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A case study of the practical use of a case management system

A praxiography of a Danish employment agency

Lasse Roosevelt Hertz — 20202107

Sami Zoorob ——— 20201781

Supervisor: Andreas Birkbak

Aalborg University Copenhagen

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Project Supervisors: Andreas Birkbak

Members:
Sami Zoorob (20201781)
Lasse Roosevelt Hertz (20202107)

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Resume

De seneste år har der været en stigende udvikling i anvendelsen af teknologiske og digitale løsninger i beskæftigelsessektoren, samt øget debat omkring rollen og betydningen af AI.
Denne debat har medført en øget bevidsthed og interesse for de muligheder og faldgrupper som disse teknologier kan medføre. Vi er interesseret i at undersøge den praktiske betydning af prædiktive teknologier i beskæftigelsessektoren især i den betydning som det får for udformningen af praksis for de kommunale sagsbehandlere.
Denne afhandling undersøger den praktiske anvendelse af et sagsbehandlingssystem med prædiktive komponenter (ASTA) i rammerne af et lille kommunalt jobcenter med målgruppen akademikere. Dette projekts metode er baseret på Annemarie Mols praxiografiske tilgang, som skitseret i *The Body Multiple* (2002).

Vi undersøger hvordan teknologiens tilstedeværelse konfigurerer praksis og performer den ledige på nye måder. Vores resultater viser, hvordan design af sagsstyringssystem kan være mere lokalt funderet og løbende forfinet, mens der tages hensyn til reel socio-teknisk praksis. Vi foreslår en række praktiske forbedringer, der vil give sagsbehandlere mere råderum til at vælge og opbygge deres egen unikke brugeroplevelse. Dette papirs resultater er væsentlige, fordi de demonstrerer, hvordan praksis, og derfor de tjenester, der leveres til kunder i den arbejdsløse sektor, er socio-tekniske spørgsmål, som bør udforskes ved at følge aktørerne i nærheden.

Abstract

In recent years there has been an ongoing debate about the employment sector and in particular about the use of predictive-technologies, which have been implemented on a large-scale in the everyday practice of the caseworkers in Danish Jobcenters. This paper uncovers the practical use of a case-management system with predictive elements (ASTA) in the context of a small municipal employment agency whose target group are academics.

The methodological approach of this project draws on the praxiographic approach of Annemarie Mol as laid out in *The Body Multiple* (2002).Our findings show how different practices are reconfigured as a result of the socio-technical entanglements between the functionalities of ASTA and caseworkers of the employment agency.

Our findings show how the design of case-management systems should be more locally grounded and be continuously developed by taking into account the concrete socio-technical practices. We propose a range of practical improvements that will provide a higher degree of caseworker autonomy in choosing and designing their own personalized user-interface. The findings of this paper are important since they show how practices, and therefore the services offered to the clients of the unemployment sector are socio-technical affairs, that should be investigated by following the actors in close proximity.

Introduction

This thesis's main objective is to contribute with an increased knowledge of the implications of using Artificial-intelligence (AI) as part of case-management systems in the employment sector. Particularly in regards to the decision making processes that take place with such systems. More precisely we will look into the kinds of practices that arise or are shaped in response to the introduction of Artificial-intelligence in public administration, in our case a Danish employment agency (from now on: Jobcenter X).

Advances brought about by the implementation of AI as part of institutional framework are rapidly changing the decision making-process of the public sector, and both information and communication technologies and AI, impacts human discretion and perception which calls for continued research on the significance of such technologies in relation to public administration (Young et al. 2019). The potential of algorithms making decisions that effectively leave out human influence, holds the promise of increasing the fairness of the decision as factors such as human prejudice, greed, or fatigue are minimized, as outlined by Lepri et al. (2017) At the same time, they have been subject to heavy criticism due to the countless examples in which they seem to enhance discrimination, information, power asymmetry, and opacity (ibid.).

Our interest was motivated by understanding the kinds of practices that arise or are shaped in response to the introduction of Artificial-intelligence in public administration, in our case a Danish employment agency. This relates both to the way that caseworkers relate to the output of such technologies as well as the different configurations that arise as part of the implementation of such technologies. This is done with a point of departure in the case management system Fasit, and in particular the modular add-on ASTA. The kind of AI that we have taken an interest in here, is sometimes talked about as *Predictive modeling*, which is increasingly used within the public sector, holding the promise of improvements to the decision-making outcomes of public-administration (Petersen et al. 2021).

There are two IT companies providing IT solutions to the Danish employment sector, KMD and Schultz, who have developed different case management systems, each with their own technological features (KMD 2022), (Schultz 2022a). Our interest was sparked when we came across the caseworker-system, ASTA, developed and owned by the Danish IT-company Schultz. Looking at sales material from their website, we quickly found ourselves reflecting

on the consequences of these technologies in the employment sector. In the Schultz web-article, *Artificial Intelligence in the Job center*, promises were made that ASTA would help the caseworker prepare for a client-caseworker meeting, and create an *Intelligent Match* for the job-seeking client (Schultz 2022b). We started wondering exactly how these promises of AI-functionalities would interact and shape caseworker practice and what they would mean for the unemployed? Looking further into it, we quickly learned that ASTA was referred to as a *tool-box*, consisting of several functionalities (Appendix 3). During an initial interview with the sales director of Schultz, we asked what kind of AI that this tool-box consisted of, keen on understanding what made it artificially intelligent.

Surprisingly to us, he argued that one could always discuss if the functionality of the system system should be considered as AI and that he referred to these functionalities as *smart technologie*s. So, this was where our ethnographic curiosity was startled. What exactly did it mean to him that ASTA was considered a smart-technology, rather than what we at this point saw as more precise features, such as a predictive algorithm or AI? Our understanding of how elements of AI materialized as part of caseworker practice, were supplemented by the framing of ASTA, and how they might also play a part in the socio-technical configuration of practice.

In examining a socio-technical phenomenon, our awareness of how individuals perceive and talk about the the functionalities of ASTA differently led us to take interest in not only the caseworkers understanding or use of the tool, but also how the company representatives of Schultz would talk about its functionalities and its applied use in caseworker practice.

