authority, truth and rational consensus are overturned (Brabazon, 2002; Fabos, 2004). For other researchers, the very same technologies create astonishing opportunities for pedagogical self-realization, collaborative learning and democratization of studies in general (Bergmann & Sams, 2012; A. Collins, 2009). The tension between these standpoints is interesting, but instead of stopping at describing the digital as completely new and revolutionary, or describing it as not very new and ground-breaking, we must begin to disentangle how the new and the old have been intertwined (and what is labelled under these headings at different points in time). To understand changes to society, we must thereby try to point out and analyze what is conceived of, presented, or implemented, as new, why it is important and what functions this “newness” transform.
One part of this is tracing the emergence, and genealogy, of the new, but we must also not forget to compare and contextualize it in relation to other phenomena. Therefore, there is a need for a historicizing of the surrounding imaginaries of technologies. Such an approach can reveal the underlying ideas of what is (construed as) “new” and which corresponding skills that are (construed as) required. This kind of analysis also has the potential to show that what is seen as new may not be as new as it first appears.

Popular education has been, and is, a central but also somewhat ignored force in shaping the digital citizen. The introductory poem by Richard Brautigan points to the ambiguity and irony that often characterize human dreams of a computerized future. These “dreams of digitalism” are partly grounded in a separation from the analogue, but they are never stable or complete. They continuously generate new hopes and fears—something which holds true for the triadic relations of computerization, citizenship and popular education. The focus of this thesis are imaginaries involving Swedish popular education [in Swedish ‘folkbildning’], i.e. state-funded non-formal adult education, awareness campaigns, social programmes and information about computers aimed towards the general citizenry. Importantly, popular education imaginaries are only partly connected to the specific capacities (or lack of capacities) that the computer holds (or is imagined to hold) at specific points in time. Educational imaginaries are also concerned with what predicted capacities a computer of the future may (or may not) hold, and what future visions (including threats and possibilities) that such an imaginary machine can produce. Even though we live in what can be described as a digitally permeated society, I will argue that very little research has been done that aims to problematize the joint historical, imaginary, and structural aspects of educating the general citizenry about computers.

For the purposes of this thesis, Sweden represents a particularly interesting case. The Swedish government has been long engaged in significant political digitalization programmes and actions. Thus a delimitation to Sweden has been based on the strong history of Swedish interventionism in both computer politics (Glimell, 1989; Lindkvist, 1984) and popular education politics (Berg & Edquist, 2017; Rubenson, 2009). However, if we broaden our perspective, the
digital citizen is, of course, not limited to a Swedish context. Imaginaries are not local in their character. As such, Sweden functions as a vantage point that provides both concrete examples, but also perspectives on transnational discourses.

**Aim**

This thesis aims to map out and explicate how and why citizenship and computers have become so closely connected, and to further elucidate the role of popular education in this relationship, by historicizing and analyzing the relationships between computer politics, citizenship and popular education politics.

By doing this I seek to contribute to the analysis of how the (desired) digital citizen has been construed over time and to add knowledge about how popular education played a role in this process. Of central importance to this thesis is the idea that sociotechnical imaginaries, including their foreseen problems and suggested solutions (i.e. problematizations), shape popular educational efforts, and also shape ideas of which citizens that are the intended “recipients” of the efforts.

**The form and structure of the thesis**

Technically, this dissertation is a compilation thesis, consisting of four papers and a ‘synthesis part’. However it can also be regarded as a hybrid between a monograph and a compilation thesis, in that the synthesis part provides, and makes use of, an opportunity to elaborate and contextualize. There are of course both advantages and disadvantages of a compilation thesis. One benefit is the continuous constructive feedback from reviewers made possible through this form of work. Disadvantages, on the other hand, consist of a certain degree of repetition across the papers (mainly the three historical ones, which depart from the same present moment, but make different historical swoops).

The papers contain the empirical analyses of three historical case studies and one study of contemporary circumstances (which served as a starting point for dissertation project). Two of the papers are published, one is in press, and one is currently under review. Further, two of the papers are written with a co-author. So to clarify, as the
first author of both these papers I was responsible for the data collection, analysis and writing. The overall research design against which the first papers is superposed was developed by my co-author who also contributed to the theoretical framing. However the theme for the paper itself was my idea. In the second paper my co-author contributed to developing the structure of the paper as well as to the introduction.

The thesis is made up of two parts. Part one, which consists of nine chapters, begins with an introduction (this chapter) including area of research, aim and an explanation of the form and structure of the thesis. Chapter two provides a background and situates the research in a local and historical context. Chapter Three outlines previous research, leading up to chapter Four where I explicate my research questions and the intended contributions of the thesis. Chapter Five explicates the central concepts—computers, citizens and popular education—that all function as theoretical and operative notions in the thesis. Chapter Six discusses my methodological choices—detailing a genealogical and policy analytical approach. In this chapter I also consider the ethical issues and choices made, as well as the epistemological consequences of these issues and choices in terms of knowledge production. Chapter Seven presents a summary of the studies/papers. The Eighth chapter discusses the results of the papers in a wider context, and Chapter Nine explicates conclusions, and suggests prospective avenues for future work. To provide the reader with a better understanding of the analyzed material, a number of illustrations from debate and coursebooks have been placed throughout part one.

Part two of the thesis consists of the four individual papers.
Illustration 2. Automationen: den nya robottekniken och hur den verkar
(Edberg, 1956, p. 144)
Setting the scene

This chapter will provide a historical perspective on popular education in Sweden. It will also address the intermingling of computer politics and the labor movement in Sweden. The reason for this is that the Swedish reformist labor movement has been a key actor in computer policies during the time periods studied (this is also the specific focus of paper III in this thesis).

The Swedish welfare model is often described as a compromise between capitalism and socialism. The Swedish state has, for example, acted in a more interventionist and corporatist manner than other Scandinavian countries (Knudsen & Rothstein, 1994). That is to say that that the often low levels of unemployment were reached through negotiations and settlements between capital owners and labor forces. Also, it is often pointed out how the generous and “universal” Swedish welfare state, through redistribution of wealth based on social class, was able to generate and maintain high levels of equality and political mobilization, as well as a strong trust in public institutions (Esping-Andersen, 1990). Today however, the exceptional days of the Swedish welfare model are arguably over (Schierup & Ålund, 2011). Inequality and segregation are now reaching relatively high levels in Sweden (Khayati, 2013). Privatization and cutbacks have hollowed out the redistributive politics of the welfare state. Taxes and public spending are today comparable to many other countries (Pierre, 2015). The OECD’s survey of adult skills provides indications of great divides in literacy between native and immigrant Swedes. The Swedes who score the lowest in literacy run nearly three times the risk, compared to those with high levels of literacy, of suffering from poor health. This is a higher figure than in most other countries (OECD, 2013). When it comes to internet use, digital competencies and popular education, Sweden stands out in a slightly more positive manner (although these differences should not be exaggerated in any way). Today, virtually every resident of Sweden uses the internet more or less regularly (Davidsson & Thoresson, 2017). Also Sweden is the second best country in the OECD when it comes to digital competencies (OECD, 2016). Further, Sweden has high levels of participation in non-
formal adult education. In an average year, 72 percent of the adult Swedish population takes part in some form of education. This is the highest ratio in the EU. Out of these 72 percent, 67 percent takes part in non-formal adult education (Statistics Sweden, 2014). In 2017, study circles attracted 1.7 million participants, consisting of 624,111 unique individuals (Swedish National Council of Adult Education, 2017). As such, popular education has been described as a contemporary mass phenomenon (Laginder, Nordvall, & Crowther, 2013).

These high levels of participation have been attributed to political goals of social equality, which have been explicitly aimed at removing barriers for taking part in educational initiatives (Rubenson, 2009). Similarly, governmental efforts to encourage computerization (often in terms of educational efforts) have been regarded as a primary explanation for the high levels of computer use in Sweden (Grönlund, 2001; Pettersson, 2001), as well as the high occurrence of Swedish internet pioneers (Höök, 2015; Wiklund, 2015). Consequently, Sweden is an interesting example when it comes to examining how and why citizenship and computers have become so closely connected, and how and why popular education has been recurrently mobilized in this relationship.

As mentioned, in this part I will firstly give the reader a background to popular education in Sweden. This historical, national and institutional contextualization helps us to better understand the role of popular education in relation to the emergence of the digital citizen, as examined in more detail in the individual papers. Secondly, I will motivate the choice to pay special attention to labor movement reformist organizations as key actors in in the trilateral relation between computerization, education and citizenship in Sweden.
Popular Education in Sweden

Popular education, as an umbrella term for the independent education endeavors conducted within libraries, folk high schools, adult education associations and lecture clubs has a much broader and longer history than can be presented in this thesis. Nevertheless, popular education, in the form of voluntary non-formal adult education institutions, has been an important part of Swedish society for the past 200 years. The underpinning justification for Swedish popular education relies on ideas that a society should be built by its citizens, but also that this building requires (certain) knowledge, values and education, for responsible choices to be made. The history of popular education is thus enmeshed with the emergence, history and growth of a civil liberal-capitalist society in general (Berg & Edquist, 2011).

On the one hand, popular education has its roots in the self-educational projects of the early 19th century middle class. At that point, popular education came to form in voluntary educational assemblies, libraries and lectures, which, to some extent, gathered people across class boundaries, but with the main purpose of forming a political and civil middle-class identity. On the other hand, popular education also has its roots in education as a form of disciplining of the “popular classes”, which included peasants, the unemployed, the working class and sometimes the lower middle class. In this case, education was seen as a means to suppress, or even foreclose, social and societal concerns, that might emerge from or in relation to, these groups (Berg & Edquist, 2011).

This paradoxical mix of emancipation and regulation can be seen as a foundation of popular education, and this contradiction is important in understanding the strong position and success of popular education historically. The main reason for this is that this paradox allowed different actors to be united behind a similar ambition. For example, in the 19th century, both the middle and the working class united behind the drive to, through education, strengthen their political purchase, and thus, their ability to change society (Berg & Edquist, 2011). By the early 20th century, popular education efforts began to settle in the form we recognize today, as
educational efforts funded by the government and municipalities (Berg & Edquist, 2011).

In 1868 the first Swedish folk high schools were founded. They were initially funded by the government (Berg, 2015). The pupils of these first folk high schools were farmers’ sons who, due to the increasing ‘scientification’ and politicization of farming, now required more and better knowledge (Larsson, 2013). Another social group which was both demanding and seen as in need of popular education, was the growing working class.

Soon thereafter, emerging social movements (e.g. the labor and temperance movements) also became significant popular education actors. These movements also founded associated libraries, which were governmentally funded starting in 1912 (Berg & Edquist, 2011), under the precondition that they were organized by national associations. The Worker’s Educational Association (ABF) was founded the same year, and became the first (and still the biggest) Swedish adult educational association (Gustavsson, 2013). Education was regarded as a three-pronged solution—against revolutionary socialist tendencies, for the fostering of diligent citizens, and to provide more individual agency for citizens through increased knowledge. Pedagogical principles such as equality and voluntarism were important. Such ideals are also often used to differentiate popular education from other forms of adult education.

From the year 1947, study circles, and not only libraries, were covered by governmental funding. The national board of education supervised the conditions for receiving funding. In 1950 there were 14 government-funded adult educational associations, and almost 30,000 study circles. Fifteen years later, the number of study circles had risen to about 120,000, before levelling off at about 300,000 (Berg & Edquist, 2011). Study associations were also the first actors to offer adults the possibility to take up studies in subjects that provided eligibility for higher studies. These ‘evening high schools’ later transformed into, and became known as, the Swedish Municipality Adult Education (Komvux). As such, popular education also has a historical connection to more formal adult education. Even today, strict separations between municipal adult education and popular education, are difficult to maintain (Fejes, Olson, Rahm, Dahlstedt, & Sandberg, 2016). Worth noticing is also
that libraries have gone from being cherished as the core of popular education to being partly driven out of the popular education spheres.

Popular education is often described as being independent (free) and voluntary—that is, free from parliamentary governance and freely chosen by those who want to take it. However Berg and Edquist have shown that the government grant system from 1870 has shaped popular education both as a part of the free civic society, but because of its governmental funding, also as coming under certain governance and the assignment of political-practical functions, resulting in blurred boundaries between state and civil society:

We argue that civil society has not been the passive object of state domination and regulation; in fact, state and civil society are not to be regarded as separate entities at all. Instead, we emphasise that ‘civil society’ has been constructed as a free and independent sphere with the help of government, which has consequently reproduced it in an overall process we term autonomisation. By autonomisation we basically mean that formal government decisions - financial support not the least - have created autonomous sectors such as popular education outside the public sector, and yet regulated it so that it has performed public functions.

(Berg & Edquist, 2017, p. 3)

Thus, the Swedish state has, for quite some time, mobilized popular education as a part of a governing ambition. And although the concept has shifted somewhat over time, popular education has also had a (both concrete and abstract) public function as a democratizing, equalizing and citizen-fostering social institution. As a striking example one could mention, how former social democratic prime minister Olof Palme in 1969 described Sweden as a study-circle democracy (Berg & Edquist, 2011).

Following this line of reasoning, popular education is often viewed as contributing to a positive societal development. This is also the main reason for the ongoing governmental support of popular education, that it adds to a democratic development of society. However from the 1990s, government support of and control over public education has diminished somewhat. Regulation-based governance was replaced by management by objectives, and the utmost responsibility for distribution of funding was moved to the
umbrella organization for adult study associations and folk high schools: the Swedish National Council of Adult Education. Today, study associations are arguably more independent to formulate their own goals (E. Andersson & Laginder, 2013). That is to say, the content of education and curricula are less regulated today than before, which also means that there is currently a broad range of study circles and popular education courses. For example, if you want to, you can learn how to become a YouTuber at a folk high school, or participate in a course that prepares you for the zombie apocalypse at ABF (Rahm & Skågeby, 2016).

Importantly, the element of voluntariness does not mean that popular education has been unimportant; the fact that it has been less regulated than other forms of education does not mean it has been uncontrolled; and its relative independency does not mean that it has been free from power asymmetries (Berg & Edquist, 2011). On the contrary, popular education has long been seen as the primary form of education for adults. Thus, popular education has been conceptualized as independent and voluntary, but paradoxically it has also been deliberately shaped as such. It has functioned as an arena for fostering independent and active citizens by shaping their behaviors, values and understanding (Berg & Edquist, 2017). Popular education has also been dependent on state funding, which has resulted in certain governmental influence and control over its assigned public functions. Also, popular education is not unaffected by the power asymmetries or hegemonic and othering logics that organize society at large. For example, by conceptualizing a “people to be educated”, popular education has historically construed and reproduced colonial, gendered and even racist, ideas (Nordvall, 2005; Nordvall & Dahlstedt, 2009; Osman, 2013; Österborg-Wiklund, 2018; Rydbeck, 2001).

Even though governmental funding of popular education has remained relatively stable for the last 30 years, regardless of the government’s politics (Fejes & Nordvall, 2016), it seems that popular education efforts regarding computers coincide with social democratic governments. In the following section I will therefore provide the reader with a background as to why one of the studies reported in this thesis has focused on the reformist labor movement, and its popular education efforts.
The reformist labor movement

Arguably, the “Swedish tech wonder” has its beginning in government initiatives to build computers. In Sweden, such initiatives have long coincided with periods of social democratic government. The dominance of the Social Democratic Party in 20th century Swedish politics is often presented as a contributing reason for the Swedish welfare model. For over forty years, in the post-war period, the Swedish Social Democratic Party remained uninterrupted in governance, and the Swedish labor movement was regarded as one of the strongest in the world (Jansson, 2016).

Because of its strong position in the Swedish welfare state, the labor movement is particularly interesting when one seeks to examine combined technological and educational imaginaries. Swedish computer politics is to a large extent also the politics of the reformist labor movement—with a focus on governing the computerization of the welfare state (A. Carlsson, 1999; Ginner, 1988). Compared to other countries, the Swedish reformist labor movement has, in a unique way, retained a positive stance towards computerization (Bansler, 1989). The collaborative spirit that existed between state and industry, together with the unions’ positive attitudes towards rationalization and efficiency (Bergström, 2007), can be regarded as a strong technological imperative which was central to social democratic welfare politics and ideology (Anshelm, 2009; Blomkvist, 1999; D. Bodén, 2016; Ginner, 1988; Hultén, 2013b). As such, the Swedish reformist labor movement has actively promoted implementation of technological solutions, something which was regarded as a precondition for increasing standards of living and increased wages (Paulsen, 2010). The technological enthusiasm of the social democrats has also been explained through its “systemic” character—that is, large technological systems also required a strong state as both procurers and builders (Blomkvist, 1999, p. 20). An example of this is that during the 1950s, computerization was seen as necessary for realizing the full potential of nuclear power (Velander, 1954). The construction of the modern welfare state was thereby also a construction of a complex data-driven “system society”. This system society also called for social democratic governance, since a conservative focus on
individualization and the logics of the market was seen as too “laissez-faire” (Blomkvist, 1999). Three main reasons for the social democratic interest in technological development can be isolated: technological development promised, in itself, an increase in well-being and wealth; but equal and just distribution of this well-being and wealth demanded socialist redistribution politics; the new, encompassing, technological systems would also require an increased societal responsibility and a strong state to control them. In Sweden, the relation between the development of computers and the labor movement has been one of reciprocity and mutuality. The labor movement had inherited a “soft determinist” perspective on technology and science, which meant that technological development was crucial to societal development, but it also needed a robust (social democratic) state for it to be fully beneficial for all citizens (Blomkvist, 1999, p. 19; A. Carlsson, 1999; Ginner, 1988). Technical and social development existed, politically, in a bilateral relationship—and therefore, knowledge of this relationship was increasingly seen as an important part of general education (Nissen & Riis, 1985).

The labor movement is thereby particularly interesting to study, as it is a key actor in the overlap between computer politics and popular education politics. Not only because the labor movement has historically been one of the most powerful actors and proponents in both these political fields, but because the politics were full of negotiations, divergences and paradoxes. For example, automation was seen as liberating workers from dirty, dangerous manual labor, exhausting cognitive workloads and nervous stress (Velander, 1956), but also as a ‘chômage technique’ that would eliminate the need of human labor (Velander, 1954). As such, this relation is not new or specific to computer technologies. Rather it concerns the relation between machines and work (and the ruling classes), which has long been a central theme for the labor movement. Importantly, the labor movement’s relationship to computers (and other machines) was closely connected to issues of ideology of technology and technology education. During the decades after the Second World War, ideas of broad technology education programmes began to take form, which was manifested differently in different educational forms. These social and educational reforms are often
attributed to social democratic governance. This has in turn been connected to the ambivalent position of machines in Marxist theory—both as capitalist accumulation and as a tool for emancipation (i.e. as both peril and promise), which also influenced the decision to make technology a subject in schools (Hultén, 2013b). The unions connected to the labor movement also promoted education as the primary (and most socially acceptable) solution to a technological development that contained both positive and negative aspects (Rolandsson, 2003).

Further, engineering education, through evening and distance classes, was a central tool in the social transformation of working-class men—something which the Social Democratic Party, since the 1930s, had been emphasizing as an important cultural and economic building block of the modernization through technological change (Berner, 1999; Schön, 2010). As such, engineering and technology education has been described as an important tool for progressive education ideas in Sweden (Hultén, 2013a). It was also a way to reach governmental goals to secure the continued obtainability of manual labor (Hultén, 2013b), and central to the social democratic vision of social mobility through education (which in turn would support a modern, just and classless society) (Berner, 1999). A clear (and rather amusing) example of the importance of technology in the shaping of the educational system, is how, in a 1958 national radio show with the aim to inform citizens about the upcoming 9-year compulsory school attendance, a large part of the show was devoted to the computer, and the important role of ‘mathematical machines’, in future society (Hultén, 2013b). The computer was conceptualized as a symbol for the rapid technological development, and seen as increasing the demands for education for a changing society, where the individual must always be ready to re-educate him- or herself (Swedish Radio, 1958). Politically, there was an early ambition to guide computer-technological development. A significant part of the concrete measures that were taken had to do with education.

More so than in many other countries, the Swedish social democratic construction of the welfare state, emphasizing universalism, was already “data-driven”. The extraordinary efficiency and capacity of computer technology were thus a
prerequisite for the Social Democratic Party’s reform policy (Söderlind, 2009)

This was accomplished through extensive registrations of citizens. Thereby, Sweden was seen as particularly susceptible to vulnerabilities, and the nation was early in discussing the risks of misuse of such databases. This was partly because of the principle of public access to official records, and partly due to a long tradition of population registers, where each citizen had their own personal identity number. In 1973, the social democratic government, as the first country in the world, legislated a data act (1973), which regulated the creation and maintenance of computerized personal records (Henriksson, 2005; Lundin, 2015; Söderlind, 2009).

Education has been a primary (if not the most central) instrument in creating the necessary social preconditions for computerization—as well as ensuring citizens leverage over computer technologies. As such, I have argued that the Swedish reformist labor movement is a particularly interesting object of study: it was, for a very long time, the biggest social movement, the most re-thinking, the most ambivalent, and, importantly, for a long time almost synonymous with the government. That is not to say that there are no problems with presenting the labor movement as a central actor. There is a risk of cementing and fortifying the image of the labor movement as the only important actor, and, as such, also obscuring other actors, forces and ideologies. Having said that, I would argue that throughout the conducted studies, and throughout the studied material, themes still reoccur—temporally situated themes that are strikingly similar across decades, and across wider discourses, and ranges of actors. For example, one year before the social democratic ‘Rigoletto conference’ (1955), the study association *Industry and Society* organized a conference entitled ‘Automation. New technology—new perspectives on economy and working life’. That is to say, many of the issues discussed at the Rigoletto conference had already been discussed at this industry executive conference. Notably, the role of education, in addressing the problems of automation, is emphasized at both conferences, and several of the speakers appear at both conferences. By highlighting this example, I want to point out that, in my focus on certain actors, there is a potential of a concealment of other actors, who also stress the importance of education in
relation to computerization. Nevertheless, the labor movement conferences are, according to my analysis, more topical in discussing how ongoing and imagined computerization should be politically organized through education. At the aforementioned industry executive conference, education is not a key issue, although aspects of re-education and increased free time are also addressed. Instead, more time is devoted to discussing, for example, computerization of grocery stores (Sallborg, 1954), computing’s radical ability to increase the importance of game theory (Faxén, 1954), and operative analyses in business management (Hansson, 1954). The potential increases in free time for workers is there posed against industry needs—rising demands and a material increase in living standards are more desired outcomes of automation (Giesecke, Vilhemsson, Nilstein, Herz, & Wallander, 1954). Another example is how, before the social democratic government in the mid 1980s takes initiative to educate the entire population about computers, all parties in the Swedish parliament have, during the entire 1970s, argued for general computer courses for youths and adults. As mentioned, Sweden is the first country in the world to adopt a specific data act (1973), which is legislated by a social democratic government, but that administration is also a minority government, and the data act has been promoted heavily by the conservative parties as well. As such, the political background is complex, and what seems to be perfectly clear by following one actor likely carries a multifaceted history of converging and diverging discourses and decisions.
Previous research

This chapter presents a survey of previous research relevant to the research area and the aim. I do this before I present my research questions, since I argue that it is a necessary prerequisite to identifying a potential research gap (which my research questions can then address). So, to set the scene, previous research of specific relevance for this thesis comes from three main areas: digital citizenship; Swedish computer politics; and Swedish popular education politics, where the overlaps between these areas are of particular interest.

![Main overlapping’s of previous research](image)

Figure 1. Main overlapping’s of previous research

The general problem area can, however, be placed in much larger, and more disparate fields, which relate to critical analyses of the political-historical aspects of education and technology, respectively. That is to say, the educational imaginaries of the digital citizen cannot be easily pinned down within one research field. For example, the history of the computer is not a single progressive and linear path of development, but multiple narratives and discourses of
computer technology, components and applications, which also includes cul-de-sacs, side-tracks and mistakes. Educational imaginaries of the digital citizen include histories from many different angles and perspectives. Popular education is but one such thread, that can be pulled from the socio-political ball of yarn that is the digital citizen. I have nevertheless chosen to pull that specific thread because popular education is, and has been, a central part of the societal push towards digital governance (and thereby also contain historical problematizations of computing in society, which, when studied, shed light on contemporary digital citizenship and its many different aspects that we often take for granted today). As such, popular education about computers seems to “fall between (academic) chairs”, which can be a contributing reason to why it has not been studied extensively.

The point I want to make is that in the specific intersection between the digital citizens and popular education imaginaries, there are few previous studies. As such, many of the ideas, questions and discussions of this thesis have emerged in dialogue with sometimes disparate previous research, functioning as information resources or unexpected starting points. An illustrative example could be a study of how the Swedish national radio, for a brief period in the mid 1980s, broadcast computer code in sound form, effectively functioning as wireless large-scale file-sharing (Skågeby, 2014). The study shows how intermediality (the interlinking of media) has a capacity to generate new practices. At the same time, the radio show in question also constitutes a popular education initiative, during a time when the Swedish government is making huge efforts to educate the population about computers (something which is not touched upon in the study). With this example I want to stress how issues of popular education are an important track in why citizenship and computers have become so closely connected—but also how it is often ignored in computer- or media-historical studies (which often emphasize materiality or use). As such, there are lots of studies that are potentially relevant to this thesis—studies that have strains of popular education woven into them, but which have not been fully expressed or explored by the authors themselves. Computer history is one such field, which I argue has many interesting overlaps with
popular education history, but where the actual overlays have surprisingly been ignored in most previous research.

**Digital citizenship**

Media research into *digital citizenship* tends to conceptualize citizenship as a form of *extended* citizenship, which takes it beyond the national state, and which, through digital media technologies, assimilates the citizen in a political community (as a person who can be seen and heard in mediated networks). Digital citizens are consequently those who have access to the right digital material resources, and who have the (digital) skills to take part in the political arenas of society (S. Lindgren, 2017). Digital citizenship has thus been defined as the overarching capacity to participate in the “electronic society” (Mossberger, Tolbert, & McNeal, 2007), and is often connected to opportunities to shape one’s identity and role in society through digital tools (Hintz, Dencik, & Wahl-Jorgensen, 2017; Isin & Ruppert, 2015). Furthermore, activities such as mediated citizen engagement and participation for change are often included as central parts of digital citizenship (Mosco, 2017). However, computers have also been described as a failed citizen technology. Olsson (2002) finds, at the turn of the century, that while computers were generally envisioned to increase democracy, users were more prone to describe the television as a citizenship technology rather than the computer. This research into digital citizenship has a common feature in that it examines how people “do citizenship” through digital technologies, or what skills and competencies that are required to do it. Here, *digital technology is a means for citizenship-making and democracy.*

Studies of adult education and digital media have, in similar ways, focused on technology as a tool for societal inclusion (Cocquyt, Diep, Zhu, Greef, & Vanwing, 2017; Moekotte, Brand-Gruwel, & Ritzen, 2017; Reneland-Forsman, 2018). It has also been stressed how digital technologies are central to lifelong learning (Thalhammer, 2014) and how they have blurred the boundaries between formal and informal learning (Wildemeersch & Jütte, 2017). Moreover it has been emphasized how the imperative of *lifelong learning* is closely connected to ideas of a rapidly changing
high-technological society (Biesta, 2009; Field, 2006). In summary, the studies referenced above have been important to this thesis in order to show how digital citizenship has been researched and defined previously. (It should also be mentioned that it is often linked to comparable concepts, such as ‘internet competencies’, ‘media literacy’, and ‘the digital divide’.) How people act or do not act as digital citizens has been widely researched. However, the historical or societal structural preconditions (such as large- or small-scale popular education efforts) are often overlooked. So, while this thesis is also a study of the digital citizen and digital citizenship, the connection to the above research is not as direct as it may first seem. This thesis, rather than underlining what people do with digital media technologies (in terms of citizenship-making), is more concerned with the historical and structural relations between (macro scale) digitalization, popular education, and citizenship.

**Swedish computer politics**

Research on Swedish computer politics has shown that it has always been permeated by more or less obscured ideological presuppositions and values, which have more to do with a view of society and citizens than with technological preconditions (even though it is often portrayed the other way round) (Ilshammar, 2002; Kaiserfeld, 1996). However new technological systems can also reveal political and ideological ambitions, spurring new debates about technology in society. Computers, as one category of technology, can thus be understood as materialized politics. Discourses and rhetorical patterns are shaped by, and shape, computers in society, and computers are thus political machines (Glimell, 1989; Henriksson, 1995, 2005; Ilshammar, 2007). Once the expected utopian, or dystopian, consequences fail to arrive (or everyday use increases), the specific debates will also dissolve, and the technology in question becomes more invisible (Blomkvist, 1999; Blomkvist & Kaijser, 1998). To exemplify this, we can look at two tables, from Magnus Johansson (1997) and Lars Ilshammar (2002) respectively, illustrating how computers have been conceptualized in Swedish computer politics over time:
Table 1. Table of buzzwords (Johansson, 1997, p. 29)

<table>
<thead>
<tr>
<th>50s</th>
<th>60s/70s</th>
<th>80s</th>
<th>90s</th>
</tr>
</thead>
<tbody>
<tr>
<td>electronic brains</td>
<td>automatons</td>
<td>tools</td>
<td>VR</td>
</tr>
<tr>
<td>number cruncher</td>
<td>robot</td>
<td>micros</td>
<td>info superhighways</td>
</tr>
<tr>
<td>computer cybertechnics</td>
<td>rationalization</td>
<td>home computing</td>
<td>cyber</td>
</tr>
<tr>
<td>science</td>
<td>EDP</td>
<td>personal computer</td>
<td>neural networks</td>
</tr>
<tr>
<td>experts</td>
<td>system</td>
<td>computer lib</td>
<td>Internet</td>
</tr>
<tr>
<td>automation</td>
<td>centralized</td>
<td>hacker ethic</td>
<td>fuzzy logic</td>
</tr>
<tr>
<td>AI</td>
<td>industrial</td>
<td>democratic dialogue</td>
<td>networking</td>
</tr>
<tr>
<td>control</td>
<td>AI</td>
<td>decentralized</td>
<td>NC</td>
</tr>
<tr>
<td>batch</td>
<td></td>
<td>interface</td>
<td>on-line</td>
</tr>
<tr>
<td></td>
<td></td>
<td>neural networks</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>fuzzy logic</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>word processing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>spreadsheet calculus</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Simplified view of the changing understanding of computers / IT in the second half of the 20th century [my translation] (Ilishammar, 2002, p. 306)

These tables show how the intrinsic technical capacities of the machines have a strong relation to how they are conceptualized. As such it becomes clear that 1) problematizations of the computer are very dependent on the concepts in vogue at the time, and 2) that issues concerning (popular) education are conspicuously lacking from these conceptual overviews. Popular education discourses about computerization relate to visions of what the computer will be capable of in the future, and what kind of desirable society (and citizen) that can, in turn, be envisioned in relation to this. As an example, we may refer to the public discussions of computerization and its effects, which emerged during the mid 1950s (Blomkvist, 1999; A. Carlsson, 1999). Education was here seen as a crucial solution to the envisioned problems of computerization (Sandström, 1989). Sandström shows, for example, how conceptions of automation and nuclear energy exercised influence on education, stipulating new requirements within three different areas: 1) vocational qualifications, 2) qualifications of (moral) character, and 3) qualifications of flexibility and change (Sandström, 1989). At the same time, it is interesting to note that, in Sweden at that time, there was one computer in use—the ‘mathematics machine’ Besk. This
again shows how a survey of previous work cannot be limited to data politics or societal computing discourses. Rather, it should also include the future visions emerging within popular education.

Problematizations of computing and education touch upon larger discourses and visions of desirable futures. Laginder (1989) shows that everyday and unproblematized visions of the future permeate political processes, something which naturally impacts on both the problematizations made, and the solutions regarded as viable. Laginder further shows how Swedish public investigations, from the 1960s until the early 1980s, specify computerization as one of the most important driving forces for societal development (and education as the most important tool of governance to harness it). Because they presume a constant adaptation of man, Laginder refers to these future visions, which include a view of constant technological progress, as ‘conservative change’. The adaptation (or education) of citizens is expressed somewhat paradoxically, since it emphasizes the importance of education to keep up with the unstoppable and impending computerization of society, but at the same time, it also underlines education as an important tool to understand and control the very same computerization process (Laginder, 1989).

The idea that Sweden should “keep up with progress” has, in research, often been connected to a strong political belief in technology and science, which has, in turn, been part of the ambitions to create the welfare society, to modernize everyday life, and to increase societal growth and (inter)national competition (D. Bodén, 2016). As such, technology has been regarded as an important factor in decreasing poverty and social misery, which can also explain the positive attitudes the Swedish state has taken to computerization since the 1950s (Blomkvist, 1999; A. Carlsson, 1999; Ginner, 1988). As such, the computerization of Swedish public administration was largely a part of a social democratic welfare project (Söderlind, 2009).

Research on Swedish computer politics is very much concerned with law-making (Sweden was the first country in the world to legislate regulations relating to the handling of personal information) and with mapping out computerization politics from the end of the 1960s to the 1990s (Annerstedt, 1969; Bäck, 1982; De Geer, 1992;
Henriksson, 1995, 2005; Pettersson, 2001; Söderlind, 2009). It has been stressed that from the 1990s the state’s role in building and maintaining infrastructure changed, and the market took over the role of the state. It has been emphasized, for example, that in all programmes to realize the information society after the 1990s, competition was seen to be the key driver of the infrastructure (Atlestam, 1995). However, this strand of research has rarely considered the connection to education (and if it is mentioned it is almost exclusively in relation to children and adolescents, not adults).

Computers in education

There is also a large body of research that shines a light on the role of the computer in education. Here the computer is often conceptualized as a means for learning. As such, these studies are only of peripheral interest to the present thesis. In previous studies on the computerization on schools, however, some interesting parallels to popular education can be found.

Research on computers in the Swedish primary and upper secondary school, both as a topic (e.g. computer literacy) and as an educational tool, is often described as an implementation that is “push-driven” rather than requested by (potential) users. Push logic here means that computers were thrust upon schools, as a result of political agendas and market lobbying, rather than being requested by teachers or pupils (i.e. “pull logic”). The introduction of computers and computer literacy followed a conceptualization of what computers were capable of generating at a certain point in time, such as increased democratization, fairer and more effective distribution of resources, better educational support, and a general increase of information literacy, necessary to cope with a growing information overload (e.g Johansson, 1999; Johansson & Nissen, 2001; Johansson, Nissen, & Sturesson, 2001; Karlsson, 2009; Nissen, 2014; Riis, 1991, 1993; Riis & Bengtsson, 2000). It was even seen as strengthening the competitiveness of the Swedish industry in the long run (Kaiserfeld, 1996). As an example of this, Magnus Hultén emphasized how notions of economic growth as the link between politics, technology and science resulted in the implementation of the subject of ‘technology’ in school as a key tool
for preparing pupils for the future (Hultén, 2013b). As such, the above-mentioned research on computers in schools has been important for this dissertation because it asks the same type of questions: What are the imaginaries around computers and education?

Overlaps of computer history and popular education

One of the research projects that have studied the overlap between computer history and (popular) education is the project *From mathematical machine to IT* hosted by the Swedish Royal Institute of Technology. That project focused partly on the role of the school in societal computerization (Emanuel, 2009a, 2009b, 2009c). As part of this project, a number of ‘witness seminars’ were organized. One was entitled *Popular education about computers 1979-1985* (Emanuel, 2009b). At this seminar, popular education was consistently described as a central actor in the computerization of the Swedish society. Another witness seminar, concerned with the Scandinavian school of systems development, also touched upon popular education (P. Lundin, 2008). The Scandinavian school, sometimes also referred to as ‘alternative systems development’, was an approach to develop computer systems in cooperation with its prospective users (Howard, 1985). This proposed course of action was seen as an opportunity to democratize the computer itself, but also the workplace in general. The approach has its roots in the 1970s action-research efforts to engage users in the often wide-ranging organizational changes that computerization brought with it. Importantly, these projects were also significant educational efforts, carried out in cooperation with adult education associations and influenced by popular education pedagogy (J. Carlsson, Ehn, Erlander, Perby, & Sandberg, 1978; Howard, 1985). They are, however, rarely framed as such, and have not been studied through educational lenses (P. Lundin, 2008). Today, the Scandinavian school is more often framed as participatory design than popular education. Nevertheless, these studies have been of use for this thesis, because they illustrate how the borders between popular
education, union education, workplace education and (action) research are blurred and influence each other.

**Overlaps between history of technology and popular education**

In the intersection between Swedish history of technology and Swedish history of popular education, Nordberg showed how the radio worked as a form of popular education and social engineering during the 1930s and 1940s (Nordberg, 1989). At the same intersection, Furuland (1984) illustrated how popular education by the beginning of the 20th century took on a double meaning in terms of enlightenment: the education of citizens was partly dependent on the electrification of society. That is, in order to increase literacy in the population, households (and schools, of course) needed (electric) light. So the electrification of households became not only a pedagogical prerequisite, but also a political goal (Furuland, 1984). Thus, it was hardly a coincidence, wrote Furuland, that the first popular education pamphlets and writings of the labor movement were named accordingly: e.g. *More light: some words for the working class about self-education*. In this text, the argument is made that ‘we must become enlightened people, if we want to be free people’ (Gabrielsson, 1897, p. 8). More than illustrating the overlap between history of technology and popular education, these pamphlets also indicated how the labor movement constituted a particularly interesting actor here.

**Overlaps between the popular education of the labor movement and technological development**

In the studies of Nordberg and Furuland (and the early popular education writings of the labor movement), *technologies become a means for popular education*. But while electrification may have been a prerequisite for education, the labor movement also positioned itself (partly) against industrialization (Edquist, 1999). Popular education was described as important for cultural sophistication and political citizen education, and thereby as more of a counterweight against an inhumane machine society than a proponent for it. So in the overlap between the popular education of
the labor movement and technological development, the Swedish labor movement took an ambivalent stance, which also reflected on expressed ideals. Polytechnic ideals existed in parallel to ideals of cultural education, although the latter were largely emphasized (Ginner, 1988). The content of the labor movement’s study circles also changed considerably during the 20th century, from content that was considered important to the movement’s political work towards activities which can referred to as leisure and amusement (Arvidson, 1985). Historically oriented research on popular education has shown how ambitions of technological progress were solid in the labor movement by the early 20th century, but also how it was paralleled by nationalist nature romanticism and an idealization of farming lifestyles. The balancing between these ideals may then have had a “comforting” effect on leftist radicalism, and potentially paved way for a more conservative nationalism (Edquist, 1999). The popular education efforts of the labor movement thus came to replace earlier more authoritarian functions in the school and church, in terms of fostering diligent and loyal citizens (Ambjörnsson, 1988). Popular education was consequently mobilized as an important tool for ideological governance and unification of the labor movement (Jansson, 2012)—it aided in shaping the identity and ideology of the labor movement. Consequently, power over popular education became an important political muscle (Jansson, 2016). The relationship between popular education and the labor movement was thus one of mutuality. While popular education was an important political tool for the labor movement, the labor movement was also an important and driving actor in shaping and influencing the development of popular education (Jansson, 2015). As an illustration, the discursive shift of the labor movement, from addressing ‘the worker’ to addressing ‘the people’ is clearly connected to the ideals and concepts of popular education (Nordvall, 2005).

Citizenship, (popular) education and democracy

Perhaps unsurprisingly, Swedish governmental interventions aimed at increasing computer literacy have often been closely tied to notions of democracy (Jedelskog, Hyltén, & Riis, 1991; Johansson, 1999). This has also been the case historically with government
support of popular education (L. Lindgren, 1996). As such there is an interesting parallel between how primary and upper secondary schools, workplace education and popular education have been assigned a duty to educate people about computers in order to increase democracy. This also provides a certain explanation to why popular education has so often been positioned as a central actor—seeing how it has such strong connections to ideals of increased democracy (as well as being free and voluntary).

In the intersection between citizenship and popular education, more contemporary studies have explored the potential for citizen education and (again) increased democracy (e.g. L. Lindgren, 1996; Niklasson, 2007). Studies have also focused on what frames of action popular education practices present to citizens and in citizenship-making, for example based on views of a common identity amongst learners (Pastuhov, 2018; Pastuhov & Rusk, 2018). These studies are concerned with learners’ experiences and educational approaches. Expanding the focus, other studies have shown that students in adult and popular education are already “doing citizenship” in lots of ways external to the actual education, something which is rarely acknowledged by the educational institution (Fejes, 2012; Fejes et al., 2016; Sandberg, Fejes, Dahlstedt, & Olson, 2016). In these studies, popular education is problematized as a means of citizenship-making. Even though these studies have taken different approaches, they have been important in conceptualizing how citizenship is made (or not) within popular education.