As such the initial reflections of our entrance to the field, led us to take a deep-dive into the different cultures and varied practices that this technology exists in. These initial considerations have led us to formulate the following problem statement:

- *How does the use of predictive technologies in case-management systems reconfigure caseworker practices - and vice versa?*

We have consciously chosen the verb *reconfigure* in examining how caseworkers and digital support systems are entangled or influence each other in the various practices that they take part in. By the use of the word ‘reconfigure’, we want to highlight an understanding of existing caseworker practices as ever-emerging or fading socio-technical practices. Our approach is strongly influenced by that of *Science and technology studies* (STS), which has a

strong focus on an interdisciplinary pursuit of examination socio-technical entanglements and how they contribute to the configurations of the world (Ulrike Felt et al. 2016, 1). STS entails investigating not only how science and technology impact social life and the environment around us, [...] *but also how the latter in turn shape developments in science and technology* (Ibid.).

From this practice-oriented perspective we believe that the use or implementation of case-management systems should be examined as part of the socio-technical context they are embedded in.

This means that when we refer to the term case-management, we do not solely refer to the use of predictive technologies, instead we work from the premise that *predictive technologies are* yet another component in a socio-technical configuration in which caseworker practice is embedded. By the use of vice versa, we want to emphasize that this socio-technical configuration happens as a result of the mutual influence between caseworkers and technologies, and a lot of other factors. By adhering to the multitude nature of the phenomenon, we strive for a less deterministic approach that only focuses on how something is changed or influenced by a technology.

This way of understanding and examining practice, shifts focus away from viewing the functionalities or work flows of ASTA as the default of practice. Instead focusing on practice in this way, allows us to describe and examine how the caseworkers use ASTA as part of their work.

This relates to our wish of having a practice-oriented approach to the phenomenon that we study, and secondly, we also believe that STS- studies carried out on AI or predictive technologies, should be highly attentive to the way that a term such as predictive technology performs or suggests a certain socio-technical configuration.

With this case-study we hope to contribute with an increased knowledge of how the understanding and practical configuration of predictive-technologies influence case-management. Increased knowledge of the actual use and significance in practice can lead to more informed design decisions when implementing predictive technologies within the employment sector specifically and in public administration as a whole. We also hope that our findings will inform discussion on how and where predictive technologies can or should be deployed. By this we wish to underline that the application of technology is dependent on a variety of conditions, which is why the practice in which it occurs must be the beginning point.

Problem Field

This is a practice-driven project that we want to situate as part of a broader field of studies on the impact of technologies on case-management. Therefore we will start off with a brief introduction of the overall context in which our research object exists.

The Ministry of Employment describes the continuous implementation of digital solutions as a vital factor in the future employment sector (STAR 2021). In the Danish National Strategy for Artificial Intelligence, it is proposed that artificial intelligence should be used to support a quicker and more effective public case-management, and that Denmark should be leading in the European Union when it comes to the implementation of data and AI (The Danish National Strategy for Artificial Intelligence 2019).

There are a total of 94 Jobcentres in Denmark, which are under the administration of the local municipal councils. The Jobcenter is the organization in which the employment policies materialize. The employment efforts of the caseworkers are to assist unemployed people in finding work and additionally to help companies with workforce recruitment (STAR 2020).

Various scholars believe that the implementation of digital solutions in the public sector changes the character of the caseworkers' practice. According to Bie-Olsen & Hvid, the rising degree of digitalization of case management will lead to a shift away from traditional case management and instead toward simply monitoring these automated technologies. This is also recognised by Bovens & Zouridis, who have documented the increased usage of digital technologies and automation decision-making in Dutch case management:*" Many decisions are no longer made at the street level by the worker handling the case; rather, they have been programmed into the computer in the design of the software."* (2002, 4). This finding is further supported by the finding of Møller et al. who points out that IT-systems used in casework often express what can be defined as divided priorities, meaning that they in practice can work to support both the professional discretionary efforts of the caseworker as well as *regulatory and policymaking bodies* (Møller et al. 2021). When considering the consequences that the implementation of predictive technologies might have in caseworker practice, a key-concept can be said to be that of *algorithmic-bias*, which expresses the notion that an algorithm is not just an objective or neutral tool, but always entails certain prioritizations (Det informationsvidenskabelige akademi 2016.).

The social work scholar Dorthe Caswell, has argued that algorithmic bias can challenge caseworker discretion, since the discretionary efforts of the caseworker should ideally reflect the professional merits of the caseworkers and should not be politically or fiscally motivated (Caswell 2005, 228). Discretion is a key concept in social work in understanding the way that caseworkers make legal or professional decisions by balancing the requirements of a legal framework and their own professional knowledge (Antczak et al. 2016, 246).
Nina Boulus-Rødje's ethnographic studies in one of the biggest Danish job centers, shows how each caseworker in her case of study was managing between 230-250 cases. Additionally, jobcenter caseworkers have to manage and keep track of oftentimes bits and pieces of incomplete information spread "[...] *across more than 20 IT systems and organizations, challenging their* [the caseworkers red.] *ability to conduct an adequate evaluation"* (Boulus-Rødje 2019, 57).

Before situating our project of study in relation to similar kinds of investigations that have been carried out in municipal jobcenters we would like to do a short representation of the employment sector.

The Danish Employment Sector

Our field of study primarily takes place in the Jobcenter of a Danish municipality.

The Danish state has set up its employment sector digitally, which means that an unemployed person must have the necessary skills to register digitally and have access to a computer. An unemployed citizen must register on Jobnet.dk, which is an online public job portal operated by the Ministry of Employment in order to receive unemployment benefits. In addition, one must be *available* for the job market, which means that a citizen must be able to take a job with one day's notice (Jobnet 2022a) as well as partake in caseworker meetings in the job center on a regular basis (Seidelin et al. 2022, 3).

According to Larsen & Andersen, the most vulnerable groups of the unemployed face a variety of obstacles in addition to their lack of employment. In the last twenty years or so, there has been a well documented shift on how social problems of groups of citizens are dealt with. Instead of engaging in types of social intervention that belonged to the realm of social policies, rather employment has become the main answer to the social problems or challenges of the citizen (Larsen & Andersen, 2019) (Larsen 2013 in Boulus-Rødje, 2019).

The focus on the jobless recipients of welfare used to be mere availability for jobs, to receive employment benefits, but policies have marked a shift of *welfare-to-work* policies

that focus on the active participation of the individual, through continuous qualification, searching for jobs or educational efforts (Boulus-Rødje, 2019).
The increased awareness of getting the unemployed back into jobs has meant an increase in digital technologies that can support this process (The Danish National Strategy for Artificial Intelligence 2019) and overall, the role of data in social work practice has become an important resource that can be applied to develop support tools that can strengthen or support the decision of the caseworker (Ammitzbøll Flügge et al., 2021).