**Research on popular education as the fostering of citizens**

Popular education is often limited, much like in the studies mentioned above, to activities at folk high schools and study associations (Nordberg, 1998; Sundgren, 1998). When the concept is broadened, this is often done with a positive view, such as how popular education can include grassroots initiatives that lead to increased democracy, or how it can be described as part of civil society’s active citizenship organization. Sometimes, popular education is positioned in between an emancipatory educational endeavor and governmental regimentation. The “peculiar nature”
and “unique Swedishness” of Swedish popular education is a lingering notion in research, operation, and politics, even though more critical studies have questioned, and perhaps even debunked, this idea (A. Lundin, 2008; Nordvall, 2005). Moreover, while the independence, freedom and voluntariness of popular education is often emphasized by both researchers, practitioners and politicians, Swedish popular education has historically been dependent on financial governmental support. This also means that the government has had an opportunity to assign popular education associations with certain tasks (Berg & Edquist, 2017). According to Berg and Edquist, the idea of the civil society as a sphere for voluntary engagement separate from the state should rather be understood as an ideological construct, which popular education has been complicit in (re)producing (Berg & Edquist, 2017). That is because, firstly, popular education has, in itself, been continuously positioned as a central part of civil society (rather than part of the state), and secondly, because popular education can be seen as grounded in the idea of free and voluntary education based on the preferences of the subjective individual. So, instead, claim Berg and Edquist, popular education should be regarded as an important part of the liberal capitalist governmental power (and is, as mentioned, also assigned with certain political-educational tasks and functions). This view of popular education emphasizes it as a fostering of citizens as assigned by a capitalist government, which is a view that is also clearly reflected in popular education efforts on computer knowledges.

The interlacing of adult education and technology that took place within various distance education programmes can also be understood as education-oriented solutions to problematizations that focused on equality, democracy, science and individualism—values that were central to the education system of the welfare state (Lee, 2008). Notably, these programmes were also part of a larger discursive and ideological change that idealized the independent learner and abilities such as self-discipline (Lee, 2009). As such, these technological imperatives of adult education are strongly connected to historical shifts over time in the discursive construction of lifelong learning as technology for governance (e.g Fejes, 2006).
Computers as a means to popular education

In similar ways, the intersection between digital media technologies and popular education has been studied with regard to student experiences of distance education, and to organizational changes on study associations. These studies illuminate the techno-pedagogical effects, and potential conflicts between mediated education and popular education (E. Andersson & Laginder, 2006; E. Andersson, Laginder, & Landström, 2007; P. Andersson, 2005; Landström, Jedeskog, & Andersson, 2009). These studies, much like reports from the Swedish National Council of Adult Education, have been aimed at increasing, as well as evaluating, initiatives and efforts concerning computers within popular education (Swedish National Council of Adult Education, 2013a, 2013b, 2018). In these reports and studies the computer is a means to popular education. While, the present thesis is focused on citizen education about computers via popular education, the above-mentioned studies have generated an important understanding of how computerization and popular education is presented by stakeholders within popular education itself.
Vilka krav har vi på datorn?

Kvarn i solidariskt medbestämmande och de verktyg vi förfogar över genom olika lagar gör att vi är beredda att ställa krav på hur de datorstyrda systemen ska användas. Målet är att människan ska styra maskinen, inte styras av den. Vi måste precisera vårt förhållande till dataorna på längre sikt, inte bara i dagskrav, och det kan ske på ungefär följande sätt:

- För att datateknikens möjligheter ska kunna tillvaratas krävs skolning och utbildning på bred front.

Vi måste omforma utbildningen kring tekniken till att inriktas på dess sociala funktion så att tekniken konkret främjar våra livsvillkor.

- Tekniskt och vetenskapligt utvecklingsarbete är en viktig förutsättning för människans välstånd.

Detta effektivisering av produktionen är också en grund för en utveckling av arbetet baserad på jämlikhet och solidaritet.

- Ekonomisk demokrati krävs för att datateknikens möjligheter ska kunna utnyttjas och bemästras fullt ut.

Arbetarrörelsen ska medverka till att vi som löntagare, konsumenter och medborgare låter våra behov prägla användningen av datatekniken.

- Arbetarrörelsen måste driva på arbetet att genom forsknings- och utvecklingsarbete praktiskt utformar en teknologi i de arbetande människornas tjänst.

I demokratiseringsarbetet ligger att utveckla ett produktionssätt som är organiserat utifrån våra grundläggande mål om solidaritet och jämlikhet.

- Diskutera det konkreta innehållet i de här kraven utifrån vår egen situation på arbetsplatsen.

Research questions and contribution

Against the survey of previous research, I have examined the following research questions:

- How has the relationship between citizenship and computerization changed over time?
- How is popular education imagined in this relationship?
- Why and how are citizenship and computerization so closely related?

In the ambition to answer these questions, it is particularly interesting to examine how popular education efforts have focused on certain problems, and thereby also arranged certain solutions as particularly important and viable. As such, these problematizations, in turn, generate specific action repertoires. By illustrating how digitalization is guided by these problematizations, this thesis shows how digitalization is (and always was) political. As such, one can begin to question the aspects we take for granted in a society that adheres to the digital imperative, and how things could have been different.

Thus, in this overlap between popular education history, historical computer politics and (digital) citizenship, I argue that there exists a research gap, and that this dissertation can make four general contributions towards closing this gap.

Firstly, it contributes to research on popular education by showing that, and how, popular education has been an important part of Swedish computer politics.

Secondly, it contributes to historical studies of computer politics by considering the sociotechnical imaginary function of popular education as a governing tool. More broadly this also contributes to science and technology studies by adding education as deeply embedded in these sociotechnical imaginaries.

Thirdly, it historicizes, with explicit empirical grounding, how digital media technology and citizens have become so closely connected.
Fourthly, it contributes to research on education by adding technology to studies of education, and not in the sense of “learning technologies”, but as an infrastructure that engenders changes in educational imaginaries as well as in education itself.

Altogether, these contributions deepen the understanding of digital citizenship as historically contingent, and as an effect of educational imaginaries and government forces rather than (only) technological development or use.
Theoretical perspective, concepts and framework

Not only the digital citizen, but also many of the discourses and concepts it envelopes, can be referred to as what Haraway (1997) calls imploded objects. This means they too must be disentangled in order to be defined. Such an extrication would bring an increased understanding to these objects as material-discursive relations (see Figure 2). Below, I will disentangle, but also try to tie together the concepts of automation, computerization and digitalization; citizen and citizenship; and popular education and politics. In some cases I will argue for the value of retaining some entanglement. This is because these objects serve as operational concepts in the dissertation and thereby also need to be open to variations in how they are used or defined in the empirical material.

Figure 2. Concepts
Computers

Computer-related concepts and artefacts age quickly. IT and ICT have been exchanged for more modern(-sounding) concepts such as digitalization, algorithmic regulation, and even AI. Most likely, these “new” concepts will fairly soon seem as outdated as ‘floppy disk’, ‘home computer’ or ‘automatic data processing’. What these concepts “really” mean, or exactly which models of computers that are referred to, is not the focus of this thesis. Instead I want to focus on what kinds of imagined problems that these concepts entail when used in societal discourses, and how potential solutions are included (or not) in the concepts and in the discourses where they are used. Even though this may sometimes imply a simplification of the concepts (e.g. algorithmic regulation is not necessarily the same as automatic data processing), and that some nuances may be obscured, there is a point in focusing on problematizations. That is, when tracing the genealogy of the digital citizen, we see how problems remain (or are deliberately retained) even though specific machinic functionalities may change—some parts of the old lives on in the new. This happens partly via the problems and solutions that are, sometimes repeatedly, envisioned, but also in digital media technologies themselves, as they remediate the old, and preserve traces of older functions (Bolter & Grusin, 1999). In this way, my discussion of concepts will reveal entanglements and similarities, but also differences and disruptions.

Even though it is important to remain open and to examine how the concepts are imagined in the empirical material, there is also room to reflect on what specific terms that have been used over time. The three main notions used in the empirical material are automation, computerization and digitalization.

By the term digitalization I mean processes where information, artefacts and people are made digital. That is, ways that many aspects of our social, economic and political lives are reconstructed in and through digital communications and digital infrastructures. Going back in time, computerization and automation were more common concepts, and I use them, together with digitalization, with some degree of interchangeability—the reason for this is simply because they constitute older concepts signifying very similar processes.
That is, ‘automation’ was, during the 1950s, used to refer to an automated process including at least one ‘electronic brain’. An electronic brain was a colloquial concept used to refer to a digital machine that could control other machines. In a similar way, computerization, during the 1970s, 1980s and 1990s, generally referred to processes of automating work or digitizing information via the implementation of computer systems. Equating these concepts does, as mentioned, entail a certain simplification. For example, a pertinent difference between the concept digitalization and the concepts automation and computerization is the inclusion of the internet in the former. While the internet is practically always included in conceptualizations of digitalization, previous conceptualizations often differ between computer technology (technology used to store and manipulate data) and telecommunications (the transmission of signs, signals, messages, words, writings, images and sounds or information of any nature by wire, radio, optical or electromagnetic systems). Still, ideas of telecommunication, and the internet, were sometimes also embraced in wider idiomatic concepts such as ‘computing power’, even though networked computer communication was not ubiquitous in any way. There is a spectrum of definitions and, seen from afar, a gradual movement across these concepts (rather than abrupt disruptions).

A recent example of how the earlier concepts are now enveloped by digitalization is how the annual survey from the Internet Foundation in Sweden provides statistics on ‘internet use’ on the one hand, and ‘households with computers’ on the other, but with figures that are practically the same. Another example is how the European Commission’s review of key competences of lifelong learning recently removed references to ‘computers and the internet’, instead using ‘digital technologies’ because it is ‘the most appropriate term to refer to the full range of devices, software or infrastructure’ (European Commission, 2018, p. 50)

As such, I have not specifically considered the impact of the internet as a disruptive change (although it, in many ways, was), but to acknowledge this connection I often refer to ‘digital media technologies’ as synonymous to machines connected to the internet. However, although concepts such as computerization, automation and digitalization overlap across time, it does not necessarily mean
that “anything goes”. The concepts all refer to digital machines and even though computers have always come in a great many varieties, they still have a few important things in common. They are all electronic machines, using binary logics to execute certain instructions. Some of these executions are initiated by you, the user, others by the programs running on the machine itself. What I want to stress, beyond this, is also that computers are not just silicon chips, hard drives and algorithms—they are also designed societal machines, used to organize and govern citizens. Thus, we must not only study how we imagine, and have imagined, computers in society, we must also study the effects these imaginaries, in turn, produce.

**Computers as sociotechnical imaginaries**

Computers have been described as a revolutionary and persuasive technology since (at least) the mid 1900s. Notably, for more than a decade, scholars have also suggested that we increasingly live in a post-digital media ecology (Cascone, 2000; Fleischer, 2009). Computer-related concepts such as the post-industrial society, or the information society, were coined and circulated long before the widespread use of the internet (e.g. Bell, 1973). These concepts signify a change from the industrial society, where production of goods was central, to a post-industrial society, where the most important goods (and skills) were related to information. This phenomenon is, of course, as widely theorized as it is debated. More critical scholars tend to stress how this change is illusory, and that Marx had, already in his time, stressed that capitalism will always strive towards replacing people with machines. A concept such as the information society is thereby only helping to obscure the actual labor, and material means of production, that underpin and drive it. Consequently, digital labor is still labor, and must be understood as an area of capitalist innovation and exploitation (Fuchs, 2014).

Proponents, on the other hand, tend to emphasize the revolutionary and liberating potentials of technology. Technological development will bootstrap innovation, and generate more democracy, more liberty, more growth.

As a way to explore the social, political, material and economical processes with which computers are entangled, I have turned to
science and technology studies (STS), since this wide field has a long history of studying such complex interlacing. Very roughly, the STS field can be divided into two major strands: one emphasizing the social construction of technologies (SCOT) (e.g. Bijker, 1995); and one emphasizing a more semiotic-material heterogeneity and co-construction of technology (e.g. Latour, 2005). The latter includes, for example, the idea of how semiotic-materiality can “program” both artefacts and human behavior, and consequently make society both coherent and durable (Latour, 1990). This strand, while also having been criticized for excessive focus on heroes, inventors, engineers, machines and networks (and thereby marginalizing other actors and power asymmetries), can nevertheless also be linked to a feminist post-constructionist approach (e.g. Galis & Lee, 2014; Star, 1991). A feminist post-constructionist approach (Lykke, 2010) emphasizes that reality is not just construed socially, but also material and always permeated by power differentials. Seeing how the focus for this thesis is on how and why citizenship and computers have become so closely connected, the work conducted by STS scholar Langdon Winner has been particularly useful. Winner has shown, not only that technology can impact on citizenship, but also how this can happen—i.e. that technologies are inherently political. Winner suggests that there are two ways in which politics and technologies overlap: political intentions can be built into technologies, and technologies can be strongly compatible with, and sometimes even presuppose, a certain kind of society and form of governance (Winner, 1980, 1986). So, in mapping out and explicating the genealogy of the digital citizen, the post-constructionist approach has been inspired by this strand of STS research. This has been done so as not to lose neither the socially constructed nor the technologically determined aspects of development. In line with a genealogical approach, I have also been careful not to exclude resistance, paradoxes, risks or accidents (e.g. Beck, 1992; Haraway, 1991; Star, 1991; Suchman, 2007; Virilio, 2007).

In this thesis, the studied discussions, taking place in the borderland between popular education, citizenship and computing, have also related more to imagined machines. Arguably more so than what actual machines of the time were capable (or not) of. As such,
problematizations of computerization have never addressed what the machines were knowingly capable of, but more their hypothetical societal implications and revolutionary potentials. Computers are repeatedly imagined as solving many foreseen societal problems, but sometimes also as creating new ones. One example mentioned earlier is how, in the 1970s, public debate emphasized the computing power in society. This concept entailed not the number of transistors possible to fit on a single chip, but a general forceful process that would digitalize the entire society. This computing power was also envisioned as capable of connecting the entire world in a network of computers. As a more statistically grounded point of reference, in 1975, the number of installed computers in Sweden totaled 900 minicomputers, 1220 office computers and 1580 large general-purpose computers (Swedish Social Democratic Party, 1978); and hardly any households in Sweden owned a computer, even less so one connected to the internet.

Another example from the studied material is the introductory chapters of the many course books about computers that were distributed. These chapters often included a history of the computer, but importantly also how the current time—the very here and now—constituted a revolutionary moment in history. The histories of the computer were traced back to the machines of the industrialization—for example to Babbage’s analytical machine from 1835. Just as often it went back to the Jacquard machine, and the Luddite protests. Often it also touched upon the code-breaking machines of the Second World War. The kinds of machines that were described as the main source of modern computers was related to how the computer, at that specific time and in that specific book, was conceptualized. That is, if the educational material, for example, emphasized how the computer was a necessary and revolutionary machine that aids industrial production, it was likened to the Jacquard loom. More critical teaching aids, stressing how division of labor and control was built into the computer, would refer to Charles Babbage, and cite that Babbage not only developed the first computer, but also methods for business leaders to enforce the most efficient division of labor, to keep costs low. Thus, it is important to examine what the computer is described as, or likened to, rather than
what it “is”. The above examples illustrate that what the computer is interacts vividly with how it is imagined.

Jasanoff (2015) describes how sociotechnical imaginaries is a key dimension of modernity that is gaining theoretical and analytical traction in the social sciences, including anthropology, sociology and political theory. Sociotechnical imaginaries can help us to transcend previous binaries between ‘descriptive and normative, structure and agency, material and mental, local and translocal’ (2015, p. 323), but also between what is, and the alternatives that could have been. In Jasanoff’s definition, sociotechnical imaginaries are:

[…] collectively held, institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology. (p. 19)

The notion of sociotechnical imaginaries is related to the concepts of discourse and ideology. However it also envelops both these concepts by more clearly including a potential for dynamic performativity and materialization through technology (or other means). As such, sociotechnical imaginaries propose that societal and social discourses can be seen as an integral part of the development of technical systems (Flichy, 2007). The notion of sociotechnical imaginaries is thus central to this thesis. So, to provide a tentative and inclusive definition, we could say that computers are both electronic machines, using binary logics to execute certain instructions, and an absolutely fundamental part of sociotechnical imaginaries over, at least, the last 70 years.

**Digital competencies**

Digital (or media) literacy and competences are today often defined as a person having access to digital media technologies, and the ability to use them (e.g. Mossberger et al., 2007). Sometimes, they also include a person’s responsible and ethical behavior on the internet. The Swedish National Agency for Education leans on the Swedish National Digitalization Council in its definition of digital competencies as ‘the extent to which one is confident with digital
tools and services, and has the capacity to keep up with digital developments and their impacts on one’s life’ (Ministry of Enterprise and Innovation [Digitaliseringskommissionen], 2015, p. 22). Digital competence is also regarded as one of eight key competences for lifelong learning, and together with literacy and numeracy is regarded as a basic human skill (The European Parliament and The Council of the European Union, 2006).

Within the boundaries of this thesis I have not taken a detailed interest in precisely what is defined as digital competency or literacy as such (for this see e.g. DiMaggio & Hargittai, 2001; Mossberger et al., 2007), but instead have focused on what problems it intends to solve, and how this problematization has shifted over time. That is, an exploration of what forms of knowledge that, in different times, have been depicted as necessary for citizens, and why. As such, it becomes important to relate digital competencies to, for example, the 1980s concept of computer skills, or the 1990s concept of information literacy. Just like today however, these concepts rarely define exactly which skills that are included. For example, who is to say if a person keeps up with digital development? Is it enough to buy the latest gadgets and use them, and if so how many, and which, gadgets? Or does it take a deeper understanding of digital machines and their societal impacts? And is this understanding, in turn, a question about knowing how to program the machines, or understanding the geopolitical consequences of digitalization? Questions like these have often remained unanswered in official documents and definitions.

To illustrate how complex these issues are, we may consider the Internet of Things, which, put simply, is when many of our everyday objects are connected to the internet. The Internet of Things is often referred to as the age of the smart things—everything has sensors, and our behaviors and intentions are predicted with increasing accuracy. Devices around us react to our presence and appear to be smart. This means that we, as interactors with smart things, come to expect more of a thing that is described as “smart”. But one fundamental premise for an artefact to be regarded as smart, is that those who design the smartness must also succeed in predicting user behaviors. Smart things are only smart if they are able to act on their own. If the user has to tell it what to do all the time, or program it in
different ways, such handling would become tedious and be more a
question of an obedient technology, rather than user-friendly
independence and specific agency (i.e. smartness). This also means
that smartness must be kept hidden from the user. The decision-
making algorithms and the controls must be hidden beneath the
interface. This creates a paradox—when things become smarter, they
must also hide the foundations of this smartness even more, which
can become a problem. What decisions are hidden from us, and why?

Also, the smarter things get, the less skill we need to use them, but
also more skill to understand them. The question is if and how
general users will care (or not care) about such issues, and what role
education will play in such a media ecology?

This calls attention to how knowledge of computers interplays
with how intuitive (or counter-intuitive) the usage is, and that we
must understand this knowledge as a discursive construction. Today,
digital competencies are defined as one’s ability to keep up with the
digital development, while the 1980s definition points to the ability
to influence development. During the early 1970s it was described
as important to gain knowledge about the societal effects of
computers, and whether their progress should be stopped or not. This
illustrates how the specific and time-bound knowledge of computers
is also construed socially, depending on conceptualizations and
imaginaries of not only computers, but also citizens and their
required skills.
Citizens

An important starting point for this thesis has been an open and inclusive definition of citizens and citizenship. By staying responsive to definitions that emerge from the empirical data, I have deliberately refrained from categorically defining citizenship (something which could have limited my understanding beforehand). This also means that I have empirically focused on material where ‘citizens’ or ‘citizenship’ is actually used as a concept, without pre-emptively excluding anything. An open and broad understanding of citizenship was particularly important for the first study, where understandings of what students do as citizens and how they enact citizenship was in focus (Rahm & Fejes, 2015). Thus, the starting point here was to “open up” citizenship rather than pre-defining it (e.g. Nicoll, Fejes, Olson, Dahlstedt, & Biesta, 2013).

Even though this inclusiveness has been important for this thesis (where it has revealed how citizens and computerization intertwine) it is also connected to certain problems. Citizenship is not a neutral concept in itself, but always connected to notions of conditioned inclusion. These notions also shape, in concrete ways, everyday circumstances for people, including for example intersectional power differentials (e.g. P. H. Collins, 1998; Crenshaw, 1995).

In simple terms, citizens are the political members of a constitutional society. However, the constitution of the “people” in itself is always a matter of inclusion and exclusion. The fundamental logic of democracy is thus always about drawing a political boundary between an “us” and a “them” (Mouffe, 2013). As such, ‘citizens are not born, they are made’ (Cruikshank, 1999, p. 3). Therefore, citizenship is always a contested politics of belonging (Yuval-Davis, 2011).

This does not stop citizenship from often being defined as a person’s formal or legal status, or membership in a community. In a wider sense, citizenship includes a wide net of social, political and economic structures that, together, regulate the relationship between the individual and the state. This broader definition of social citizenship as full citizenship was coined in 1949 by Thomas Humphrey Marshall (1950), whose essay still influences debate on citizenship. In the essay, Marshall defines the social responsibilities
of the state relating to its citizens as a crucial prerequisite to live as a full member of society.

The concept of (social) citizenship has thus been widely criticized and elaborated. As hinted at above, researchers have shown how formal rights and actual rights are not necessarily the same thing, and that the concrete shaping of citizenship (and its agency) is contingent upon gender, sexuality, race, ethnicity, mother tongue, ability and so on (de los Reyes, Molina, & Mulini, 2002; Fraser & Gordon, 1992; Schierup, Hansen, & Castles, 2006). Other critics have shown how citizenship can be used (or transformed) in neoliberal governance, as a way to delegate more responsibilities to the individual, while at the same time delimiting their capacity for action (Kymlicka & Norman, 1994). One example of this neoliberal use of citizenship is how education is often regarded as a way to foster “proper” citizens of the future (Lauder, Brown, Dillabough, & Halsey, 2006). In this line of thinking, participants in education are regarded as “not yet” citizens who need to learn certain skills and capacities to, eventually and hopefully, become full member of society (Dahlstedt, Fejes, Olson, Rahm, & Sandberg, 2017; Fejes, Dahlstedt, Olson, & Sandberg, 2018; Sandberg et al., 2016).

As a way to retain an openness in the concept of citizens/citizenship, while also maintaining a sensitivity to power asymmetries, an understanding of citizenship as a figuration can be useful:

figuration is the mode of theory when the more ‘normal’ rhetoric of systematic critical analysis seems only to repeat and sustain our entrapment in the stories of the established disorders (Haraway, 1992a, p. 86)

Using Haraway’s terminology (Haraway, 1992a), the digital citizen can thus be seen as a figuration. Put succinctly, this means that it is a complex, power-permeated, mutually transformative (Barad, 2007), socio-material phenomenon.
Popular education

It has been pointed out that popular education is notoriously hard to define, particularly from a historical point of view (Berg & Edquist, 2017). Popular education is, admittedly, a wide-ranging term, which blurs boundaries between civil society and the state, but, from the perspective of this thesis, this is also a strength. This thesis makes use of a broad notion of popular education. It entails not only study associations and folk high schools, but also non-formal educational efforts aimed towards the adult population via radio, TV, museums, films and civic information. However the focus is mainly on popular education as a form of state governance. That is, information, fostering and education are seen as transferred from the state to the population (the citizens). Thus, popular education, in the form of non-formal adult computer education, awareness campaigns, social programs and liberal education about computers can be understood as educational imaginaries assigned to handle (in this case) computerization. Consequently, this thesis starts from Berg and Edquist’s definition of popular education: ‘voluntary educational activities, generally aimed at the mass of adolescents and adults, organized by non-profit and non-governmental associations, outside compulsory and/or regular educational institutions’ (Berg & Edquist, 2017, p. 1), but also acknowledges their addition in that popular education has recurrently been deployed for governing purposes.

As such, my strategy has been to track where popular education is mentioned in political imaginaries about computers, how computers are imagined in the popular educational initiatives that follow, and finally to trace how popular education institutions inscribe themselves in relation to automation, computerization and digitalization.

A shining example of a collaborative effort, where all these “tracks” are visible, is the course Computer knowledge. This was a distance course, organized by The Swedish Educational Broadcasting Company, inspired by the BBC Open University (Emanuel, 2009b). It was broadcast via radio and TV and was a collaboration between the Swedish Educational Broadcasting Company, publishing company Liber, distance education company
Hermods, and the universities in Gothenburg, Linköping, Stockholm, Umeå and Uppsala. The course was comprised of 20 radio shows, 20 TV shows, 14 course booklets with assignments that could be sent in for checking, and 40 hours of practical computer handling exercises. After completing the course, there was also an option to take an exam and, if successful, to receive 10 university credits (equivalent to 400 hours of study). Just over 30,000 people registered. Most of them took the course as a study circle at work, or via study associations. One evaluation of the course estimated that approximately 10,000 took the course via popular education associations. Further, out of the 30,000, one third were teachers. Swedish companies The Apothecary Company, Systembolaget and the Savings Bank Group subsidized their employees’ participation in the course. The practical exercises could be done at home, in the workplace, or at a study association (Commission for Informatics Policy [Datadelegationen], 1985). As such, this course could be defined as higher education (since it, in fact, rewarded university credits), workplace education (since it was subsidized by major employers, governmental and private), or popular education (since many of the participants studied via study associations).

During this time, public authorities also emphasized the importance of getting educated before getting a computer for the home: ‘before a household acquires a computer, one, or several, of the household members should take a basic course about computers, for example within a study circle’ (Commission for Informatics Policy [Datadelegationen], 1984; Pettersson, 2001). This case shows how educational efforts entailed cooperation between many different actors, and that they were not presented in an unequivocal way. As such, education is sometimes synonymous to popular education, and sometimes popular education is but one of several possible forms of education. When there were ambiguities, or collaborations between diverse actors, I have been very careful to mention this in the text. When I have not emphasized it, it is because the material has been consistent in defining it as popular education.
Summary

For this thesis, popular education has functioned as both a point of departure to investigate the digital citizen, and as a recurring political tool deployed by governing forces in order to construe digital citizens. As such, popular education is connected to two other important concepts: computers and citizens. In order to multiply their operational use in analyzing the wide empirical material, these three concepts are all defined as rather open and inclusive.
Research strategy, methods and material

As mentioned, the purpose of this thesis is to map out and explicate how and why citizenship and computers have become so closely connected, and to further elucidate the role of popular education in this relationship by historicizing and analyzing the relations between computer politics, citizenship and popular education politics. In the examination of these relations as current and historical problematizations, a genealogical method becomes particularly suitable. Because I want to understand how the digital citizen has been formed, it is valuable to study how problem-solution co-constructions shape this process.

So, when studying these contextual problematizations, where does one begin? According to Foucault the starting point is “now”. Practically speaking, the starting point for this thesis was a study of “the present” (i.e. the paper Ubiquitous computing, digital failure and citizenship learning in Swedish popular education), which in turn led to the following three more historical papers. For the first paper I interviewed folk high school students about citizenship, and I immediately discerned a connection to digital media technologies. The premise for that study was to examine, understand and explain, through analysis of their own narratives, how adult students do citizenship. Thus, the main question was very open: can you tell me what you do as a citizen? The responses consisted partly of stories about digital media technologies. The very first student I interviewed explained to me, for example, how the anonymity of playing World of Warcraft (WoW) was a necessary part of citizenship. That we discussed WoW was very unexpected. But when I thought more about it, I was surprised that I was surprised. As another respondent expressed it: ‘it is how we live’. Not all of the 37 respondents had striking stories about digital media, but more respondents discussed it than discussed, for example, voting—sufficient for it to stand out as a clear pattern. Following this first study, I began researching how popular adult education actors described their role as educators of citizens. What I found was that citizenship, as a concept, was rarely used for governmental purposes and political assignments for
popular education, except for when it concerned digital inclusion. Digital inclusion was presented as a precondition for exercising citizenship (Swedish National Council of Adult Education, 2013b). It became clear that the connection between the citizen and the use of digital media was being made on several levels, by different actors, within popular education. This insight shaped the problem area for this thesis. From a curiosity and an inquisitiveness of how this had come to be, the historical studies emerged. The point of this initial and slightly autobiographical account is to provide a setting for how the work with this thesis began, and how the overall research approach was designed. In this chapter I will describe the implementation and methodological execution of the studies. Firstly, I will describe a genealogical approach. Next, I will present one variety of policy analysis inspired by the genealogical approach. Finally, I will discuss ethical considerations and delimitations of the studies.

Research perspective: genealogical approach

Genealogy, as it is described by Foucault (1984a), is not a method for describing a straight teleological derivation of a certain current phenomenon. Rather, it is a historization emphasizing how a plurality of events were consociated in leading up to the “now”. Genealogy is therefore not about using history to show how the present was “caused” (i.e. that history can be seen as a definite cause of the now). Rather, genealogy is a methodological procedure that makes use of history to diagnose the present. That is, it functions as a way to problematize contemporary concepts and intellectual thought figures. As such, genealogies certainly become historizations of the present, but importantly, not of the more common, sequential and continually progressive kind. This does not mean that genealogy thinks of history as random or unsystematic. Genealogy considers history as complex weave of interrelated events, collectively and organically directing change (or non-change) in certain directions. In his use of the very concept of genealogy, Foucault takes inspiration from Friedrich Nietzsche’s ironic use of the concept in On the Genealogy of Morals. To explain, a Foucauldian genealogy opposes the search for a definite origin:
What is found in the historical beginning of things is not the inviolable identity of their origin; it is the dissension of other things. It is disparity. History also teaches how to laugh at the solemnities of the origin. (Foucault, 1984a, p. 79)

The quote above illustrates how genealogy (as a “theory-method”) is put forward as the opposite of historical studies focused on sequential causal relations, but in this statement Foucault also makes visible the epistemological foundations of genealogy. Foucault argues that knowledge is not about understanding, but about cutting (an elaboration of this concept will follow). A genealogy must take its start in the things we experience as having no history at all. Next, we (try to) isolate the different contexts, or scenes, where events take place—but also those where they are missing and remain completely unrealized. To put it differently, from a genealogical approach, errors, mistakes and non-identities are important. The examination of a specific genealogy opens up to the plethora of events that have shaped a phenomenon, but also those events against which the phenomenon has conflicted (Foucault, 1984a).

The central issue is that events are important if they result in phenomena that keep on existing, and that keep on having value to us. This is where the cutting comes in—the genealogy of a phenomenon must have a clear point. Much like a joke has a punchline. The punchline of the genealogy lies in discovering that who we are, and what we hold for true, is not necessarily a question of controlled linear progression, but more of tangential events, or even accidents.

The present has also been the starting point for this thesis. The digital citizen is a phenomenon which is often seen as lacking a history—it is habitually seen as a purely contemporary object clearly situated in the present, and without ties to the past. The incessant updating of digital culture, and the continuous migration of social and civic functions to digital environments, help to sustain this idea. Through the analysis of historical texts we see that the contemporary digital citizen certainly has new aspects (mainly the tighter connection between citizenship and digital inclusion), but it can also be traced in a wide range of events (many of which can be assigned to popular education politics) that are not very new at all.
The relationships between digitalization and citizenship within Swedish popular education are thereby historically contingent (and thus not random or unintentional). Genealogy as a method is able to trace the lineage of shared intellectual constructs, their uniqueness in relation to other constructs, as well as their historical morphing. According to Foucault, power and dominance permeate these constructs. This power is often also unilateral, repeated and preserved, throughout history. Foucault (1984a, p. 83) writes:

Genealogy, however, seeks to reestablish the various systems of subjection: not the anticipatory power of meaning, but the hazardous play of dominations

For Foucault, dominance is determined throughout history, but not necessarily by those who are generally perceived as dominant. As such, it also becomes important to reveal, and make visible, both the fact that political systems of rules and regulations shape the digital citizen, and also how this (re-)shaping takes place. Thereby, genealogy as a method has, in a very concrete manner, guided the selection of empirical material for this thesis. I take Foucault’s genealogy as an appeal to investigate historical events in detail—to get down to the “nitty gritty”—and to search for different voices in different types of material. Even though I have mainly used genealogy as a way to approach history on a societal level, I want to stress that, for Foucault, different levels of analysis interplay in a way that resembles a post constructionist approach. In other words, history is real and efficient (Nietzsche’s ‘wirkliche Historie’), in that it inscribes itself on the body;

We believe, in any event, that the body obeys the exclusive laws of physiology and that it escapes the influence of history, but this too is false. The body is molded by a great many distinct regimes; it is broken down by the rhythms of work, rest, and holidays; it is poisoned by food or values, through eating habits or moral laws; it constructs resistances.
(Foucault, 1984a, p. 87)

These very corporeal and experiential issues have admittedly not been emphasized in this thesis (something I discuss later, under the delimitations heading), but they were a starting point of sorts, as the initial study (using interviews and participatory observational
methods) very straightforwardly encountered such experiences. I will shortly return to how the material was selected, but first, I want to introduce Carol Bacchi’s (1999, 2009, 2015, 2016) qualitative method for policy analysis. I will also show how it interplays with, and develops, the genealogical approach.

**Analytical approach: What is the problem represented to be?**

The basic idea of Bacchi’s version of policy analysis is that ‘we are governed through problematizations’ (Bacchi, 2009, p. 263) and that important analytical insights can be gained from analyzing these *problematizations* (i.e. how problems are construed) rather than the problems themselves. This is done in order to challenge the “problem-solution paradigm” which Bacchi argues dominates political agendas in most industrialized Western countries, and in supranational organizations. The problem-solution paradigm refers to the view that policies are the best way to deal with problems in society or in markets. Various “action programmes” can thus not be executed without first problematizing their territory. This is grounded in the idea that there, to begin with, is something problematic there, and that this calls for change. Policies are thereby always already problematizations, says Bacchi. On this point Bacchi diverges slightly from Foucault, who instead emphasizes how the problematization process is foregone by some kind of “difficulty”, which then generates a response from governments (Bacchi, 2009; Foucault, 1984b). For Bacchi, the problems take form (or even emerge) during the creation of policies, not before them. From this perspective, policies are not reactions to problems that exist in society, rather they reframe (or even produce) a certain societal phenomenon as a problem. By producing problems (that also require solutions), these action programmes construe certain conceptualizations of what the problem is. This leads to the (by now perhaps obvious, but still important) value of understanding problems as not existing outside the frames within which they are produced and conceptualized. Bacchi even warns us that the idea that problems exist independently of the conceptualizations of these problems can have serious political implications. That is, because the
problematizations are based on some form of consensus (that something is problematic and should be solved), they can obscure how governance takes place, how order is upheld, and, not the least, what underpinning assumptions and values that shape the “problem”. Bacchi puts it this way:

Problematisations are framing mechanism; they determine what is considered to be significant and what is left out of consideration. As a result, public policies create ‘problems’ that channel and hence limit awareness of and sensitivity to the full range of troubling conditions that make up our existence (Bacchi, 2009, p. 263).

So, even if problems, according to Bacchi, do not exist outside the action programmes and policies that create them, the representations of them gain their own agency and impact, materially and symbolically, on how we are governed and how we live our lives. Bacchi states that ‘Policies constitute ‘problems’, meaning that they make a ’problem’ exist as a particular type of ’problem” (Bacchi, 2009, p. 263). Following Bacchi’s ideas, this thesis contributes to “problematization studies”, and the process of how problems are made, rather than trying to solve “real problems” in themselves.

Again, rigorous analyses of the relations between solutions and problematizations can make fundamental assumptions and values visible. Political solutions can therefore be understood as co-creating the problems they intend to solve. Problems and solutions exist in a cyclic and reciprocal relation, where they effectively configure each other (Bacchi, 2009). A clear example of this is how digital exclusion is described as a problem. The problematization envelops a solid association between digital inclusion and societal inclusion. Notably however, the concept of exclusion is in itself labelling, connoting and producing a certain type of problematization. The solution to societal exclusion consequently becomes digital inclusion. Further, problems must be understood as pluralistic and, often, entangled in other problematizations. Bacchi describes it as central to also study how problematizations are “nested” in each other (Bacchi, 2009). Digital inclusion/exclusion is thereby tightly connected to the problems attached to (lack of) democracy and education. The digital citizen, as a desired citizen, is a problematization/solution, which is built on
a deep commitment to digital progress as a solution to all kinds of societal problems.

Bacchi borrows the foundation of her approach—that we are guided by problematizations—from Foucault. That is, Foucault emphasizes the importance of studying how problems are conceived. It is not hard to spot the similarities between Bacchi’s approach and the Foucauldian genealogy. They both underline a critical analysis of taken-for-granted truths, which, by being regarded as true or neutral, hide the power relations that construe them. Consequently, there are many overlaps in their methodologies (but also some differences, e.g. in terms of inspirational sources, specificity in approach, and empirical focus).

This thesis is inspired by both of these approaches, but I also want to accentuate that I have not rigorously followed either of the methods (if that is even possible). In the text above, I have given general examples of how the methodological procedures have been very important for defining the problem area of this thesis, the analytical approach, and its contribution to knowledge. I will now make it clearer how I have proceeded in detail, and what I have utilized from each method respectively. Firstly, I want declare that I have seen genealogy as the basic research approach, and What’s the problem represented to be? (WPR) as the main analytical method of this thesis. The combination of these frameworks can be seen as an amplification, where Bacchi elaborates on Foucault’s ideas, and puts them into succinct questions that can be posed to the material. As such, Foucault has given me ideas of ways to disentangle the digital citizen in history, while Bacchi has provided me with a set of questions (and follow-up questions) that helped me to actually analyze the material.

I will now demonstrate the methodological procedure more thoroughly. As previously mentioned, Bacchi has been inspired by Foucault, which clearly resonates in her approach. After the method was introduced (Bacchi, 1999), Bacchi has developed it to include six steps, or questions (Bacchi, 2009). Apart from Foucault’s ideas about genealogy, Bacchi’s approach is also stimulated by social constructionism, poststructuralism and discourse psychology, feminist body theory, and governmentality studies. This means that
Bacchi includes both individual and societal levels in the analysis. The six steps of Bacchi’s policy analysis are as follows:

1. What’s the problem (e.g. digitalization) represented to be in a specific policy?
2. What presuppositions or assumptions underlie this representation of the ‘problem’?
3. How has this representation of the ‘problem’ come about?
4. What is left unproblematic in this problem representation? Where are the silences? Can the ‘problem’ be thought about differently?
5. What effects are produced by this representation of the ‘problem’?
6. How/where has this representation of the ‘problem’ been produced, disseminated and defended? How could it be questioned, disrupted and replaced?
7. These questions can be compared to the research questions of the thesis:
   a) How has the relationship between citizenship and computerization changed over time?
   b) How is popular education imagined in this relationship?
   c) Why and how are citizenship and computerization so closely related?

With this comparison I want to show how the research questions are based in both the WPR approach and Foucauldian genealogy. For example, research question c) is based on the first and second of Bacchi’s questions. Research question c) is also grounded in a genealogical approach, in that it also concerns what forms of knowledge that are tied into the problematization—what is taken for granted, and what is “possible” to think. In relation to this, discourses should be understood as systems of meaning, including assumptions, values, presuppositions and connected signs, something Bacchi refers to as “conceptual logics”. This term is similar to Foucault’s discourse concept, which sees them as socially produced forms of knowledge that set the boundaries for what is possible to talk about. In her second question Bacchi refers to Foucault’s *archaeological* approach. This notion includes the practices and processes that lead
up to the domination of certain types of problematizations. The specific ideas of individual policymakers are not in focus here, but instead the inherent logics of the problematizations. While this is hard in historical studies, I will argue that when I focus on problematizations in the empirical material, the underlying practices and processes behind them become visible to some degree.

Bacchi’s third question— *How has this representation of the ‘problem’ come about?*—is here regarded as a purely genealogical one. In this thesis, this question concerns the historical tracing of the digital citizen. This question is also reflected in research question c), which concerns how and why citizenship and computerization have become so intertwined. Consequently, this is an important question (which I deal with in an abductive manner—more on this below), which deals with how things are made visible, manifest, and taken for granted, but also what ideas that are not emphasized and made invisible. As such research question c) contains elements of Bacchi’s fourth question, as well as a genealogical approach (as has been discussed previously). The fifth question of Bacchi’s—*What effects are produced by this representation of the ‘problem’?*—is limited to considering the role of popular education—research question b)—and thereby, in different ways, who are conceptualized as targets for efforts (in this case, those who are seen as target groups for popular education efforts).

The questions a) to c) above represent my attempt to summarize the overarching research problems of the thesis. In practice these research questions, which are already influenced by both Bacchi and Foucault, have guided the analysis of the empirical material. However for each of the studies the specific research questions may have been phrased slightly differently. So, for example, for the first study/paper, the empirical material consists of careful transcriptions of recorded, semi-structured interviews with students at a folk high school. The specific research question for this study was: How is citizenship made, and what material resources are seen as necessary for doing citizenship? This specific research question relates to the thesis’ research question c) (Why and how have citizenship and computers become so tightly connected to each other). The study, however, does not go into detail about *how and why* this has come about, but rather stipulates *that* this is the case. Consequently, the
following studies take a more historical direction, in trying to explore *how and why* this situation had occurred. Nevertheless the analytical procedure has generally been the same, regardless of whether the material has consisted of policies, interview transcripts, films or play scripts.