In Danish job centers, unemployed citizens are categorized by caseworkers into one of two categories: *ready to work* or *ready for activation* (Beskæftigelsesministeriet 2022). The difference between the two groups is that the first one is considered capable of reaching employment within 3 months, whereas the other is not. Therefore, the social efforts relating to that individual should aim at activities with the purpose of making them *ready to work.,* cf. para. 2. (Ibid.).

The individuals affiliated with the employment agencies can broadly be said to receive one of two different kinds of public benefits. The first group receives public benefits and are not insured, and then the second group that has been a member of an unemployment insurance fund, which makes them eligible for this public benefit.

The latter is our target group. Furthermore, the employment efforts of the municipality of our jocenter, has divided their employment efforts as to let different job centers focus on different target groups. The job center that we are cooperating with is concerned with academics. Depending on the insurance fund, one needs to apply for either six or eight jobs every month (Appendix 3).
One of the fundamental concerns for caseworkers is the risk of long-term unemployment, as it increases the challenges both for society and for the unemployed themselves, since long-term unemployment can easily make the individual lose touch with the job market.due to a loss of resources and a greater deal of people on public benefits (KORA 2016). There is no consistent way of defining long term unemployment. OECD defines long term unemployment by the 12 months mark (Ibid.) which coincides with Statistics Denmark's definition (Danmarks statistik 2022).

Presenting Research Relevant to Our field of study

In our initial research process we found lots of literature and journal articles that had investigated the use of predictive technologies in the Danish employment sector. There was a larger number of papers specifically related to the implementation of such technologies in the Jobcenter. In this section, we present some of the recent and central papers concerning the use and implementation of AI-technologies in the Danish employment sector. We have found the presentation and discussion of these papers relevant in formulating and presenting our own methodological approach and in positioning our project based on other similar projects.

In the paper *We Would Never Write That Down*, (Petersen et al. 2022) shows how invisible work is a prerequisite for the practical use of classification systems, highlighting how local adaption and alternative ordering can be necessary and create more effective case-working processes although they are invisible, and therefore also to a machine (Ibid.).

The study was carried out in the context of a jobcenter, and related to a predictive technology, used to screen individuals for their risk of becoming long-term unemployed. It was found that a group of caseworkers did not document or write down their professional assessments in the system at their disposal.

The findings suggest that although the classifications of a small group of caseworkers in an unemployment unit engaged with ready for activation-clients, could be systematically used by AI, the caseworkers could not, however, morally justify jotting down the characterization of their clients in their internal it-system (Petersen et al. 2021, 1).
This is attributable to ethical concerns about the impact on the client, as well as a belief that their highly specialized classification system will be easily misunderstood or abused by statistical initiatives or AI (ibid.).

While Petersen et al. are concerned with AI repercussions, their primary interest in caseworker classifications came from observations and conversations with caseworkers following their practice. According to Petersen et al., it was not their job to decide what things were, what mattered, what was essential, trivial, or even right or bad, but rather to figure out how caseworkers made sense of things (Ibid.)

In improving the decision-making capabilities of AI-systems, Petersen et al. argues that a practical and thorough understanding *"of how decisions about individuals are, in fact, made.*", within such systems is needed (Petersen et al. 2021,2).

The findings and discussions of Petersen et al. are highly relevant to our study for two main reasons. Firstly, the kind of invisible work carried out within the small working-unit shows the complex, coordinated and ample efforts caseworkers had to employ when coming into contact with these kinds of IT-systems. Additionally it shows the importance of relating the examination of the use of a technology in its context of use, in particular since workers' willingness to plot the necessary data is in turn affected by their own understanding of bureaucratic logics or institutional goals as well as AI (Petersen et al. 2021).

Secondly, it raises the methodological question whether classical semi-structured interviews are sufficient in getting a good ethnographic understanding of caseworker practice, since their findings showed how invisible was carried, thus not plotted into the systems documentational framework.

To our research process, this was an important finding, as it made us question how we could describe or engage with caseworker practice empirically and that we therefore should examine the case workers practice in relation to ASTA in both a material and practical manner.

Another paper highly relevant for our project was *Are you green? Algorithms for decision support in the public sector.* In this paper, Flügge et al. has made a preliminary study of how algorithms for profiling the unemployed contributes to the caseworkers' decisions-making (2022). From this paper we wish to highlight two of their findings.

Flügge et al. argue that the caseworkers discovered that the number of individuals classified as low, medium, or high risk did not correspond to the number of residents who, in the caseworker's experience, arrive faster in employment. The second interesting finding they made was that there were times when the caseworkers were unable to explain why a client was classified as high-risk. This meant that caseworkers were unsure if the tool was reliable in assessing clients risks (Ibid.). Finally, 50 of the variables used by ASTA are not transparent, caseworkers report, which means that the caseworkers find the assessment unclear, and in other situations, irrelevant (Ibid.).

ASTA

Following our interest in ASTA, we established contact with the IT-company Schultz, with the goal of examining the practical implications of the use of ASTA in the frontline. ASTA is a purchasable add-on to Schultz's case management system Fasit, which is currently in use in

two-thirds of all Danish job centers (STAR 2022a). Achieving access was surprisingly easy and there was a great deal of openness in providing us with relevant information. This was contrasted by the difficulty of coming into contact with municipalities that wanted to let us conduct interviews and conduct ethnographic field work.

During our first meeting with the sales director of Schultz, we learned that ASTA was actually an umbrella term that encompassed several functionalities, some of which could be defined as artificially intelligent, although it was not clear to us exactly what made it intelligent (Appendix 3). The *ASTA-toolbox*, it was also frequently referred to (Appendix 3). Schultz portrays ASTA as a concept with numerous functions and processes that cannot be characterized as a single technology, but should rather be seen as a collection of solutions involving technologies and narratives.

The ASTA Tool-box

The story of ASTA, came into existence when Schultz wanted to design a kind of, as the product developer of Schultz, Simon, puts it, *digital assistant*. According to Simon, the tool was meant to help the caseworkers focus less on trivial administrative tasks in order for them to: "*[...] be able to spend more of their time actually bringing their professionalism into work"* (Appendix 2.2).

In the following, we'll go through 3 components of the ASTA-toolbox, Intelligent match (IM), Conversation Preparation (CP) and Risk of Long-term Unemployment (RLU).

Intelligent match (IM)

IM uses natural-language processing to analyze the citizen's CV, applications and job applications to predict and suggest improvements to the range of competencies that the citizen has listed, and at the same time assesses whether the job-searching strategy of the citizen, eg- what kind of jobs the individual is applying for matches the competencies adequately (Schultz 2022a). This makes IM a statistical model which has been trained using the method of Machine learning. Machine learning refers to a self-programming algorithm that can continually learn how to detect patterns in a data-set based on a given set of instructions (Burrell 2016).

Conversation Preparation (CP)

Another of ASTA's tools is CP, which is a component of ASTA that displays a wide range of different modules. These modules contain different types of information about the citizen, such as how many jobs the unemployed have applied for in the last 30 days, how regionally and flexibly the jobs that the unemployed applied for were, among others.

The functionalities of CP can be defined as a so-called RPA-technology (Appendix 2.1), which stands for Robot Process Automation and is a kind of technology that has already been implemented and thoroughly evaluated in a number of municipalities. The technology refers to automated robots that navigate and streamline case-processing in already existing systems. (Bie-Olsen & Hvid 2018, 48).

Risk of Long-term Unemployment (RLU)

The third component of ASTA can forecast the likelihood of an unemployed person becoming long-term unemployed (Schultz 2022a). RLU is likewise a statistical model that has been trained using machine learning (Appendix 2.2).

The main idea behind the technology is to support the caseworkers in faster identifying the type of unemployed and their needs, in order to fully provide the best individual assessment of how to get them back into employment, based on the characteristics of previously identified long-term unemployed (Appendix 2.2).

The Data Infrastructure of ASTA

The data Schultz utilizes for its digital products is retrieved from Jobnet.dk, Fasit, and the unemployment insurance funds (A-kasse), to create one collective data-base (STAR 2022b). The purpose of the common data-base is that the citizen has access to their own case and data as well as to support the continuous sharing of data between the unemployment insurance fund and the Jobcenter (ibid.).

This kind of personal information can be accessed through Fasit and is collected when the unemployed individual access jobnet.dk. The data consist of a wide-range of information such as gender, postal address etc. with the purpose of classifying the type of citizen in order for the caseworker to provide an individual effort (Jobnet 2022b).

Methodological approach

This theoretical section aims at situating our methodological point of departure, and to introduce key analytical terms that will be applied in answering our research question.
We draw on a particular kind of ethnographic approach, as laid out by the Dutch ethnographer Annemarie Mol in her book *The Body Multiple (2002),* which is a detailed ethnographic account of atherosclerosis in a Dutch hospital. A key element in her book is the concept of *Praxiography which* hinges on the understanding that the object of study is *done* by means of different and sometimes overlapping practices, meaning that the ethnographer should not engage with object of study outside of the practices that maintain and shape it (Mol 2002). To Mol, the *praxiographer* cannot separate the object of study from the practices in which it is enacted:

> *"An ethnographer/praxiographer out to investigate diseases never isolates these from the practices in which they are, what one may call, enacted. She stubbornly takes notice of the techniques that make things visible, audible, tangible, knowable. She may talk about bodies – but she never forgets about microscopes."* (Mol 2002, 33).

As such the ethnographic approach of Mol is based on examining how both humans, things and ideas enact the object of study, in this case atherosclerosis, through a variety of practices. Additionally, Mol argues that when the ethnographer starts paying attention to the practicalities of the enactment of the disease, reality becomes multiple, as there is not just one disease but rather many and contrasting practices that all do the disease (Mol 2002). Therefore, our analytical approach posits not one practice, but many and shows how they enact the unemployment of the individual in different ways. Specifically we want to lay out what Mols understanding means for our analytical approach. Mol's praxiographic approach is relevant for the scope of our project, since it is empirically driven and allows the ethnographer to examine how practice is constructed through an interplay between both caseworkers and technologies, thereby understanding practices as socio-material.
However, before going further into detail of the analytical consequences of drawing on Mol's praxiography, we want to situate her body of work to Actor-network-theory (ANT). This is important for understanding our analytical approach, since most of Mol's work including her term Praxiography, and the concepts that it embodies, should be seen as deriving from, and supplementary to, ANT. In particular, the notion that both humans- and nonhumans have

agency which means both ideas, objets and humans create the practices that we are about to examine. Therefore, before going into further detail with her practice-oriented approach, we will situate her body of work in relation to ANT.

Actor-Network Theory

Actor-Network Theory (ANT) is a methodological and theoretical approach in which the world is understood as heterogeneous networks consisting of human and non- human actors. (Law 1992, 380-384). Pioneered by the STS-scholars, Bruno Latour, Michel Callon, and John Law, ANT materialized in the mid 80's, and has greatly affected the understanding of how technology and science are connected with society and nature (Ritzer 2004). This means that ANT discards both a realistic and social constructivist idea of how science is produced, and rather sees this as a "[...*process of heterogeneous engineering in which the social, technical, conceptual, and textual are puzzled together*...]" (Ritzer 2004, 1).

The analytical framework of ANT instead entails a relational materiality in which the significance of actors happens through the relation to other actors in the network (Ritzer 2004, 1). According to ANT, everything in the social and natural worlds occurs in continually moving, so called *networks*. Nothing exists outside of those interconnections. There are no external social influences beyond what and how the network actors interact in the present situation.

> *"Networks are processual, built activities, performed by the actants [human and nonhuman actors] out of which they are composed. Each node and link is semiotically derived, making networks local, variable, and contingent"* (Ritzer 2004, 1).

ANT is therefore a constructivist approach since it views human and non-humans as entities that form actor-networks that should be described following the notion of *generalized symmetry*, meaning that actors should be described and attended to on equal terms (Lauritsen, Jensen & Olesen). ANT is also anti-essentialist since it posits that it is not the inherent qualities of actors, but rather their relation to other actors, that make them significant in the network. (Gad & Jensen, 58), (Ritzer 2004).

The Praxiography of Annemarie Mol

Following our brief introduction of ANT and how it emerged as a branch of STS, we want to situate her body if work, some of which she has put forth in cooperation with Law (Pedersen 2021). The work of Mol, has contributed to what Gad & Jensen define as *"post-ant"*, which can be said to be a "[*...set of discussions within ANT."* (2010). Post-ANT can be defined as a certain brand of ANT that embodies certain ideas and concepts that can be said to go beyond "traditional ANT" (Ibid.).