In practice, the data collection (or *production*, as it can be referred within a post-humanist approach) procedure has consisted of identifying particularly rewarding historical sources of information. This has been done by a meticulous screening of potentially relevant sources of data, including historical popular science books, academic writings, debate transcripts, broadcast media databases, state public reports and more. This was done to adhere to the genealogical ambition of not restricting oneself to a limited type of data source, but to letting *different voices* from *different types of material* be heard. Even more practically speaking, once valuable sources were identified, the procedure meant copying all the relevant textual material, based on continuously refined research questions, into a coherent corpus of text. I have then read, and re-read, this material a significant number of times, coding the material according to both emergent themes, as well as to existing research questions. At this stage, the approach can be described as explorative. When coding the material I was careful to not only look for statements that support a certain presumption, but to actively search for resistance, opposition, paradoxes, disruptions and alternative stories. As analysis continued, textual segments were thus structured according to the research themes, but also in terms of its antagonisms or ambiguities. As such, pieces of texts were combined, split up, removed or re-categorized, continuously. This procedure allowed for me to be systematic throughout the analysis, but also responsive to the patterns that emerged from the specific material itself. The analysis, through its gradual and careful reading of all the text, is reflective of how the research questions are expressed in the material. The combined approach of Bacchi and Foucault is a theory-method. As such, my analytical approach can mainly be seen as abductive. This has also made new theoretical viewpoints possible in a continuous fashion (i.e. a theoretical openness). This has been particularly important, since the focus has been not only *that* and *how*, but also *why*. 
An abductive approach allows for an oscillation between empirical material and theories, but also opens up to the possibility of consulting new theory to improve analysis and refine research questions. It also entails a potential to take the elicitation of material in new directions, which has been done. Emergent themes and new theoretical ideas, spurred by the reading of the material, lead to new, potentially interesting material (of which I was not aware when I began analysis), and even new research questions. An example of this is how I have made use of Langdon Winner’s (1980) ideas regarding the politics of artefacts, or how Raymond Williams (1983) points out that digital technologies are central to his notion of Plan X, or how Susan Leigh Star (1991) emphasizes how we must always consider who benefits from (the development of) a certain technology—all theorists that influenced certain interpretations of results in the different papers included in this thesis. An important effect of this abductive approach is the focus on imaginaries and how we can think about them in relation to education.

Material
There are many ways to structure historical material. First, one must settle upon a time period and type(s) of material. As mentioned, the genealogical approach takes it start in the present. For me, the present was delimited to the 2010s. The decided starting point (or ending depending on how you see it), after some initial research, turned out to be the 1950s. In my studies which goes back further than the 1950s it becomes clear that there are few signs of computer debates before the 1950s. Other researchers have also that shown how public debates and policies about computerization really take off in that time period (Blomkvist, 1999; Blomkvist & Kaijser, 1998; A. Carlsson, 1999).

It should be stressed that both Foucault and Bacchi look to different types of data sources and regard this as a methodological strength. As such, the genealogical approach looks for lineage in unexpected places in an attempt to recover countless lost events (Foucault, 1984a). The WPR approach underlines governance as something that does not necessarily happen within one type of institution or governmental control, and thereby seeks to bridge the
dichotomy between state and civic society. From these premises, a broadening of material has not been a problem—rather, delimitation has been the issue. That is, both Foucault and Bacchi promote the use of unconventional sources, plus the fact that the thesis problem area spans many decades.

Computerization discourses are polyphonic by nature. They contain many perspectives and originate from many different stakeholders. Consequently, this thesis has studied many different types of material. Interviews with students (and teachers) helped me to identify and characterize discourses, but also the material conditions that make citizen activities possible. The interviews also became a point of departure, which showed how the things we take for granted today, when it comes to digital media technologies, were entwined with doing citizenship. Moreover, political texts, educational material and official reports exposed events surrounding the digital citizen on other levels. Thus the thesis envelops many types of data (see appendix). I have conducted 42 interviews, of which 37 were with students and 5 with teachers at a folk high school. In addition, this specific data collection also included pictures and films taken by the respondents themselves. The collected material concerns contemporary student perspectives, and how they actualize everyday citizenship through digital technologies. In order to trace the digital citizen backwards in time, I analyzed textual material in the form of reports and policies, written to influence or govern computerization at large. To include popular education efforts, on a more detailed level, I have also analyzed educational material in the form of films, radio broadcasts and one play. In numerical terms the empirical material used in the papers consists of: 98 text-based political writings including propositions, referrals, party programmes, action programmes, and reports, 37 interviews, 16 newspaper or magazine articles, 15 course books (used in popular education), 10 academic journal articles, 8 conference/congress reports, 9 debate books, 8 transcripts of political speeches and meetings, 7 educational movies, 5 radio shows, 3 “witness transcripts”, 1 play manuscript, 1 recorded parliament debate and 1 board decision. This enumeration represents the material explicitly referred to the papers. However, most of the material I have consulted and analyzed has not been made explicit in
the papers but has still been extremely important to the analytical work done. For example I have scrutinized around 30 issues of union journals, looking for what eventually resulted in 5 articles on the ‘LO computer’. In a similar way I have analyzed party programmes from the 1940s, only to conclude that there were no debates about computerization comparable to that which emerges during the 1950s. So, behind each explicit selection and use of a certain source of data lies a huge amount of material that has been scanned and studied.

I have applied Bacchi’s policy analysis on all types of material (apart from the interviews) because policies can be regarded as plans of action, that is, as declarations of intent in order to achieve one (or more) goals. In other words, they tell us what we should do, or think (Bacchi, 2009). Thus, both educational material and reports can be seen as policies.

Ethical considerations
As mentioned, the thesis took its start in interviews with folk high school students about doing citizenship. By then the method was interviews and to some extent participatory observations. Following the first study, the material was mainly historical texts. The shift in methods from interviews and interaction with living people to reading and interpreting dusty books (and other material) also resulted in a change in terms of research ethics. As such, there was, later on, much less risk of subjecting anyone to direct risks, or to any form of registration of sensitive personal information. Nevertheless, the demands on scientific quality did not diminish. Below, I intend to discuss the preconditions against which I have conducted the studies. Particularly the importance of shining a light on the researcher’s own responsibility for potential effects of the research. While the main part of my material consists of historical texts of different kinds, the first study is based on interviews. In the interview study I have adhered to the guidelines from the Swedish Research Council (2017). I have taken several measures to protect the respondents, and to not take advantage of their trust in me. The respondents have been given both written and oral information about the goals of the study, that their participation is entirely voluntary, and that they can cancel said participation at any point during the
study. All participants have given their informed consent. I have also anonymized all the names of participants, the school in question, as well as the types of study the participants undertake. The studies I conduct can consequently not be seen as pertaining to a particularly sensitive problem area. Still, these ethical decisions should be made. While the participants are adults, the study does examine stories of citizenship, which means that issues surrounding ethnicity, political opinion and race could be discussed. The study could then have qualified for ethical review, under the current legislation, condition B. Further, the Swedish Research Council (2017) stresses the importance of ethical considerations during observational studies. The council particularly emphasizes the significance of not influencing people or situations that are being observed. So, while the observation and interview study only constitute a minor part of this thesis, it is also important that the researcher takes time to reflect on her or his role and potential weight on the conducted research as a whole. Such issues will be considered next.

**Ethics as an epistemological standpoint**

Foucault states that ‘knowledge is not made for understanding; it is made for cutting’ (Foucault, 1984a, p. 84). He describes this idea through a genealogical process which reveals the historical and hazardous play of domination (Foucault, 1984a). Power permeates genealogical thinking. At the same time, Foucault little considers the very power of cutting in history. If knowledge is for cutting, what responsibility does the researcher have, cutting the genealogy of a phenomenon out of history? In term of ethics, I am again inspired by a feminist post-constructionist research tradition where, for example, Barad (2007) has developed ideas around knowledge as cutting. In Barad’s elaboration, the importance of situating the researcher and phenomenon in the research is emphasized, which helps a reflexive revelation of how knowledge, and thereby power, is (re)produced. Karen Barad, building partly on Foucault, argues that knowledge is created by a process of separating things from each other long enough for us to gain knowledge about them. That is, the observer or researcher effectively creates the research object. This cut is what she calls intra-active. From this perspective, all studies are agential
cuts, which cannot be disconnected from the researcher and her interpretation. Thus, the researcher selects what to include, and what to exclude, in her studies. Another cut may actualize other inclusions and exclusions. Therefore epistemology cannot be separated from ethics. Seeing how our own actions in the world also create it, we have a responsibility to consider how we intervene in the coming about of the world, and how we can fight and rework biases that are being actualized, and thereby of importance (or not). Barad coins the notion of ‘ethico-onto-epistem-ology’, stressing how these elements cannot be separated. The researcher herself has responsibilities for the cuts she makes (using theory, concepts, methods and technologies) (Barad, 2007; Haraway, 1988).

The above reasoning connects to the Swedish Research Council’s recommendations, which stipulate certain general guidelines about ethics in life. The first of these states that you should tell the truth about your research. One part of telling the truth is to consider the responsibility the researcher has in making a certain cut. This does not mean that truth becomes relative, but that it is contextual and situated (Haraway, 1988). Because all research is interpretative in some regard, it is important to not only shine the light on the studied data, but also on the interpreter. And to question who may (or can) speak for whom? Reflection is often defined as an interpretation of an interpretation (Alvesson & Sköldberg, 2008)—and interpretation is never neutral. This means that different paradigms, norms, concepts and interests have an impact on what can be regarded as good research. An interpretation is therefore always an ideological and political expression (Alvesson & Sköldberg, 2008). Put simply, research is political. It is therefore necessary, or at least desirable, for researchers to take a greater responsibility for their own approach, the preconditions of their research, and the potential implications of it.

The notion of situated knowledge(s) can be seen as proposing a middle road between positivism and social constructionism. In this way it contributes to a discussion about the reliability of qualitative research (through a process of post constructionism). It does so by highlighting how ‘material-discursive apparatuses’ (Barad, 2007) or ‘thinking technologies’ (Haraway, 1992b)—i.e. machines, contraptions, theories and conceptual frameworks—are parts of the production of knowledge, meaning that science must be understood
contextually. ‘Situated knowledges’ is based on the notion that scientific knowledge is neither neutral nor objective. Rather, all scientific knowledge is embedded in its own contexts of production, which includes the researcher’s placement in time, space and body; the apparatuses used to make cuts; societal power relations, and so on. We are, in other words, never situated outside of our objects of study, but always, as Donna Haraway says it ‘in the belly of the monster’ (Haraway, 1988, p. 581). Using these words, she phrases a critique against the idea of researchers as ‘modest witnesses’ who can claim a detached and disinterested position, from where stable and passive facts can be observed. Haraway also refers to this position as a ‘god trick’. She argues forcefully that this position is untenable. We simply cannot collect data about the world without also considering how this very process is construed—by ourselves, and the tools and machines we use. Another terms Haraway introduces to this problem complex is ‘siting and sighting’ (Haraway, 1988), which refers to the importance that researchers reflect on their situatedness, and reveal the technologies and conceptual frames that are central to the research design.

What Haraway proposes is a very reflexive position. This view of epistemology is, to me, a way to make myself ethically accountable for my study. I have not been a modest witness who observes, registers and reports what I objectively saw. My own preconceptions, problematizations, apparatuses and situatedness have been part of shaping the results. In the next section I will elaborate on this position.
Applied ethical issues

From the discussion above, many ethical issues can be derived concerning the work conducted in this thesis. The most central are:

- Who can (claim to) speak for whom?
- What harm can my studies potentially cause those who take part in them, and how can I prevent or lessen this risk?
- What reality is being put forward in the results, and what political, social and economic consequences can it potentially have?
- What are my preconceptions about relations between phenomena in the problem area?
- What are my values in relation to the problem area? How can they impact on the research?

As a starting point to address these questions it can be noted that although my preconceptions about the problem area were colored by techno-feminism as a critique of power relations obscured in technologies (which also contains a subversive potential), the subversive potential of this position has not been given much room in the studies. For example, the digital citizen can, to me, not be regarded as a cyborg in Haraway’s sense (Haraway, 1991). That is, it is not a monstrous noise in the informatics of domination that mobilizes a critical potential. As such, the subversive potential of the digital citizen has had to stand back for the analysis of how it, as a desirable citizen and a societal norm, concurrently creates the analogue citizen as someone with inferior possibilities to do citizenship. By reproducing this particular conceptualization of the digital citizen, the thesis runs the risk of fortifying it—something which may have socio-political consequences. Over the five years it has taken to write this thesis, there has also been a slight transfer of the discussions from how everyone should become digital towards the dangers of the digital. Today, concepts and practices, such as online harassment, fake news and fictitious facts have become construed as serious problems and threats to democracy. The problem of citizens not being digital enough has shifted towards them being overly digital, or digital in the wrong way. This perspective may produce more regulation, registration, discipline
and surveillance. As such I cannot help but wonder what would have happened if I had let the respondent who argued that anonymity online was an absolute necessity for citizenship guide my future studies more palpably (i.e. what would have happened had I followed the various experiences expressed by informants more thoroughly)?

Even though I have taken a structural approach, the cut I have made, in which I apply my analytical apparatus, is only a small cut in the world. Other cuts would have produced other answers. Thus in this thesis I will return to discussions of the limitations of the studies, including alternative approaches.

**Delimitations of the study and the thesis**

There are of course always other ways of delimiting and categorizing material, which could have been interesting. For example one could ask oneself if, and if so, how, it mattered that the informants in the first paper were folk high school participants? Would they have replied significantly differently if they were students at municipal adult education (Komvux)? My guess is: probably not. There are no indications that the results from this study would have turned out very differently had I interviewed students within a different form of adult education. Perhaps the study would not even have needed to be framed as ‘popular education’. However, it was a fate of luck that I still did just that because it made it possible to followed popular education as a thread through Swedish computer policy history.

An important delimitation in this thesis concerns the role of libraries in the digitalization of the citizen. Libraries have been excluded from the studies in this thesis, and the reason is that libraries, as they are described in the included material, have been separated from popular education, and are often given an independent role and mission in action plans for digitalization. Still it should be said that popular education and libraries share more commonalities than differences in terms of digitalization assignments. Cooperation between libraries and other popular education has, through studied material, also occurred frequently.

More recently, there are indications that libraries, since the 1990s, have been more active and engaged in driving projects to
increase digital inclusion than popular education has. Without the exclusion of libraries, perhaps this thesis could have provided a deeper understanding of when, how and why libraries became the main educator of citizens in relation to digital skills. Perhaps it would also have highlighted similarities and differences in comparison to popular education. Another important delimitation has been made towards labor market education, workplace education and different types of vocational training, despite the fact that they have also been important sites of digitalization education. For instance during the 1950s a number of trade educations emerged, partly via study associations, where students could learn programming during the evening. During the 1990s there were significant efforts to provide unemployed with new technology education through what was called ‘Datortek’. This has been excluded, as the focus of this thesis has been popular education efforts aimed mainly at the whole population—more like social programmes (however as I will show, even these efforts had the pragmatic consequence of being aimed at limited groups).

I have mainly studied how popular education has been represented in material about computers. Had I only examined how popular education presents the role of computers in the digitalization process, perhaps the visions and problematizations of popular education actors could have been portrayed with greater subtlety. In the early parts of this thesis I mentioned SCOT (social construction of technology) as one strand of STS (science and technology studies). SCOT focuses on relevant social groups and the power struggles that take place between them regarding how technologies should be construed. I have partly focused on how various social groups construe the digital citizen and mobilize popular education as a form of governance. For example I have studied how the labor movement mobilizes popular education, but my main focus has not been social groups nor ideologies. Power struggles between different societal actors could thereby have been studied more clearly and deeply. In some ways this would have captured the problem setting agenda (or privilege) (Gustafsson, 1989)—i.e. the right to define what constitutes a problem. In my delimitation to the labor movement they have been given a relatively
large space, at the expense of other groups that could have been interesting, for example white-collar organizations.

My starting point for the thesis was that digital media technologies and citizens are linked, both on a policy-making level and in terms of individual narratives of how citizenship is being done. Of course it would have been interesting to regard these as narratives about media rather than computers, and to see digital inclusion as a form a medialization process. However I believe that the genealogy of the mediatised citizen would have taken a different turn (i.e. the genealogy would have been significantly widened by the notion of (mass) media). One could also discuss what would have happened if I had discussed the digital human instead of the digital citizen. Perhaps emotions or corporeal effects would have been made more visible? It is also important to mention that because I have not regarded civic experiences in detail, I have also not noticed when these first-hand relationships (between citizenship, digitalization and popular education) have failed, been renegotiated, or taken different routes on a more personal level. This may present a risk in terms of disregarding what people do, and thereby robbing them of their agency as digital citizens. Another delimitation that can be discussed concerns what results that could have been brought about had I written the genealogy of the intersectional digital citizen. That is, machines were never neutral. They are also entangled in gendered, racialized and sexualized regimes of truth, filled with (asymmetrical) power relations. For example, machines have been so associated with masculinity that the relationship between humans and machines has been studies as ‘man-machine system’ (Cockburn & Furst-Dilic, 1994). By making visible how technologies are gendered in relation to e.g. popular education, the reproduction of power asymmetries also becomes clear. I have partly tried to do this, but it has not been a major focus. Throughout the studied material there are stories of how class, mother tongue, gender, age and functional variations act as structuring principles for popular education efforts. I have discussed who the target groups are, historically, but I have not delved deeper into certain aspects around intersectionality. For example during the 1980s, in popular education collaborations with unions there were indications that in relation to the issue of who receives education about computers, migrant workers were
marginalized. Similarly, but in the 1950s, offices were among the first workplaces to be computerized. A large group to be laid off during these processes was women occupied with calculating tasks, who were replaced by computers (mainly in the banking and insurance sectors). This circumstance was not presented as a problem for the unions—until male-dominated professions were threatened by replacement with computers (which happened much later). Further, what is being taught to, and learned by, each target group has varied throughout history. The so-called Scandinavian approach seems to have directed its efforts much more to professions dominated by men (e.g. printers and compositors), than those dominated by women (e.g. perforator typists). Following these traces in history would have more clearly shown how popular education efforts regarding computers and gender (along with other power structures) have been shaped in intersectional terms.

Alternate routes for data collection

I mentioned above that both Foucault and Barad proposed that knowledge(s) represent(s) cuts out of reality. But to be honest, I am not entirely sure I have made one cut. Rather I have made several cuts, where each one could have been done differently. I am not sure I made the most relevant or interesting delimitations. How could I be? My choices have, naturally, had an impact on the type(s) of knowledge that can be generated. Other ‘thinking technologies’ would have provided different kinds of knowledge. A discussion of alternative methods is thereby, as I see it, also a discussion of how the studies can be developed in future work.

When it comes to empirical material, it can be discussed if it is possible to equate, for example, an educational film with a parliamentary debate. That is, would this thesis have been significantly different if I had only studied one type of material (e.g. propositions about digitalization)? My position, after having done the work I have done, is that this would not have changed the work drastically. The problematizations about digitalization that have been “caught” at different points in time show a certain orderliness in that they reoccur in dissimilar types of material. I would dare to say that the problematizations that have emerged are part of broad public debates at a certain point in time, and as such, they are also
the dominant ones during that particular era (framing a distinctive zeitgeist). However, genealogy also “revealed” popular education as an important actor, and highlighted the diversity of popular education initiatives.

Perhaps it would have been fruitful if I had used different types of data collection and analysis in the individual papers. An important starting point for a genealogical approach is to question the present, but because the three historical papers begin in the same “now”, but move on to make different historical swoops, this may have generated a certain repetition. Had I instead only used policy analysis for the papers, but a genealogical approach for the thesis framing, this might have resulted in less reiteration.

Further, interviews with teachers and/or participants in older popular educational efforts could have provided insights into how these efforts were understood and received. During the mid 1980s, for example, the ambition was to make as many as possible computer literate. During the work with this thesis there were numerous occasions where I met people who participated in these courses. Many laughed, and told stories of failed courses, where participants experienced extreme frustration when having to learn to program in BASIC or having to learn redundant functions in EXCEL. Thus an interview-based study could have provided explanations to why the broad data education was never realized in full scale.

In order to analyze the historical relations between digitalization and citizenship within Swedish popular educational politics, I have taken an interest in both discourses and actual implementations of popular education efforts. A focus solely on educational efforts, without the concurrent analysis of problematizations of the computer, ran the risk of missing out on why these efforts were described as important (and thereby realized). A focus solely on the discursive preconditions that shaped the digital citizen would have missed out on how they also produced material effects, for example in the shape of specific courses and efforts. Following this line of argumentation, I believe that a rewarding approach has been to, in fact, draw from many different sources of data.
Summaries of papers

This thesis aims to map out and explicate how and why citizenship and computers have become so closely connected, and further to explore the role of popular education in this relationship, by historicizing and analyzing the relationship between computer politics, citizenship and popular education politics. The thesis consists of four studies. The first, a study using interviews and participatory observation, was used mainly to frame the problem area for the ensuing thesis work—that citizenship and digitalization are increasingly co-construed. The main thrust of the thesis can be found in the following three studies, which should be seen as genealogical swoops that examine how this co-construction has been politically and historically contingent.