By viewing different realities at once, in terms of ANT understood as several networks that can mutually influence each other, Mol introduces an ontological multiplicity to the classical ANT-approach (Gad 2005, 56). As such Mol brings nuance to the constructivist approach of ANT by introducing a flexible and agile approach to how practice unfolds in various ways. Different ways posit different realities.

In works such as *The body Multiple: ontology in medical practice* (2002) and *Complexities: social studies of knowledge practices* (Law & Mol 2002), Mol has contributed to the field of STS with her approach to health-care practices as performative, arguing that realities are created inside such practices, and that realities are shaped through the practices that shape them.

In particular we are drawing on Mol's work *The Body Multiple*, in which Mol discards a grand theoretical explanation of the phenomenon of study - in her case atherosclerosis, in a Dutch hospital. Mol presents a praxiography in the form of a "theory" that an object is not something that *is*, but is *done* in many contexts as a post-ANT "theorist." Namely, enactment-in-action. Rather than speaking of overall or broad perspectives in understanding how different professions understand atherosclerosis, Mol draws attention to the multiple ways that the disease is enacted depending on the varying practices that it is entangled with:

> *"These are practices in which some entity is being sliced, colored, probed, talked about, measured, counted, cut out, countered by walking, or prevented. Which entity? A slightly different one each time. Attending to enactment rather than knowledge has an important effect: what we think of as a single object may appear to be more than one."* (Mol 2002, 1)

This way of attending to multiple ways that disease is done, is closely linked with her praxiographic approach. Mol argues that praxiography is a technique for ethnographers to

examine practices through a variety of events, activities, and environment. Mol's praxiographic approach entails a focus on knowing items as entities that are modified in practice, rather than on understanding people's perspectives on them (Mol 2002, 31-32). This implies that praxiography focuses less on items and more on the activities that surround them, with the goal of learning how objects are handled. Mol argues that "*When a disease is being 'done', we may say that it is performed in a specific way."* (Mol 2002, 32). Praxiography focuses on knowing artifacts as entities that are modified in practice, rather than on understanding people's perspectives on them:

> *"Because as long as the practicalities of doing disease are part of the story, it is a story about practices. A praxiography. The "disease" that ethnographers talk about is never alone. It doesn't stand by itself. It depends on everything and everyone that is active while it is being practiced. This disease is being done."* (Mol 2002, 32-33).

The notion that the object is not provided and bounded, but exists in materialities, places, and practices, including the researcher's, is demonstrated and given birth through enactments of sources and documentation. As a result, *realities* shift situationally and processually as a result of practices (Pedersen 2021).

Mol argues that when practices are put at the forefront, there is no longer *"a single passive object in the middle waiting to be seen from the point of view of a seemingly endless series of perspectives"* (Mol 2002, 5). Since different practices enact the manipulated object in different ways, reality becomes multiple (Mol 2002).

As she puts it, the body is multiple: "*It is more than one and less than many"* (Mol 2002, 84), because diverse representations of the body overlap in health-care procedures.

Here, we see how adhering to the multiple nature of the object of study, has the ontological implication that the ethnographer does not engage with one, but multiple realities. This means discarding for example a realist ontology, in which there is one observable reality, and instead exploring how different enactments of support-systems result in multiple understanding as to what counts as true. Mol emphasizes that the concept of multiplicity should not be considered as a heterogeneous, ambiguous, and pluralistic phenomena to be examined from various angles. Instead she shows how atherosclerosis is performed differently across varying socio-material practices (Jensen, Lauritsen and Olesen 2007). This is very important in understanding Mol's ontological starting point, which is not to apply different perspectives on the same phenomena but to attend to the way that different practices result in multiple ways

of *doing* the disease. Jensen, Lauritsen & Olesen argues that complexities of multiplicity lie in the connections to different constructions in multiple dimensions. Some dots connect different versions of practice, and some don't (2007).

Mol distances herself from an epistemological focus on reference, when discussing knowledge. Instead of asking "*...whether representations of reality are accurate"* (Mol 2002, 1). She sees the question of what we know as a matter of manipulation, since the objects of study come into existence with the practices that perform them: *"If reality doesn't precede practices but is a part of them, it cannot itself be the standard by which practices are assessed."*(Mol 2002, 6). In this way Mol views realities as a consequence of practice.

This brings us to the main focus of our own analytical approach, which is our strong focus on the socio-material practices of the way that the unemployment of the individual is *enacted*, which means attending to the various socio-material processes that do different kinds of unemployment in Jobcenter X. We consider examining how practices of Job Center X enact different kinds of unemployment relevant since the main objective of the Jobcenter is to help its clients reach employment.

Enactment is a word, specifically chosen by Mol since it does not have any strong epistemological ties, and thus can be applied for an ontological commitment to practice:

> *"The English language has a nice one in store: enact. It is possible to say that in practices objects are enacted. This suggests that activities take place—but leaves the actors vague. It also suggests that in the act, and only then and there, something is—being enacted. Both suggestions fit in fine with the praxiography that I try to engage in here."* (Mol 2002, 32-33)

What we try to attempt is therefore to do a praxiography of the different practices that arise or are maintained in Jobcenter X by attending to the way that the unemployment of the individual is enacted. In identifying and describing these practices we draw on Mol's *method of comparison* as a way of understanding and identifying the difference between different practices (Gad & Jensen 2010). This implies that language, explanations, and rhetoric are all part of the same performance, one enactment of practice (Jensen, Lauritsen & Olesen 2007, 104).

As such our methodological approach hinges on comparing the ways that different socio-technical configurations enacts different types of unemployment. This means that our praxiographic approach allows us to understand how realities are partially constructed by the

means of technologies. At the same time however, this way of approaching the practices of Jobcenter X also allows us to avoid a technological deterministic approach to the role of ASTA in caseworker practice, since realities are shaped as a consequence of ever-oscillating socio-material processes. This means that this is also a praxiography of the way that caseworkers and the predictive functionalities of ASTA reciprocally enacts and reconfigure practices.

Enacting Predictive Technologies In Case-management Systems

The methodological considerations in this section will not be introduced directly as part of our analytical approach, but are instead meant to provide the reader with an understanding of our ethnographic process and reflections regarding our project.

In the same way as our methodological approach hinges on showing the different unemployments that are enacted in the context of Jobcenter X, this section will be introduced to show how our ethnographic efforts are in themselves performative and what implications this have for how we can make sense of the phenomenon that we study.

A section that considers and reflects on our own role in forming the cultural processes that we try to describe, should be seen in light of the ethnographic process of inquiry that has taken place. When we first entered the field, it was with the notion that algorithms were the main and most interesting component in the predictive technologies that we were investigating. Our initial idea was that a meaningful way of making sense of algorithmic significance in casework-practice would be to pursue a technical or mathematical definition of the algorithmic-term, thus delineating a clear component of the object of study.

However, during our entrance to the field, we gradually became methodologically anxious by this kind of pursuit, as it didn't match up with the various native expressions and ways of making sense of the technologies that we were describing. As part of initial literature search we searched for ethnographic methods or perspectives that could help us in examining or delineating the algorithm. In this process, we stumbled upon a paper by Nick Seaver, called *Algorithms as culture: Some tactics for the ethnography of algorithmic systems* (2017). In this paper Seaver argues for the necessity of viewing algorithms not as mute objects that exist within culture as statical terms but *"as" culture,* meaning that the ethnographer can apply certain methodological approaches to empirically make sense of them (Seaver 2017, 1-2). Drawing on Mol, Seaver calls attention to the multiple nature of the algorithmic term and its various uses across different contexts, thus outlining an ethnographic approach that

engages with algorithms as "*[...]unstable objects that are enacted through the varied practices that people use to engage with them."* (Seaver 2017, 1).

As such we believe that Seavers focus on the ethnographer as an active enacter of cultures is fruitful in reflecting on how the ethnographer molds the cultures that they engage with. However, rather than specifically following algorithmic culture, we choose instead to follow the predictive technologies of ASTA, thereby applying the same methodology, but following a different cultural phenomenon.

Seaver cites Mol's book *The Body Multiple*, as one of his inspirational sources in exploring the varied algorithmic practices and seeing algorithms as *"multiples"* (Ibid.), thus adopting this ontological vantage point of Mol. This brings us to what we see as the most important part of Seavers argument of the multiple and varying enactments of algorithms.

"We are not remote observers, but rather active enactors, producing algorithms as particular kinds of objects through our research" (Seaver 2017, 5).

This has the consequence that the ethnographer is not just observing algorithmic culture, but is actively enacting algorithmic culture as they go about their research. We therefore argue that the meta-reflections that focus on the way that the ethnographer enacts the case-management systems and predictive technologies, have concrete consequences for the field that we engage with. The way that the ethnographer gives space to or focuses on certain themes rather than others, *foregrounds*, as Seaver would put it, some issues rather than others:

"Different ways of enacting algorithms foreground certain issues while occluding others: computer scientists enact algorithms as conceptual objects indifferent to implementation details, while calls for accountability enact algorithms as closed boxes to be opened." (Seaver 2017, 1).

This approach effectively redistributes the object of study, since it is no longer the thing, or object in the center: *algorithms* that are made sense of, but instead different and multiple practices that occur as the results of heterogeneous sites and actors (Seaver 2017).

Following Seaver's line of thought this is essential, as societal framing and enactment of the term *algorithm,* plays a fundamental role in further societal enactments of the term - ultimately deciding what and how issues are given space or focus (Seaver 2017).

This argument can be complemented by relating to what Mol defines as *ontological politics,* since Mol argues that the existence of multiple ontologies and their complex connectedness means that realities are inherently political (Mol & Law 2002).

To Mol different ontologies enact different realities, which means that she sees socio-material practices as political since they entail different ways of performing the world (Mol 2002, 6-7).

This is an additional argument in considering how our ethnographic accounts and investigations of ASTA are in their essence performative. As such the ethnographers enactment of predictive functionalities of ASTA, are also inherently political in an ontological sense.

Ethnographers that investigate the practices that arise or are maintained in accordance with these technologies, should examine these technologies without casting a verdict on their socio-technical configuration.

As such we hope that such an approach can serve as a springboard for discussion and a deeper knowledge of the circumstances and context surrounding the usage of predictive technologies in the public sector. By focusing on how different practices enact predictive technologies, the unemployed and the role of caseworkers, we hope to inform discussion about the different ontological implications or consequences of predictive technologies on a very practical level.

Short-term Ethnography

In comparison to the praxiography efforts of Mol, as illustrated in *The Body Multiple*, we have less opportunities for in-depth ethnographic observations and interactions with practice, which prevents a more thorough investigation of how the client is performed through the reconfigured practice. Rather than maintaining the pretense of having to undertake traditional ethnographic fieldwork, we instead aim to provide a precise and direct approach to our field of research, by introducing Short-term Ethnography.

In the article, *Short-Term Ethnography: Intense Routes to Knowing* Pink & Morgan (2013) introduce a strategy for carrying out *short-term ethnography*. In their view, short-term ethnography is characterized by forms of intensity that lead to profound and legitimate methods of knowing, rather than being a "quick and dirty" manner of undertaking qualitative research. (Pink & Morgan 2013) This means that they argue for shorter periods of observation and participation as being qualitatively viable.. As such, they challenge the long held belief that ethnographic observation should be over longer stretches of time, even years, for the results to be relevant. (Pink & Morgan 2013)

We believe that the introduction of Short-term ethnography allows us to become more directly involved in the multiple practices the caseworkers engage in since our direct ethnographic approach allows us to uncover a greater amount of practices than a more passive one would. We try positioning ourselves in modes of knowledge gathering that puts certain questions or approaches in the foreground. Situations that would typically appear by themselves after long stretches of fieldwork, we actively pursue. One example of this was exploratory sessions with caseworkers, where we asked them to simulate a certain practice or about different functionalities. As the caseworkers maneuvered around Fasit and ASTA's functions, we had the opportunity to directly point on the screen and ask why they clicked there, or what the information boxes ment, and how it would make them think or feel regarding a client's case.

Asides their strong case for short-term ethnography, also drawing on the research framework of Pink & Morgan has given us a new way to comprehend and approach "the field", through their concept of the *ethnographic place***.** This term, understands the ethnographic process as the coming together of various modes of engagement, and localities that are not limited to a specific ethnographic context, but rather extends to the ways that the ethnographer theorizes or empirically makes sense of the collected data. The *ethnographic place* is as such: *[...] a collection or configuration of things of which locality can be part, but yet go beyond locality* (Pink & Morgan 2013, 354).