Paper I: Ubiquitous computing, digital failure and citizenship learning in Swedish popular education

This paper constitutes this thesis project’s genealogical starting point. As such it is not so much a direct answer to one of the research questions I have asked, as it is a reflection of Foucault’s idea that genealogies must begin in the present. The paper poses the question: How do adult students enact citizenship, and what discursive and material conditions make certain enactments more or less possible? The paper then draws on 37 interviews with adult students at Swedish folk high schools, and focuses on the everyday material-discursive enactments of interactive media in adult students’ statements about citizenship. Applying a post-constructional perspective, the analysis reveals how students’ statements about citizenship are made possible by ever-present media technologies and the associated practices of “living in media”. Students’ statements continuously reiterate how notions of citizenship are entangled with the internet (and other new media). However, while new media are deeply embedded in the everyday lives of citizens and enable important citizenship enactments, they are also a source of
discomfort, giving rise to ambiguous statements. These double-edged statements refer on the one hand to negative implications on physical health, distraction from important tasks and over-reliance on the internet as an everyday need, and on the other hand to improved access to information, convivial communities and empowered citizenship.

The main takeaways from this paper are three. Firstly, the empirically grounded insight that digital technology is a fundamental part of being and acting as a citizen today. Secondly, an observed ambiguity, or “double-edgedness”, of this interlacing of citizenship and digitalization. And thirdly, an awareness of, and continued focus on, the role of popular education as one form of education specifically stressing (digital) citizenship. These understandings led to the more overarching question of how these circumstances have emerged through history—which is more thoroughly addressed in the three following papers.

Paper II: Popular education and the digital citizen: a genealogical analysis

This paper begins to historicize and problematize the concept of the digital citizen and how it is construed in Sweden today. Specifically it examines the role of popular education in such an entanglement. It makes use of a genealogical analysis to produce a critical “history of the present” by mapping out the debates and controversies around the emergence of the digital citizen in the 1970s and 1980s, and following to its manifestations in contemporary debates. This paper argues that free and voluntary adult education (popular education) is, and has been, fundamental in efforts to construe the digital citizen. A central argument of the paper is that popular education aiming at digital inclusion is not a 21st-century phenomenon; it actually began in the 1970s. However this digitalization of citizens has also changed focus dramatically since the 1970s. During the 1970s, computers and computerization were described as disconcerting, and as requiring popular education in order to counter the risk of the technology “running wild”. In current discourses, digitalization is constructed in a non-ideological and post-political way. These post-political
tendencies of today can be referred to as a post-digital present where computers have become so ordinary, domesticized and ubiquitous in everyday life that they are thereby also beyond criticism.

The paper shows how the relationship between citizenship and computerization changed over the 1970s and 1980s, relating these changes to the present. It also begins to explore how popular education is imagined in this relationship — as it shows how the relationship between foreseen problems and solutions has the effect of shaping not only the types of educational efforts that are already (and can be further) realized, but also, by extension, which citizens are and will be construed as appropriate targets for education (something which is further elaborated upon in Paper IV). The paper conclusively argues that government action, in the form of broad information campaigns and popular education directed at citizens, is an important but often neglected aspect of the computerization of society, both historically and today.

Paper III: Computing the Nordic way: the Swedish labour movement, computers and educational imaginaries from the post-war period to the turn of the millennium

This paper provides a deeper look into one group of main actors at the historical intersection of citizenship, popular education and computerization—the Swedish reformist labor movement associations. Jumping back to the 1950s, this paper illustrates how computers have been described as a problem (and sometimes a solution), and the role of popular education (in the form of non-formal adult computer education, awareness campaigns, social programmes and liberal computer education) in solving these problems. The labor movement debates have concentrated on both the growing opportunities and the increasing risks, but almost always also on the need for corresponding education. The paper shows how, from the 1950s on, popular education has been mobilized as an important tool for governance in Swedish computer policies. Certain themes dominate the discussion over time: the 1950s and 1960s are dominated by tensions between increased welfare and increased
spare time for workers; the 1970s are characterized by a bleaker picture of computerization, where control and surveillance are expressed worries; the 1980s sees the rise of an unstoppable technological development, where certain risk groups are identified as potential future losers; and in the 1990s, access (to computers) becomes a watchword, and the various subsidiary efforts to help people get their own home PC reflects an individualization of computer education efforts.

These results show the importance of historicizing computerization discussions, in order to get at the underlying meanings of what is conceptualized as “new”, and thereby also parallel demands of new popular knowledge. Such a perspective can also identify how the artefacts, processes and policies that we think of as historically ground-breaking may have longer and stranger histories than we first anticipate. Problematizations of the computer have changed over time, and these discursive reconceptualizations can be described as existing on a spectrum between techno-utopian visions, where adaptation of the human is seen as a task for popular education, and techno-dystopian forecasts, where popular education is needed to mobilize democratic control over threatening machines. As such, the goal for popular education has been one of political control—either to adapt people to machines, or to adapt machines to people.

Paper IV: The ironies of digital citizenship: educational imaginaries and digital losers across three decades

This paper reports on the expanded examination of the various “losers” in educational imaginaries. “Losers” is a term that reflects ideas of which groups of people that were imagined as particularly vulnerable or at risk during the impending computerization of society. As such it poses questions such as: What problem is the “digital citizen” a solution to? Who has been presented as problematic, and subsequently, who has become the primary target for educational solutions? What skills have been described as indispensable for the digital citizen during different periods in
history? By using Sweden as a vantage point this paper provides both concrete examples and perspectives on transnational discourses. Again, the focus of the study is on discourses concerning non-formal adult education, in the form of awareness campaigns, social programmes and adult liberal education about computers aimed at the general citizenry. A number of genealogical swoops are made, eliciting new empirical material from three periods in time: the 1950s, the 1980s and today. The contribution is a critical take on how the citizen has increasingly become connected to digital technologies, and how this convergence has at the same time created digital exclusion. Relating back to the research questions posed in this thesis, the change over time can be described as a shift from governmental control relying on specific imaginaries of techno-utopianism towards commercially driven, and abstract, digital inclusion. The ambition has always been to bring all citizens on board for the creation of the desirable future. However the notion of “all citizens” has also enveloped conceptualizations of the normal, and the “othered”, of those who need to be adjusted, and those who do not. That is, computerization has been construed as requiring certain skill- and mindsets, so much so that a new type of (desired) citizen has been construed. Everyone who ends up outside this new type effectively also ends up in the “upside down” of digital citizenship. What these groups of people have in common is that they were already vulnerable groups who were regarded as marginalized, problematic or different. In other words, it is the already excluded who need to be included through education.

In a wider sense, this can be related against the fact that our use of digital technologies, platforms and infrastructures is today often portrayed as part of an autonomous technical development, guided by clever and independent innovations, rather than broad sociotechnical imaginaries that inspire parliamentary support and governance. For the past 70 years or so, non-formal adult education about computers and computing has been a key part of political ambitions to create a desirable future. Thereby, the paper sheds light on the often-overlooked structural and societal efforts that have historically shaped the digital citizen (and the digital loser) of today.
Illustration 7, Excerpt from course book: Datorer - på våra villkor (Björk & Saving, 1975, p. 6)
Discussion: How and why are computers and citizenship so closely related?

In this chapter I will discuss the combined result of the papers, aiming to synthesize a meta-analytical perspective. The ambition is to map out and theorize overlaps between different types of imaginaries, as they are enacted across citizenship, computerization and popular education. Computerization, and the forms of governance it implements, is both material and discursive in that it has a close relationship with the specific technologies of its time. It is also a matter of how to prepare for and work towards a potential future. One way of phrasing this could be to say that we do not live with the technologies of today (and yesterday) only, but also, to a large extent, with imagined future technologies and their foreseen effects. In many ways, education is about preparing for the future. As such, the connection between educational imaginaries and sociotechnical imaginaries is one where education is always looking to, and even adapting to, future technologies and future technological society.

In his book on the role of collective imaginaries in social life, (Bouchard, 2017) outlines what he refers to as a model of mythification, representing a dynamic interaction between four closely related components (social myths; collective actors; target population and power relations). In order to accommodate various levels or spheres of application, this model is presented as an ideal type (in the Weberian sense). As such it denotes characteristics and elements of a given phenomenon, but at the same time it does not correspond to all potential characteristics of any specific case. Instead it articulates the components that are common to most cases of the given phenomenon. For my purposes I have proceeded from this model, but tailored it to firstly reflect the theoretical concepts used in this thesis, and secondly to question parts of the structural layout of the model (i.e. representing power relations as a component
Figure 3. Educational imaginaries as an ideal type.

of the model (Bouchard), rather than a relation (me)). Thus, here power is understood in a Foucauldian sense — not as something one holds, but as a reproductive force; power generates effects. This ideal type of educational imaginaries consists of four components (not including the power relations between them, represented by the double arrows).

In this model educational imaginaries consist firstly of problematizations (or problem-solution coordinations) as developed in the Foucauldian-inspired post-structural analysis, by Bacchi (Bacchi, 2009, 2012, 2015). Here the function of problematizations is primarily to designate something as a “problem” — ideally a problem that also has a corresponding designated solution. Collective actors—policymakers, governments, social movements, popular education institutions et cetera—are mainly those with the agency and mandate to act in a “sphere of policy production”. The target populations are (in this case) mainly groups of citizens who, for varying reasons, are seen as in particular need of particular forms of education—acting in a sphere of reception, appropriation, adaption and redefinition (Bouchard, 2017). The final component of the model is technology—which, I will argue, is practically always an important part of educational imaginaries and its problematizations (from electricity, books and slates to the internet, smartboards and virtual reality headsets). While this thesis has arguably had technology as its main focus, it is hard to ignore the fact that new technological developments are repeatedly invoked as
motives for change in educational imaginaries. Power relations between the components will vary, of course, and provide fruitful units of analysis in themselves.

One of the things the model achieves is to clearly illustrate the interconnectivity between its structural components. The power relations are operative in the model, and educational imaginaries can be regarded as emergent functions of the components and their performative relations. Therefore it is sometimes hard to precisely distinguish one component from the other in a clear-cut manner—simply because they are dynamic in their relation to each other. In the words of Karen Barad (2007), they are intra-active, i.e. mutually transformative. In the light of these assumptions, I will now move on to discuss the results from the studies reported in the papers, based on the components and relations explicated in the model above.

Problematisations

To briefly recapitulate the theoretical definition, problematisations are essentially a Foucauldian concept, referring to the (production of) ‘objects for thought’. Bacchi (2012, p. 1) states that:

Foucault employs the term ‘problematization’ in two ways: first, to describe his method of analysis and, second, to refer to a historical process of producing objects for thought. His particular method of analysis, which he calls ‘thinking problematically’ (Foucault, 1977, pp. 185-186), is the method just described, where the point of analysis is not to look for the one correct response to an issue but to examine how it is ‘questioned, analysed, classified and regulated’ at ‘specific times and under specific circumstances’ (Deacon, 2000, p. 127). In the second meaning problematization captures a two-stage process including ‘how and why certain things (behavior, phenomena, processes) become a problem’ (Foucault, 1985, p. 115), and how they are shaped as particular objects for thought (Deacon, 2000: p. 139; see also Deacon, 2006: p. 186 fn 2). These problematized phenomena become problematisations, the foci for study.

When analyzing policies (as a broad site common to problematisations) the focus is on how problems are constituted, conceptualized and charged with specific meaning rather than on the “factual” (or presumed factual) problematic conditions (Bacchi,
2016). The genealogical empirical swoops made in this thesis show how in the 1950s problematizations were centred around the building of a welfare state. Notions of adapting citizens are central—and this took two forms. Automation was imagined as only to some degree replacing workers. Rather it would create both more work and greater protection for workers (who would now be in charge of the expensive machines). As such, an increasingly technical society needed to be balanced through increased cultural refinement and sophistication. Of course society would need more people educated in technology, but since technology also demanded great responsibilities, a character-building educational foundation was seen as important. This education would provide people with the necessary abilities for a future where society changed constantly. Thus, humans needed to be adapted to a new kind of society—including both new working knowledge, and new recreational ‘bildung’, which would have beneficial synergic effects.

The 1970s sees more techno-sceptical discourses, and problematizations include visions of stakeholders, who control capital as well as means of production, that will safeguard technology to primarily cater to their interests. That is, under the capitalist order of things, there was a perceived risk that the computer would be used for oppressive purposes (or even become an oppressive “computing power” in itself). Neutrality of technology is described as a myth. An important solution to the potential problems of computerization was thus to educate workers and citizens about computers and thereby provide them with the capacity to control, govern, and, if necessary, even to stop computerization.

During the 1980s, the notion of an “unstoppable computer development” became more common, and anti-technological discourses are seen as reactionary. It was, again, central to focus on the utopian aspects of technology. The main goal for popular education was to get everyone on board in the progressive development, and education was seen as increasingly compensatory—by strengthening the knowledge of citizens, one could lessen the risk of them becoming “lost generations”. Education was also seen as a way to increase the competitiveness of the nation, and to create a compromise between employers and employees when it came to implementing computers in the workplace. In the 1980s,
computerization was again seen as positive, but unlike the 1950s, the good computerized society could not only be realized through technology. Rather, computers had to be built for the desired purposes. Education was seen as a central building block for this ambition to be realized.

By the end of the 1990s, debates shifted towards problems associated with unequal access to computers—a problematization which lingers to this day. Computers were increasingly framed as “information technology”, and access to IT was consequently regarded as access to information. The citizen was increasingly conceptualized as a user, and access to IT was regarded as a distinct asset which needed to be distributed equally amongst the population. Several projects were launched, for example by unions, but also the government, to facilitate and equalize ownership and use of computers.

Nowadays, a political coherence regarding digitalization seems omnipresent, both on national and transnational levels (e.g. European Commission, 2014). Access to digital media technologies is seen as a human right (United Nations, 2016), as important as access to clean water or electricity (House of Lords, 2015), and with significant impact on the health and economic well-being of citizens (Tinder Foundation, 2016). As such, use of digital media technologies is seen as a prerequisite for acting as a citizen. Digital inclusion becomes equal to societal inclusion (Swedish National Council of Adult Education, 2013b).

Current (and historical) problematizations see conceptions of technology entangled with ideas about which knowledge citizens need, now and in the future. This is fundamental to the general type of digital citizen that is being construed. Changes in (imaginings of) technology push changes in (imaginings of) education. As mentioned earlier, this pertains to what desired type of citizen is being construed, and what skills this citizen should possess. Digitalization is today also put forward as the best solution to all kinds of problems, ranging from social exclusion to environmental problems and lack of housing. Further, popular education is still imagined as important in facilitating digital inclusion. In the popular education political document, *Folkbildningens Vägval & Vilja*, the government emphasizes digital participation as a priority for popular
education: ‘Democratizing digitalization is a mission on par with the introduction of reading and writing’ (Swedish National Council of Adult Education, 2013b, p. 27). Thus, utopian descriptions of digital potentials are again typical, but the positive effects are, if possible, even fuzzier. As such, current discourses are dominated by a lack of friction, where everyday smoothness, efficiency and constant connectivity replace utopian social visions of digital technology. Further, as this replacement is located in an omnipresent system of power asymmetries, it will also serve the interests of those in power.

In a culture that glorifies individual material success and applauds extreme competitive behaviour in pursuit of success, inequality becomes a sign of success for those who win. (Acker, 2006, p.459)

To summarize, for the past 70 years problematizations in their relation to (computer) technology, collective actors and target populations have been key components in political ambitions to educate an appropriate future citizen. That is to say that computers have always been associated with educational imaginaries. Popular education has repeatedly been set up as one of, if not the, most appropriate and effective forms of education for adjusting the citizen to the effects of computerization, promoting computer literacy and later on, fostering the completely digital citizen. It has been imagined as particularly suitable in getting people to use, evaluate and influence digital media technologies, but also to evaluate and harness the risks associated with computerization. Societal organization, including the control of its citizens, is thereby partly upheld through education(al imaginaries) about digital technologies and their potential effects on stakeholders. By studying problematizations of the computer, in relation to collective actors and target populations, educational-political ambitions based on dreams, hopes, and imagined risks, can be made visible.
Collective actors

Collective actors can be seen as key stakeholders in the production of problematizations. They are of course not solely authoritative, and their relationships to the other components of the educational imaginary model are often complex. When it comes to the production of (problematizations in) collective imaginaries, Flichy (2007), and the edited volume by Jasanoff and Kim (2015), point to several possible types of collective actors: the scientific community and renowned individual scientists; companies and business leaders; social movements; educational institutions; political parties and prominent politicians; NGOs; public and legislative authorities; news media; popular culture and marketing, as well as popular science books, magazines and authors, to provide a non-exhaustive list. Of course, both within and between these groups of collective actors there are also power relationships and negotiations, or competition, over what we might call standardized problematizations (i.e. problematizations that are more or less agreed upon, and which are recirculated across collective actor outlets). Looking at the studied material, relations between collective actors are characterized by a circulation and continuous redistribution of agency and power between the governing state, social movements and the market. Notably, these actors also overlap, and boundaries between them are at times difficult to maintain.

For this thesis I have mainly analyzed material from public authorities and public education institutions. Therefore it may not be surprising that the role of the state comes across as significant. However I would like to stress that government initiatives to digitalize citizens, and to adapt them to a digital society, have been very important in the digitalization of the Swedish society for the past 70 years, something which is also, somewhat surprisingly, often neglected.

In the 1950s, the social democratic Swedish state effectively functioned as a risk capitalist in Swedish computer development. In 1953, said government financed the construction of Sweden’s first computer—one of, if not the, fastest in the world at the time—BESK. This machine was, in international competition, very fast. In fact, it outpaced the American ENIAC by many times—at least for a few
weeks. The government was consequently an influential actor and procurer in producing and guiding problematizations around automation and computerization during this time. Its main ambition was arguably to adapt people to an impending computerization of society, characterized by increased welfare and more free time. If computers in the 1950s held a promise of utopia, this idea shifted in the late 60s and early 70s, when computers were increasingly discussed as dangerous, and associated with imperial capitalism, surveillance, citizen control, an invasion on personal integrity, and exploitation of workers. These potential problems with computers were seen as so pressing that stopping the development was actually discussed. In some cases, the imminent computerization of certain workplaces was in fact stopped by striking workers (Ehn, Erlander, & Karlsson, 1978).

The main problem in the 1970s was imagined as one relating to control—who actually controls the computers? Leaving control to the government or the market were both options which were regarded as deeply problematic. During this time many heated public debates regarding computer technology took place in Sweden (Söderlind, 2009). Several stakeholders, mainly outside of the government, had become sceptical towards the potential benefits of the computer. In the early 1970s the computer had, for many, instead become a symbol of a large-scale, technologically determined society and all the problems that came with it. An important solution to the potential problems of computerization/automation was to educate workers and citizens about computers, thereby providing them with the capacity to control, govern and, if necessary, stop computerization. In 1978, 100,000 people took part in a study circle called ‘Computer use’, developed in collaboration between the Swedish Trade Union Confederation and the study association Brevskolan. In the course, participants were encouraged to examine the historical development of technology in the workplace, focusing on how it has affected working conditions, work content, values, power asymmetries and control over work.

The social and public critique of computerization that characterized the 1970s shifted in the 1980s. Grand government efforts to educate the whole citizenry were once again launched (e.g. the ‘Broader education and training in EDP’), but more to keep
people from “lagging behind” in an unstoppable computer development. During the 1990s, collective actors emphasized access to technology, and governments (as well as unions) subsidized purchases of hardware and software (and, to some extent, also education), effectively helping Swedish households go online. Today, digital society is controlled not only by governments, but by multinational corporations, acting on a competitive market. From a government perspective, computer knowledge is still a popular educational (techno)fix that cures exclusion—a pedagogical regime that takes lifelong learning as its governing ideal. Thus, in problematization terms, the digital citizen as a solution is construed as the normal and desirable state of being, but at the same time it also creates the problem—someone who is digitally excluded (the unwanted and abnormal). Popular education actors themselves also emphasize their role and responsibility in increasing digital inclusion. The Swedish National Council of Adult Education claims, citing the latest report from the Internet Foundation in Sweden, that popular education has an important role to play, mainly because popular education can reach those who have no interest in using digital media, as well as those who thinks it is too troublesome. The argument goes: ‘popular education provides an accessible and softer way to gain new knowledge. Using a pedagogy adapted for those who have not dared, or for other reasons have avoided, to approach the digital world’ (Swedish National Council of Adult Education, 2018).