The ethnographic place includes the environments in which ethnography is conducted, as well as the situations in which it is studied. Short-term ethnography entails extensive field trips which employ participatory and direct approaches to establish scenarios figuring out what is important to those individuals in the context of the study (Pink & Morgan 2013, 352). Instead of patiently waiting for the perfect ethnographic event during one's field-work, the ethnographer must work to bring oneself into contact with these events. In this sense there is an obvious parallel to draw between Seaver's understanding of ethnographic knowledge-making or that ways of knowing are a result of different enactments. Equally, this approach also fits with Mol's praxiographic approach in which the object of study is not seen as materially bounded, but rather enacted differently as a result of ever shifting socio-material practices.

In the following sections we proceed to the ethnographic fieldwork itself, giving an account of how our praxiographic approach was combined with the notion of *short-term ethnography* in an effort to describe the varying practices of jobcenter X.

Ethnographic Field work

In the following we introduce important events leading up to the interviews and the ethnographic techniques that we applied. Rather than artificially dividing the different sections into field work or interviews, we have chosen not to do a particular distinction between field-work or interviews. Instead, we treat all empirical events as fieldwork since we approach interviews "[...] *as a form of cultural action themselves[...]"* (Seaver 2017, 8), meaning that the planning or undertaking of interviews can be engaged analytically by the ethnographer .

During our project we carried out a total number of 3 interviews with the representatives from Schultz and 3 interviews with caseworkers in the jobcenter. The interviews with the Schultz employees were carried out over a period of 2 weeks and took about an hour each whereas the caseworker interviews were more spread out and all took place after sessions of fieldwork in the job center.

During both of our visits to Schultz we observed and took in the general vibe of their modern headquarters, and arrived way too early on purpose to observe the cordial unfolding of corporate life with one or more cups of delicious free, vending-machine coffee. Prior to the visit both of us had decided on writing down our pre-understanding of Schultz that we were about to engage with. This helped us keep track of our ethnographic process, and sharpened the ability to self-reflect when processing impressions from the field.

Furthermore, we agreed on jotting down individual notes just after our meetings had taken place, initially not discussing these first hand impressions, since *[...observers tend to lose sensitivity for unique qualities of a setting as these become commonplace"* (Emerson et al. 1995, 26).

During our visits we applied ethnographic techniques to preserve interesting observations or conversations that we engaged in. As an example, one of the authors of this paper made mental "headnotes" of the things that happened in order to write them down at a later stage (Emerson et al. 1995, 19-20). Before the start of the first interview, we were given a brief tour of the building and especially the office space of our informant.

> *"When we met our first informant, I quickly asked him where his office was, and with a hint of surprise in his voice, he asked us if we wanted to go see the office upstairs. Before climbing the stairs he turned around and without much emotion in his voice he said: "Let's go then and take a look at where we abuse people's personal data". We*

all bursted into laughter. As he used his key-card to enter the first floor office, I wondered what his reaction would have been like, had I not laughed." (Appendix 3).

The previous note from our field work shows the very first encounter with an informant at Schultz. The product owner's use of a joke related to the classic prejudices surrounding data in the public sector, showed a kind of attention to public debate and might have been related to the kinds of questions or points of critiques that he would typically be met with by outsiders. During the initial tour of the open and bright office-space, The term *data-hoarder* caught our attention. As we entered the office-space a guy with a ponytail and glasses, sitting in front of an expensive looking computer monitor. A middle-aged woman was standing next to him, half engaged in conversation, half engaged in following the computer screen action. "*Let us go take a look at the data-hoarders"* (Appendix 3)*,* the product owner said to us as he slowly approached their entrenched position. An office room divider had been placed in such a manner that one could stand directly next to the couple without being visible to them. He tiptoed, leaning over the room divider, and asked them "*how are my data-hoarders doing today*?" (Appendix 3). The guy with the glasses, looking confused for a moment, smiled and said, "*we are doing fine thank you - just hoarding a lot of data he answered*"(Appendix 3). We all laughed again. During this tour and in general, we refrained from taking notes. This was done to build rapport and to not risk creating a feeling of betrayal or to let our informant feel overly observed trying to let this situation unfold in the most natural manner possible (Emerson et al. 1995, 19).

While we were setting ourselves up in the small conference room that had been assigned to us, the curious encounter that hat outfolded in the big open office space of the first floor, was fresh in mind and in the following interview we would use the native term *data-hoarder* as a frame of reference. We opted for carrying out semi structured interviews, since this fitted nicely with the methodological notion of short-term ethnography, which involved engaging in a more direct manner with the field. This allowed us to work iteratively from one interview to the next changing questions or adding important themes as our knowledge of the field deepened and broadened (Appendix 6).

One example of this was the two native terms *input- and output*, which were generally used to describe in detail the difference between the variables used to produce the outputs displayed in ASTA, and the output visible to a caseworker (Appendix 3). The presence of the term in our first interview led us to include specific native-language questions that

encouraged our informant to let us know about her use of the term (Appendix 3), thus being more direct, and drawing on the methodology of Short-Term Ethnography in actively creating the ethnographic events of our inquiry. We would always dobrief searches before meeting with company representatives. In one case an informant had posted material on his LinkedIn profile discussing functional and ethical considerations of using predictive technologies. This provided us with relevant native vocabulary that we could use during the interview.

In interviewing and communicating with our informants we were inspired first and foremost by Spradley's "*Asking descriptive questions",* in order to gain insight into the lives of our informants from a native's point of view (Spradley 1979). We drew inspiration from this ethnographic approach in trying to formulate questions that encouraged our informants to answer with offset in their own cultural reference, limiting their tendency to use their *translation competence* and providing us with a native's point of view (Spradley 1979, 51).

This was achieved by drawing on our informants cultural reference when asking questions, to minimize the risk of the informant using his translation competence. This meant we would re-state their questions and ask about their office-routines in order to understand their daily practice and lives. Instead of asking *"what do you mean by that?" or "why would you do that?",* we used the ethnographic technique of restating the utterances of our informants as questions: "*restating prompts them to speak in their own ordinary, everyday language"* (Spradley 1979, 47). This is different from making the informant use their *translational competence*, in which they translate the cultural meaning from their own cultural scene (Spradley 1979, 51).

In the following, an example of the restatingt of the informants statement, can be seen.