In the studied material, and as can be discerned from the text above, boundaries between actors are sometimes not very distinct. Berg and Edquist (2017) have branded the construction of popular education as part of the free and voluntary civil society, a process of ‘autonomization’. By using this concept they refer to the idea that certain actors are positioned as autonomous, while still also executing governmental functions. Thus autonomization is to some extent an illusion—an ideological construct, which helps produce, and reproduce, the notion of civil society, but also the notion of free and autonomous citizens, who independently shape themselves through education. The idea of autonomization becomes a useful concept to this thesis in order to problematize the collective actor component of the educational imaginaries model. The state has, in
many ways, used popular education in attempts to reach computer educational goals, for example in efforts to reach adult citizens. As such, popular education was a way to manufacture consensus and to convey a sense of transparency around computerization. Popular education was seen as an adaptable actor that could quickly respond to new circumstances: ‘compared to study associations, the traditional procedures of the school, including curricula and funding, have probably been a nuisance’ (Nissen & Riis, 1985, p. 14). So, by delegating computer political ambitions to swift, open and citizen-grounded popular education, such ambitions have been re-cast as democratization processes, rather than state governance. As such, power relations between actors become central, also as an emergent effect of the enactment of imaginaries.

According to Foucault, power of domination is reproduced in rules, rituals and the carefully designed procedures that distribute rights and obligations. As such, a genealogical approach is not only interested in the creation of meaning, but also in revealing systems of domination and submission. This means that:

Humanity does not gradually progress from combat to combat until it arrives at universal reciprocity, where the rule of law finally replaces warfare; humanity installs each of its violence in a system of rules and thus proceeds from domination to domination (Foucault, 1984a, p. 85).

Foucault presented systems of rules as colonizing regimes of dominance. The argument is that “success” throughout history is the same as controlling, or dealing with, the systems of rules. The term “to deal with” does not only entail a following of rules, but also an ability to use the rules against those who created them—that is, to shape, pivot, obscure, hide from and redirect rules. In relation to the inherent political aspects of technology (Winner, 1980), collective actors can thus be theorized as actors controlling or dealing with a (technological) system of rules.

Over time, many different collective actors have of course shaped problematizations in relation to technology and target populations. However a plurality of these actors has also performed state functions, as collective actors also have to relate to, handle, pivot, but mostly conform to, the general political agenda. At the same time, the role of the state has increasingly converged with that
of the market—it is complicated to remain outside the digital imperative today, and as such the necessity for states to be interventionist in targeting populations is transformed. The interventions and efforts are instead focused on including the digitally excluded into a state-market hybrid of digitalism.

Even though borders between actors are blurred, when many actors collectively uphold systems of rules, it becomes a system of standardized problematizations. An efficient collective actor is one who can adapt to the system society—a holistic system made up of many components, shaping a totality, which is more than the sum of its parts. The system society preceded computerization, but is strongly compatible with it—in effect, they have a reciprocal relation. As such, the computerized system society represents an imaginary of a seemingly self-organizing society, where the political intermingling of humans and machines is neutralized.

One way of achieving this is to hide the labor of production, and to present technological artefacts using almost magical characteristics (Suchman, 2007). Another current example concerns the fact that someone must produce the huge amounts of big data that machine learning and artificial intelligence will operate on (and learn from). The enormous efforts in AI development are underpinned by a continuous access to new data—data many times produced by digital citizens. The key issue is not to adjust people to machines (1950s), or to adjust machines to people (1970s), but to incorporate people into a ubiquitous algorithmic system society.

Today, the digital citizen is a seemingly autonomous actor, whose enactment of citizenship is in fact conditioned by various socio-technical preconditions. The digital citizen is thus both an individualized and an aggregated actor who sustains the digital imperative. Decisions about citizens are increasingly relocated to (digital) places where they are no longer presented as judgements, but as facts. Decisions are made invisible, since they are no longer political evaluations, but objective results. As such, the digital citizen also becomes a detached and apolitical concept—a necessary effect of computerization, rather than a historically emergent and politically charged figuration negotiated by collective actors.
Illustration 8. Excerpt from the course book: *Datorer - på våra villkor* (Björk & Saving, 1975, p. 75)
Target populations

The main target group included in (popular) educational imaginaries was, for a long period of time, the general citizenry. Everyone was seen as in need of some educational adjustment to handle the effects of computerization, or to control the technical development. Nevertheless, certain groups have also been problematized as particularly important targets for popular education efforts.

In the 1950s, when the debates on societal effects of automation erupted, the main problem was to adapt people to the social effects that computers were depicted as causing. In the 1950s there was a strong optimism about computer technology. Although a growing need for an educated labor force was foreseen in order to secure a better future, differences in talent, capacity and intelligence were anticipated to affect opportunities in the future. Through scientific methods, the most suitable candidates for re-education could be identified. These sifting procedures would also constitute a fairer way to determine futures, compared to letting economic conditions determine an individual’s possibilities. The educational reserve of the 1950s was thereby already “datafied” by being subjected to (technological) measures of aptitude. These measures were also already intersectionally structured (based primarily on an able-bodied male hegemony).

Consequently, both women and “low talented” people were problematized as others, but in different ways. Through computerization, women were still described as having somewhat increased opportunities to combine work and care, and thus (conditionally) take part in the better future. Nevertheless, these “losers” of deindustrialization were particularly described as targeted for “adjustment” via social reforms and political actions (although everyone needed some adjustment). The mission of the welfare state was to make sure that individuals could reach their full potential, while simultaneously realizing a good future for the nation as a whole. As mentioned above, everyone was seen as needing some adjustment, but the end goal of automation and new technologies was described as creating happier citizens and a more prosperous society for all. Thus, humans needed to be adapted to this new type of society. As mentioned above, optimism was generally strong.
However, at the Workers’ Educational Association (ABF) conference in the mid 1950s, the question was raised whether everyone really would benefit from an increase in spare time:

It is not a bad idea to ask questions such as: Is an increase in living standards, and the consequential emergence of new human needs, only positive? Is everyone really capable of, in a real and sound way, making use of an increase in free time? Are continued social benefits and reforms always beneficial to society and people? And where will we go after that? What we have referred to as social security has grown over time, but is the individual person herself safe and in harmony? Is it not hard for her to adjust and find herself in our complex society, and does not many of us still feel emptiness, loneliness and insecurity? (Lundquist, 1956, p. 156). (My translation)

Popular education efforts regarding computers have rarely been technology-focused courses about handling a computer (although such courses have existed); they have often taken the form of enlightenment ambitions aimed at large parts of the population. As such, education has taken the form of mass education about the societal impacts of computerization. A major part of the courses was about how to make people aware of the potential dangers of computerization. When computers become more of a problem in the late 1960s and early 1970s, mass education aimed at the general citizenry is imagined as the main solution. If the educational imaginaries of the 1950s focused on adapting people to an impending high-tech future, the educational imaginaries of the 1970s represented the opposite—adapting machines to people’s needs. Knowledge of computers was regarded as important in order to control the threatening computing power. An illustrative example of this was that at the time, the Nordic countries conducted policy-driven workplace-based research and education initiatives, where a special ambition was to include “low-skilled” professions in the knowledge production of computers. These initiatives are often referred to as the ‘Scandinavian approach’, and are basically the starting point for the field now known as participatory design. The purpose of the education was to strengthen the position of workers and to provide them with tools to express requirements on computer systems, but also to develop computers system in line with their
needs (J. Carlsson et al., 1978; Ehn & Sandberg, 1976; Gunnarsson, 2006; Palme, 1976). In practice however, the educational efforts were often aimed at those who were regarded as more qualified for computer use within the low-skilled professions—something which created marginalization within groups. Norms relating to who the qualified worker was, and whose knowledge counted, had consequences on popular education and other educational efforts regarding computers (Gunnarsson, 2006). Interestingly then, many of the roots of participatory design arguably emerge from popular education projects, and an important insight is that while efforts were made to include the marginalized, the underpinning conceptualizations could very well create new forms of marginalization.

Turning towards the 1980s, everyone was again the target population to be educated—this time in order to not become lost generations. Popular education is positioned as an important educational form (through its free and voluntary approach), but there is also a clear individualization of education (where it is the individual’s choice whether to take part in education or to be left behind by the rapid progression). The Swedish social democratic government decided to launch what they described as the largest educational reform in Swedish history—the ‘Broader education and training in EDP’. It was stressed that this computer educational effort needed to be a mix of citizen education and work life education, enveloping the following areas:

a) Usage of computer systems on a societal, business and personal level
b) Company structure, organization of labor, duties, professionalism and the connection these concepts have to computer systems
c) An orientation in the meaning of systems development and computer programming
d) The operational structure of the computer and its functions
e) An orientation in what is unique about computer technology and about the impact of “invisible” software
f) A summary of positive and negative consequences
g) An understanding of computer politics
h) A certain training in “running” various applications
i) Knowledge of further education opportunities

(Commission for Informatics Policy [Datadelegationen], 1985, p. 10). (My translation [quotes in original text])
It is seen as very important that people understand that EDP systems do not represent and process real information (data) about the world, but actually administer ‘conceptions, ideas or values, that a few people are ‘building into’ electronic rule-based systems’ (Commission for Informatics Policy [Datadelegationen], 1985, p. 89).

Educational efforts at the time were aimed at the entire population, but particularly targeted the groups who showed the least interest in computerization, as well as those who were depicted as less educated in general. These groups were (again) conceptualized as being women (especially blue-collar and migrant women), but also people with special needs. Women, if they were not provided with real influence in computerization processes, were specifically tackled as in the risk zone of becoming the “computer illiterates” of the future. As a solution, the government decided to initiate a special computer course, where low-skilled workers were offered popular education during work hours, with pay. Low-skilled women were specifically targeted and recruited through outreach strategies, and in certain workplaces all women participated in the course.

In a similar way, a focus on women with limited education led to the development of the Trade Union Computer (Swedish: LO-datorn) by the Swedish Trade Union Confederation in the 1990s. This computer was described as a compensatory effort following the logics of redistributing more to those who generally got less. A few months after the launch of the LO computer, the Swedish government decided on a computer subsidy for everyone (who had a job). This effort can be seen as tying back into the 1980s attempts to redistribute (computer) resources, but this time there was a stronger focus on access than on education or knowledge. Even though the efforts are not explicitly aimed at all citizens, but only at union members and employees, the subsidy has been described as essential for computerizing the Swedish households.

From the turn of the millennium, focus increasingly shifted from the general body of citizenry to those who have neither the technology nor the desired knowledge. Even though digital competency is a ubiquitous requirement in current times, not everyone is conceptualized as in need of education. In fact, most people are not. The vast majority of adults are already digital, and
educational efforts are, today, instead directed to the few—those on the outside. In this context, popular education efforts display an interesting logic: the people targeted for educational efforts are people who have been pushed to the brinks of society. Now they just need to be “reformatted” as digital to become citizens (again). The efforts are thereby directed towards those who are often described as the already most vulnerable people in society: migrants, homeless, people with mental health needs, and the elderly (Swedish National Council of Adult Education, 2018).

The non-user of the computer is no longer depicted as left behind in the technological development, but as left outside of society. In 2018, 47% of those who do not use digital media technologies say that they are not interested in the use or, for that matter, usefulness of them. Very few refer to a lack of access, or lack of time, as a reason for non-use. (Davidsson, Palm, & Mandre, 2018). As such, use is no longer a binary category (i.e. use vs non-use). Instead there are new categories and divides. “Rare-users” and “super-users” are two new categories presented as important to understand the “media landscape” of today. Those who are described as digitally excluded are then not (only) those who do not use digitally networked media technologies, but also those who only use it a few times a week (Davidsson et al., 2018). So, even though more and more people are using digital media, digital exclusion is not decreasing, it is growing, since people who are not using it “enough” are now also depicted as digitally excluded.

Further, “shallow use” (e.g. extensive gaming, gambling and shopping) is also a problem (van Deursen & van Dijk, 2014). Additionally, digital exclusion is also problematized for those who are swayed by “fake news” and “fictitious facts” (Swedish National Council of Adult Education, 2018). The imagined problems relate to excessive, insufficient and misguided use of digital media. This is in turn connected to lower levels of education. Accordingly, the European Commission’s recent review of key competences for lifelong learning stresses the need to encourage “responsible participation” in digital society (European Commission, 2018). The digital citizen is consequently not only someone who uses digital media technologies enough, but someone who uses them properly—
as well as someone who constantly “keeps up with” technical developments.

For most target populations, the governance of the digital citizen becomes an effort to increase self-governance. As such it is the individual’s responsibility to always update herself, to maneuver and adapt to the algorithmic control of her citizenship, to escape her filter bubble, to learn to distinguish fake news from “real news”, and to regulate and remedy her (over)use of persuasive digital technologies. The (desirable) digital citizen of today uses digital technologies “just enough”, and in ways that make her economically competitive. The digital citizen of today is construed as an active, informed and engaged citizen, who, through digital technologies, effectively interacts with authorities, takes active responsibility for her own health, and makes informed and independent choices. For example, digitally competent and confident citizens are described as having the possibility to “drive innovation”. Further, it is seen as urgent that citizens have an opportunity to contribute and participate in the digital society, but not to change it. They are concurrently not imagined as evaluating, developing or changing technology, they are primarily conceptualized as what I will refer to as prosumer citizens. Such prosumer citizens, and their activities, are described as important in enabling a democratic society, and as ensuring future possibilities for the individual. Important abilities today are entrepreneurship, learning to learn and computational thinking. Computational thinking can be defined as the ability to (re)phrase a problem so that it can be solved by a computer. Thinking within the digital imperative is thereby encouraged. The digital citizen can be understood as a product of, compatible with, and in reciprocal relation to, the advanced capitalist society.

An example of this is how digitally excluded groups are also imagined as economically beneficial to digitalize. Because of the growing ageing population, and an impending future where more people will need more expensive medical treatment, societal costs will rise severely in the coming years. The European Commission stresses that e-health initiatives will be crucial in keeping healthcare affordable and accessible. Also, the development of care robots is described as part of the solution to the problem of an ageing population. The elderly are thus imagined as a group that will need
more digital solutions, while also being a digitally excluded group. As mentioned before, the primary reason for this is their disinterest. As such, both the EU and Sweden are stressing the importance of enticing and encouraging the use of digital media technologies with the elderly.

In summary, the target groups of current times are 1) those who are already outside society and for whom a promise of digital inclusion is a promise of societal inclusion; 2) the non-user or rare-user who needs motivation in order to want to be digitally included, and finally 3) groups seen as not possessing the capacity to keep up with development (i.e. non-users), or seen as using digital technologies too much or too superficially (i.e. wrong-users) and therefore need to be corrected. These target groups can be seen as the digital losers of today. “Loser” is here to be understood as a figuration (Haraway, 1992a) of historical contingencies—groups who, through different governing methods, need to be adapted and regulated. That is, there is a power asymmetry built into the dichotomy of winners and losers, where winners become symbols of the desirable normalcy. When issues of power are individualized and delimited to winners and losers, or the digitally included or excluded, many other issues are obscured. Lani Guinier (2002) illustrates this phenomenon with a story of a number of children competing against each other in a simple game for kids. Boys and girls competed against each other, and the girls repeatedly won. Adults, observing the game, soon began to try to deconstruct the game to find out why the girls were winning; were they really better than the boys? Were they more team-oriented, or did they have better motor skills? What was wrong with the boys? Discussions went on for a while until a grandmother of one of the children interrupted the debate, asking “Who designed the game?” The point of this example is that we tend to focus on who is winning and who is losing (and how to “fix” the losers). Rarely do we ask ourselves, who made the rules of the game we are playing, and even more rarely do we ask what is the story we tell losers, to get them to want to continue playing?

With increased computer use, new problems arise and new kinds of skills are required. For example, not only are non-users depicted as losers of the future, but so are “wrong” users. Digital competencies are increasingly defined as a continuum of making use
of digital technologies, describing a desired, or proper, use of digital artefacts. Inscribed in these descriptions are differentiations between deeper (better) and shallower (worse) use. While the general population today is digitally included, the target groups of today are not especially unique historically. Like previous targets groups, they are ordered in an intersectional logic of class, age and gender, and other ‘unifying signifiers’ (Lykke, 2010). A difference is arguably that the target groups for digital adjustment today are increasingly groups who do not themselves request popular education.

Technology

Of course, trying to briefly summarize computer technology development from the 1950s until today is a difficult task. Nevertheless, an abridged history may be necessary as a backdrop to the discussion of the thesis’ results in this regard. In an international context, the machines built in the 1950s were often backgrounded by military interests, and were large proprietary mainframes and minicomputers, developed for scientific, government and business applications. The 1960s saw companies like IBM and DEC introducing brand lines of computers. Their use was still regulated to universities, corporations, governments and the like. Home computers became a market segment during the 1970s and 1980s—Altair, Apple, Commodore and other vendors developed smaller, more user-friendly, and somewhat cheaper machines. During these decades, the transistor, the integrated circuit and finally the microprocessor changed the size and reliability of computers considerably—leading up to the personal computer (PC) revolution in the late 1980s and 1990s. The home market grew considerably, along with cheaper and more powerful memories and processors, and “recreational applications”, as well as home office applications, became common. The introduction of the internet not only spurred the adoption of computers even more, but also radically altered business and consumer behavior, effectively creating a hyperlinked global information infrastructure. Today, computational and networked devices are ubiquitous, and flat screen devices come in all sizes. A pervasive algorithmic culture is emerging, including an ambition to digitalize everything and put it online (e.g. the Internet
of Things). Artificial intelligence, virtual reality and (social) robots are arguably beginning to fulfil the imaginaries projected in earlier decades (or even centuries).

What the (extremely condensed) description above does not convey is that technologies can also be considered as inherently political (Winner, 1980). Technologies have characteristics, or specificities, that can have wide political ramifications. These specificities can also be designed with certain intentions, resulting in both expected and unexpected outcomes. Political intentions can be built into computer technologies, but more importantly in relation to this thesis: adopted computer technology can be seen as strongly compatible with a certain kind of society and form of governance. Certain technologies “require” certain power relations and social infrastructures in order to administer them. Winner, expressing a sophisticated view in between technological determinism and cultural materialism, thus claimed that technologies are not neutral. Interestingly, this position is also resounding in some of the material, and the collective actors, I have been studying—in particular in the period between the 1970s and the 1980s. Computers were seen as much too powerful to be allowed entrance in society without a serious consideration of their consequences.
As such, it is stressed that technology is not neutral:

Technology is generally conveyed as neutral. It is often stated that technology is not evil nor good. New systems for production are presented, by corporate managements, as “apolitical” technical solutions. Technology is removed from the political agenda. What is being taught at technical colleges, and what is developed at the R&D departments of companies are not seen as politically controversial. Add to this picture that technology is supposedly governed by an independent logic; it develops from stage to stage in a natural order, not influenced by human values. This is not a correct description of technology in society. These are myths, which have, for a long time, been manufactured and fortified. In fact, there is no ‘natural technological development’ independent of other societal conditions. At each stage, technological development contains many promises. Actual historical development will only fulfil some of these promises. As such, some services and products are promoted, while others are obstructed. It is the power conditions of society that guide what technologies emerge. Those in control of capital and the means of production make sure that technology mostly caters to their own interests. (Swedish Social Democratic Party, 1978, pp. 19-20) (My translation)

But not only are technologies suited for certain purposes, and thus not neutral, they are also always striving towards a future sociotechnical imaginary (Jasanoff, 2015), where an even greater technological realization is possible (utopian or dystopian). In the context of educational imaginaries it is not very surprising that the sociotechnical imaginary dimension of technology becomes particularly pertinent—technologies are always entangled in sociocultural dimensions, and the (imagined) effects of computerizations have been vividly problematized and actively governed throughout modern history. As such, the computer is more than a symbol (or artefact) of technology-driven modernity; it is also a technology fundamental to the fostering of good citizens and a desirable social future. For example, the automation of the 1950s was imagined as bringing a large and fast increase in standards of living, measured in such variables as increased spare time, increased wages and improved and democratized opportunities for education (Ivre, 1956). Practically everyone agreed that automation would be
a powerful tool in the service of rationalization and the increase of productivity. From an economic standpoint, this was also seen as the only way to increase standards of living, lift consumption, extend spare time and enrich the personal lives of the masses. The main question was not *if* welfare and free time would increase, but *how soon*:

> When can we reap the rewards of the development of new technology? We have heard so much about the technological innovations the future will bring: nuclear power, automation, organic synthesis and genetic plant breeding. Everything we have heard tells us that, if the world can live in peace, we can look forward to a future liberated from poverty, as the standard of living—even in the most advanced countries—will have multiplied for the better, all the heavy jobs will be taken care of by machines, and the part of our lives we devote to work will have significantly diminished compared to today. This dream is not new. But we can no longer deny that what new technologies are telling us now is that the realization of this dream is in a less distant future than we had ever dared to hope. In a world of such abundance the need to economize is less pertinent. It will become more of a question of doing what we enjoy, pushing the buttons that provide us with what we want. (Swedish Social Democratic Party, 1956). (My translation)

The quote above provides a striking example of a sociotechnical imaginary of the time, and even though computer technology is during this period (the 1950s) often *described* in neutral terms, it is clearly also strongly compatible with the idea of a social democratic data-driven society.

As mentioned above, the 1970s represent, interestingly, the most techno-dystopian imaginaries in the studied material. Technologies and technological development are seen as distinctly non-neutral and in need of control and close observation. This may have to do with large administrative systems entering the collective imaginary, and issues around privacy and surveillance surfacing and reaching critical mass(es). The computer became personal in the sense that it could have an impact on the life of an individual—and the sociotechnical imaginaries took a more disconsolate turn. In the 1980s, imaginaries around an “unstoppable computer development” portrays anti-technological discourses as backward-looking. It
became, again, central to focus on the utopian aspects of technology (which are, of course, also inherently political). Computer technology was at that time seen the core factor in creating the ‘good information society’, which would/should be characterized by increased business competitiveness, increased equality and developed democracy. Sociotechnical imaginaries of the time include descriptions of computers so small, cheap and powerful that they will be integrated into all domestic appliances. Searching for information in databases is also imagined as becoming a mundane part of people’s lives (Government Bill, 1984).

In the 1980s, socio-political issues relating to computerization were thus regarded as some of the most important challenges of the future. Notably, increased popular education was described as ‘one of the principal preconditions for the development and use of computer technology under democratic governance and control’ (Commission for Informatics Policy [Datadelegationen], 1985, p. 13). A survey made by Statistics Sweden (SCB) at the time reported that 2 million Swedes felt that they were in need of computer education; 1.5 million of these declared that the most important reason for needing a computer education is to be able to evaluate the social impacts of computerization (Commission for Informatics Policy [Datadelegationen], 1984). An important material precondition was also the enormous drop in computer prices (as mentioned in the introduction to this section). As an example, in 1983 the Worker’s Education Association (ABF) began its computer education with one studio consisting of a few VIC-20 computers. Five years later they had four studios with IBM compatible personal computers. In 1987 they stated that they could get a fully equipped studio at one third of the price compared to two years earlier (Focklid, 1987). Naturally, such a development had an impact on adoption rates, and associated imaginaries, surrounding both the computer itself and the distribution of computer technology in society.

Over the 1990s and around the turn of the millennium, the material increasingly refers to the computer as an information and communication technology, where access is presented as a particularly important prerequisite for democratic equality. The sociotechnical imaginaries are colored by ideas of equal and
universal access to technology—and the concurrent political efforts correspond to this idea. Personal computers in the home were charged with notions of getting onboard and online, as well as becoming educated and entertained—mainly driven by a logic stating that access was determinant. Today, commercial and governmental services are converging in descriptions of computer technology use.

Five years ago we noted that one million Swedes were not online. Today the number is half a million. But another 600,000 Swedes use the internet less than once a day. This means that 1.1 million Swedes do not use the internet at all, or less than once a day. For specific services the number is even less. For example 1.5 million Swedes do not use BankID. Another example is that every other person born in the 1940s does not use Facebook. Consequently, those who seek to invite their peers to their 70th birthday party should complement their Facebook events with, for example, an e-mail. (Davidsson et al., 2018, p. 4). (My translation).

As seen from the quote above, technology is treated as a universal category, even though it, and the sociotechnical imaginaries, are entwined with problematizations, target populations and collective actors.
The summarizing table below is neither a complete nor teleological representation of the historicized digital citizen, rather it is a tentative map of the genealogical swoops made in the papers, and a reminder of the inevitable entanglement of technology in educational imaginaries.

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<td>Problems</td>
<td>Leisure time explosion</td>
<td>Dangerous computing power</td>
<td>Keeping up with development; avoid being left behind</td>
<td>Unequal access to the information society</td>
<td>Digital exclusion = societal exclusion</td>
</tr>
<tr>
<td>Solutions</td>
<td>Meaningful spare time through social engineering and popular education</td>
<td>Collective technological assessment via popular education</td>
<td>Individual computer skills through popular education</td>
<td>Computers for everyone</td>
<td>Digital citizen</td>
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<td>Targets</td>
<td>Everyone (especially the un-educable)</td>
<td>Everyone</td>
<td>Everyone (with focus on women with short education)</td>
<td>Everyone (with jobs)</td>
<td>Vulnerable groups “outside society”</td>
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<td>Rationales</td>
<td>Adjust people for utopia</td>
<td>Stop dystopia</td>
<td>“Keep up” and create utopia</td>
<td>Create a strong “IT-nation”</td>
<td>Smoothness— but for what?</td>
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Table 3. Overview of educational and sociotechnical imaginaries and problematizations.

Throughout the studied material, and across different time periods, technological development is often described in terms of an autonomous force (utopian as well as dystopian), where popular education is mobilized to govern citizens in order to regulate said technological development. As such, digitalization was, for a long time, formulated as a political construction of a new system, where latent resistances were reshaped into problematizations, and thereby into solvable problems. The problems of computerization have, across different periods in time, repeatedly been rephrased as educational problems and solutions, where educating the entire citizenry through popular education has been imagined as a recurring remedy.
Conclusions

In conclusion, this thesis has begun to mapped out and explained how and why computers and citizens have become so closely connected, the continuities and disruption of this genealogical relation, and the role of popular education in this connection.

Drawing on previous research in the overlap between Swedish popular education history and historical computer politics, this thesis adds knowledge about how and why popular education has been an important tool in the historical-political-technological enactments of the digital citizen. This is, I will argue, an area of research that has been somewhat ignored in studies of both popular education and computer history.

By historicizing and analyzing the relationships between computer politics, citizenship and popular education politics, this thesis has shown that citizens and computers are now more entangled than ever before, but also that computer technology has, since at least the 1950s, had a significant impact on citizenship. This relation has shifted from managing the unwanted side-effects of computerization to imaginaries of total digital inclusion. Regardless of whether the sociotechnical imaginaries are colored by hope or fear—popular education is repeatedly imagined as one of the central solutions to realize the hopes and steer clear of the threats of computers. This thesis has further shown how imaginaries of popular education, as a silver-bullet solution to problems of computerization, have had important functions as governing tools for at least 70 years. The targets for popular educational efforts, such as social programmes, information campaigns and mass education, have often been the whole body of citizenry—although certain risk groups have also been seen as particularly important to adjust. These risk groups have been historically contingent, but often had in common that they are construed as already marginalized or problematic in some sense.
As such, this thesis makes two major and specific contributions:

- Empirically, the thesis unearths archived, and in many ways forgotten, discourses around the historical enactment of the digital citizen, questioning assumptions that are taken for granted in current times.

- Theoretically, the thesis proposes a conceptual model of educational imaginaries, and specifically introduces the notion (and method) of problematizations into these imaginaries.

These contributions, in various stages of completion, have made an impact in several overlapping fields, including citizenship education (Rahm & Fejes, 2015), adult education (Rahm & Fejes, 2017), digital culture studies (Rahm, in press), and history of technology (Rahm, submitted).

In conclusion, Swedish popular education has since at least the 1950s been imagined as a central solution to problems of computerization, but also to realize the potentials associated with computers. Nowadays citizenship is conditional by digital inclusion. Today, governing forces, and thus popular education, must work to re-include citizens in a society that they were already part of, but through an unmitigated computerization of society were gradually excluded from. Digital inclusion is imagined as solving societal exclusion, as well as adapting people to the ubiquitous use of digital technology: not too much, not too little, and in the proper way.
Future work

This thesis contributes to the disentangling of the relationships between digitalization, citizenship and popular education. In this disentanglement I have picked up, and pulled, certain threads, while others have been left untouched. Hence there are other threads that could be interesting to pull, and which could render important contributions to knowledge. Below I will look at a number of such threads.

As mentioned earlier, since the 1990s libraries in Sweden have played a key role as conveyors of knowledge about computers, but also as institutions which have functioned as a form of “computer support for citizens”. This has not been studied thoroughly. The Swedish Commission for Digitalization recently suggested that an effort should be made to provide citizens with commercial digital service centres, where they (citizens) could receive help concerning their digital problems. This suggestion made libraries point out that they had been providing this service for quite some time already. This in turn resulted in several public debates about what the mission of libraries’ really are, and their responsibility in digitizing the citizen. Consequently, there are several aspects of this that would be interesting to delve deeper into, focusing on the borderland between state and civil society, when it comes to citizen education about computers.

Another aspect, which Wildemeersch and Jütte (2017) put forward as vital, and which at the same time has been overlooked in research, is the mapping out of the consequences that digitalization has had on adult education associations. As I see it, such research could envelop, firstly, changed ways of everyday learning, where commercial platforms may have assumed functions from popular education, and secondly, in relation to commercialization, surveillance and measurability when the associations themselves are digitalized.

Earlier I also pointed out how the labor movement has been given much room in this thesis at the expense of other actors. In light of this it would be very interesting to examine how the Swedish Confederation of Professional Employees (TCO), including its study associations, has associated itself with computerization. During the
witness seminar, *Popular education about computers 1978-85*, there are insinuations that the white-collar unions were more negative towards computerization than the labor movement. For example they proposed that unions should retain the right to stop a planned process of computerization at a workplace. At the same time they were perhaps even earlier than the labor movement to provide education about computers. A tentative overview is that Tjänstemännens bildningsverksamhet (TBV)—a white-collar study association—is the most animated study association when it comes to education about computers during the 1970s and 1980s. The educational efforts taken by TBV also seems to differ from the labor movement in that they more directly tried to influence technical development in itself.

Another interesting thread to untangle is why, around 1980, something happens that can most be accurately described as the *taming* or *harnessing* of the computer. In the 1970s the computer was described as a worrying and wild force, where the most important question concerned whether society should be computerized or not. During the 1980s the discussion about a positive or negative attitude towards the computer shifted into a discussion about computers as completely necessary, and computerization as something that society does not need to, want to, or can, stop. An interesting angle would be to study what actually happened. There are tendencies in the material I have studied, which tell tales of complicated and useless courses. At the time, wide-ranging debates (including, amongst others, the Swedish Trade Union Confederation) stress the importance of basic maths and language skills as necessary to take full advantage of the benefits of computerization (something which is probably even more emphasized once computers are rebranded as information technology). Perhaps, the education effort ‘Kunskapslyftet’ (a governmental adult education effort in effect between 1997 and 2002, primarily aimed at unemployed adults lacking a three-year high school education) can be seen as a continuation of the broad computer education effort?

It would also be exciting to examine public debate (and primarily popular science “debate books”), around the late 1960s and early 1970s. This specific period has been described as very intense when it comes the number of public debates, and as influential concerning
how these debates went on to shape Swedish computer politics. In the book *Computers and Politics*, published in 1970, it is claimed that computer technology has not been given the space it deserves in political debates. The book is thus aimed at “wakening” both citizens and politicians. This book can be seen as a starting point for public debate, and for governmental efforts to both control the debate, and to broaden it through popular education. It will also be followed by many more debate books, discussing societal implication of computing. This phenomenon generates some interesting questions: What problems are these books trying to make public? And which problems are overlooked, or even silenced, and why?

Another track, which today is very topical, is the *genealogy of the risky digital citizen*. In the quote below Virilio emphasizes how all development of technology also designs its future accidents and unintended events:

> The shipwreck is consequently the ‘futurist’ invention of the ship, and the air crash the invention of the supersonic airliner, just as the Chernobyl meltdown is the invention of the nuclear power station. (Virilio, 2007, p. 5).

New technologies create new risks. Thus, increased use of a certain technology will arguably also increase risks. As such, modern society must deal with its self-produced risks. Today, these risks and threats are also of such magnitude that they will not be limited to the places and situations where they originate: high-tech productions, and their invented risks, are a threat to everyone (Beck, 1992). The increasingly digitalized society of today is also more often regarded as “inventing” more risks. One could easily perceive this as something “new”, but already in the course *Computers on our Terms* (1975) the question is raised: What would happen if all the computers in Sweden were suddenly shut down. The reply is that society would collapse. That is, already 40 years ago, total reliance on computers was seen as ubiquitous and absolute. The fears and risks that computerization generates must be understood as both material and discursive. According to Beck (1992), the risks are neither just culturally created nor just “out there”. The risks, and the conceptualization of the risks, shape, and reshape, each other. Studies can show how the conceptualization of certain activities and
people as risky—and thereby worthy of governmental interjection—is highly political and historically contingent. Instead of looking at what digital risks that really exist today, I would seek to examine: Under what conditions, and according to which logics, have certain forms of digital practices, options or groups come to be described as perilous. The question is not: How hazardous is it? but instead: Why have certain practices or actions been imagined as potential hazards? As can be seen from the papers, an important part of dealing with these risks is education. An interesting follow-up question becomes: What competencies is the (digital) citizen supposed to acquire in order to reduce the risks of computerization? Today we see, for example, that a big threat to democracy is that citizens, on their own, can share and distribute incorrect information to each other. In this day and age, saturated by post-truth, prejudice and fake news, the correct knowledge is consequently presented as crucial. In relation to these debates it would be rewarding to compare them to earlier risks of computerization. For instance, how was popular education mobilized in relation to the so-called Y2K issue, or millennial bug. At that time there was a huge discussion regarding the potential societal collapse that would come as a result of the many computer programs that represented years with two digits rather than four. Another risk of computerization during the 1980s was screen radiation. In Sweden, pregnant “screen workers” had the right to be reassigned to a new position—without screen work (a right which remained implemented until the end of the 1990s). Around the year 2000, a rising number of stories told us about “internet addiction”, which was deeply worrying, and also something that popular education could remedy.
Going further back in time, in 1952 the labor movement described the dangers of (a different form of) disconnection:

If we want to look for contemporary symptoms, elucidating the general feeling of distress, we must look towards phenomena such as the [techni]colored weekly press and its mass function, and the audience attendance at reality-escapist movies, and the publicly directed sporting events. Most likely this is a composite phenomenon. You could refer to it as relaxation, or perhaps even better, disconnection. You are temporarily placed outside your own situation, free of its clasps, and can refrain from thinking things through. A possibility to forget. At the same time, the movie, the short story, or the games on the lawn or on the track, generates impulses towards hope, which reality will hardly fulfil. Reality becomes, to the returners, only slightly more zestful.

(Swedish Social Democratic Party, 1952). (My translation).

Today, descriptions of historical dangers of new technology are often used to illustrate how contemporary debates show similar traits of moral panic, and how ridiculous it would be to repeat the same exaggerated alarms as back then. As such, it becomes urgent to not get stuck in an entrenched battle between the newness (which would imply relevance and timeliness) or oldness (which would justify a dismissal as a Luddite attempt to disregard the importance of new technology) of the described dangers. For example, considering how printing would cause an unmanageable flood of information (Gleick, 2011). Or how Plato warned that writing impaired people’s ability to think (Dahlberg & Ruin, 2011). Focus on how popular education has been mobilized around these dangers can provide us with an enriched perspective on why some practices or conditions have been problematized as precarious.

In further relation to this, it would be pressing to examine intersectional perspectives present (or not) in digital inclusion efforts—particularly in relation to adult education and popular education. A tentative assessment is that it is becoming increasingly privileged to be able to “cast digital technologies aside”. As O’Neil (2016, p. 8) points out: ‘The privileged, we’ll see time and again, are processed more by people, the masses by machines’. In the light of this quote, it would be interesting to examine which educations have
been digitalized (and which have not), and how this interplays with social categories such as class, mother tongue and gender.

Other aspects that could be of interest are the many union information films about the computer, citizens and the future. The intention behind these films was that they should be utilized within study circles. They were sometimes also broadcast via the Swedish Educational Broadcasting Company and Swedish national television. These films can be seen as sociotechnical imaginaries of the computer, as a contemporary and future problem. As such, it would be interesting to more closely study how the computer was imagined as a threat, or prospect, in these films.

It has been stressed that the concept of ‘bildung’ will inevitably be individualized in a digital ecology where everything one wants is constantly available. The knowledge generated by extensive digital data collection is further more and more focused on predicting the future (rather than transmitting a well-chosen selection historically generated knowledge) (Snickars, 2015). Others have stressed the need to teach “soft skills” rather than knowledge to compete with machines (Ma, 2018). The logic is that when it comes to facts and knowledge we will not keep up with machines, so education instead has to enhance “unique human abilities” so that machines can never catch up with us. In relation to this it would be interesting to investigate what learning (or ‘bildung’) becomes when machines learn from us. When our data-driven media ecology constantly learns from us, do we, and if so what and why, will we need to learn? When digital systems can define context, and potentially reduce learning to behavioral change (i.e. adapting people to the system), what happens to the concept of ‘bildung’?

Finally, I argue that digital media technology’s relationship to education (in a broad sense) should be further subjected to critical scrutiny, and educational research can and should contribute to this.
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Appendix

Empirical material

**Government documents**


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Aftonbladet. (1978, 18 mars). *Här står de tysta kontrollanterna...*
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Academic journal articles


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Educational films

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**Witness seminars**


**Transcripts of speeches and oral presentations**


Popular sciences debate books


The illustrations included in this thesis are all part of the empirical material, and have been added with the expressed consent of the artists and/or publishers. However, the photograph from the 1950s has been impossible to trace (copyright holder to these illustrations/photos to please contact me in case of concern). The poem by Richard Brautigan in the beginning of the thesis was published with a copyleft statement which grants the permission to reprint the poem as long as it is given away for free.
Collection of data at Swedish folk high school and Interview Guide

A total of 37 interviews with students and six interviews with teachers has been collected. The data collection proceeded as follows. Since project leader Andreas Fejes had good contact with the school, he introduced the project at a meeting with all teachers. The fact that the principal as well as teachers were “on board” may have helped to make the collection a success. Because ‘citizens’ and ‘citizenship’ are words that, in Swedish, are not used much in everyday life, the project was interested in opening up the concept (i.e., reaching beyond the immediate and formal descriptions of citizenship such as for example voting). The research project created a study design where the informants are given a small pen camera and are asked to document (film, photograph or record audio) what they do as citizens. After about a week, I met the informants for individual interviews. When I handed out the cameras, I asked the students to sign a paper (where they also left their phone number) confirming that they had received the cameras. I then texted the student for definitive confirmation. That way I was assured that we each had each other’s numbers and could reach each other if we for example needed to change the interview date. To connect with students and encourage them to participate in the study, I spent an average of three days together with the students in their classes (a total of four different educations and classes). I introduced them to the study and then proceeded to “follow” them for a few days. Since the task of documenting what we as citizens do in everyday life could be perceived as difficult, I think I made it much easier for the students to participate in the study by spending much time in their environment (the school). It also gave them the opportunity to ask questions about the project (and me), and gave me a better understanding of the specific education and the opportunity to ask situated and relevant questions. Not all informants took pictures with the camera, but the majority did. These pictures also became a natural starting point for the interview, where we would jointly look at the pictures, which the informants could then “explain” and I could ask follow-up questions. I started from a semi-structured interview protocol with the following questions:
1) Stories about what is documented with pen camera
2) What is not documented
3) Stories of doing citizenship in life general (wide)
4) Stories of doing citizenship in education

Before recording, I told the respondent the following: This interview is completely anonymous. I will not tell anyone whom I interviewed. All locations and names will be anonymized and no one will know who you are or what school you go to. You have the right to pull out at any time. The interview will be used only for research purposes and stored securely.

Questions, Theme 1:
Tell us about what you have photographed/documented during the week. (If you have not photographed anything: What would you have documented if you had had the time?)

What is the motif of the picture? Why did you choose to photograph this motif?

Questions, Theme 2:
Was there anything you were hesitant about?
Did you delete anything that you photographed? Why?
What did you think was the easiest/most difficult task? Why?

Questions, Theme 3:
If you see life more broadly, what are you doing, in your life, when you feel that you are a citizen? What is this stuff?

What is needed to be able to do X?
What do you think about that?

Why is this citizenship?
Questions, Theme 4:

What is being done here at the school regarding “doing citizenship”?

What do the teachers do and what do you do together?

Do you as students do anything together? Are you in any special place? In or out of the classroom?

Questions (background variable):

Tell me a little about yourself.

What is your name?

What education do you attend?

Why this specific education?

Are you working as well?

Where do you live?

Do you live alone?

Which sex do you identify yourself as?

How old are you?

What nationality/nationalities do you see as your affiliation?

What are your interests?

What would you like your life to be in 10 years?

Do you think it will be so?

Regarding interviewing teachers: I did not lend them cameras, but instead I looked up policies or guidelines regarding citizenship education at their school and used that as a starting point for the interview.
Part 2: The Papers
Papers

The papers associated with this thesis have been removed for copyright reasons. For more details about these see:

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Educational imaginaries
– a genealogy of the digital citizen

Lina Rahm