Alexander:

I consider it my professional responsibility to make sure that we do things the right way…well statistically correct [...] we might not reach the right number or result, but one could say that we try to eliminate bias.. or that we in this way try not to include things in our models that shouldn't be there

Lasse:

So,when you make sure not to include things in the model that should not be there,you do things the right way? (Appendix 2.1)

Additionally we would use *Typical Grand Tour Questions*, which encourages the informant to give an account of an event. Its descriptive nature allows the informant to focus or give space to what counts as important to them (Spradley 1979, 50). These kinds of questions were used during fieldwork in the jobcenter in getting acquainted with the different routines of caseworker practice and also during our interviews at Schultz in understanding the different stages required to build their statistical models.

Our use of these kinds of tour questions were closely aligned with our praxiographic efforts in attending to how unemployment was done in jobcenter X through different practices. We occasionally found it difficult to ask the types of descriptive questions outlined in this methodological section. On numerous occasions, one Schultz informant would employ his translation skills for practically the entire duration of an interview.

We speculate that this might be due to the interview culture at Schultz and the role of the product owner, as a great deal of his work consists of *dumbing down* things or to explain complex statistics to outsiders. As such we speculate that his role is to bridge or to translate from one setting to another which might be one way of understanding how the interview unfolded.

This means that he might in some cases refrain from using what we consider *native expressions*, but that in the setting of an interview the continuous use of his translation competence is essential in the kind of situation that he finds himself in. As Alexander's task is to mediate and convey technical concepts to stakeholders who do not possess the same insight, his native language is shaped by this practice.

Participatory Observation

Prior to our field observations, we decided to design a protocol specifying how to approach the fieldwork carried out in Jobcenter X. The protocol can be found in appendix 4. This was primarily done to streamline and systematize the way we jotted down notes, and in what types of situations that we would do so, and secondly because our short-term ethnographic approach and the possible scarcity of interactions in the field, meant that we found it necessary to be direct in creating some of the empiric events of our field-work.

During the client-caseworker meeting our degree of involvement was relatively low which meant a more passive type of participation (Spradley 1980, 58). But during interviews

or fieldwork that didn't involve clients we would actively try to aim for a more *moderate* to *active type of participation* during the first 10 minutes of the interview, asking if we could use the different kinds of functions of ASTA and take over the steering wheel of their computer - the mouse.

As the caseworkers have done a numerous of times before, they will prepare and facilitate the meeting. Since their awareness of what they do might not be explicit to them, it is up to us to identify their behavior and practices (Spradley 1980, 55). This includes both paying attention before, in between and after meetings. During observations we must be aware and pay attention to atmosphere, surroundings, and impressions the whole time we are there (Spradley 1980, 56). Additionally, we would use the canceling of a client-meeting as an opportunity to further engage in conversation with a caseworker if we would get the chance, striking up casual conversation with them in a corridor or see if it would be possible to have lunch with them.

Both authors of this project have a background in social work and at times our conversations with the caseworkers felt more like sparring with a colleague from another department than interviewing an informant. This was especially true for the second author who had experience from working in a municipal context with very similar kinds of tools and client interactions. For this reason, it proved a bit more difficult for the second author to identify certain tacit rules at work, since the familiarity of the situation made him feel more at home than what was the case with the first author (Spradley 1980, 62).

In this instance we found ourselves in the curious situation of being both insiders and outsiders (Spradley 1980, 56-57). Our social work background meant that we had a good sense of the bureaucratic workways of a municipal institution but could also reflect on client-caseworker relations from a professional standpoint. At some times this gave us the experience of engaging in professional evaluations about a client's case with the caseworkers. Our backgrounds provided us the framework for participating in the native language of Jobcenter X, making for a more active participation.

Coding

In the praxiography of the different practices of Jobcenter X, we have chosen to code our data in a way that resonates with the praxiography of Mol. In coding the data we have a focus on comparing the different statements of our informants in following the unfolding of multiple

practices, by the means of *listing* instead of *categorizing* our data. Arranging the statements of our informants through the method of *listing*, has been our attempt at engaging with the data in accordance with Mol's method of comparison in seeing how various things, caseworkers and technologies made for multiple practices. These various lists can be seen in Appendix 7.
Most importantly, this was our attempt at not letting reality precede our findings (Mol 2002), but to see how different socio-material connections could perform reality in various ways. The way we order our data, does not mean that we simplify or categorize the complex, but that our listing makes way for investigating multiplicity of practices and how these relate or in some instances overlap (Mol 2002). This means that we compare our informants' statements without closing down categories created by our understanding of the statements of our informants.

Analysis

Mol's work concerning atherosclerosis focuses on how different practices enacted the sickness in multiple ways, and how reality shifts with the practice through which it is shaped. Drawing on her approach we investigate how the unemployment of the citizen is enacted as part of a practice that consists of caseworkers, clients and predictive technologies etc.
The analysis is centered around the empirical findings of meaningfulness or lack of same in caseworker practice. *Meaning* will function as the leitmotif and recurring theme in our analysis. Using the native term meaningfulness, we want to illuminate how different ontologies are shaped as a result of both the output of the different tools and the way that data is illustrated in the system. Overall, the caseworkers relate to the way that these tools support them or work against them, by referring to certain practices and the outputs of these functionalities as more or less *meaningful.* However meaning and meaningfulness are not to be understood as static terms or perspectives on the functionalities of the tools, rather we will argue that meaning and lack of meaning express themselves as experiences that are performed in practice.

As the analysis will show, there appears to be not one but many ever shifting practices that enact both tools and the unemployment of the individual in varying ways.
We have divided the analysis into four different analytical sections that describe the different

and overlapping ontologies of practice. The first analytical section presents the reader with an introduction to the context in which ASTA is introduced, showcasing different circumstances and conditions of the caseworkers in employment agency X. In the 3 following chapters we describe the different practices that relate to the 3 overall "tools" of ASTA: CP, IM and lastly, RLU. This means that our analytical insights are always tied up and related back to how the caseworker enacts different functionalities of ASTA and how this ends up doing the unemployment of the client. Before every analytical section we will do a brief description of the functionalities and practical design of every tool, since getting acquainted with the functionalities and design of the different tools are important in understanding the practices in which they are enacted. In our first introductory analysis we show how the different tools cannot be meaningfully separated due to the system design and the caseworker's way of engaging the different tools as part of their work practice.

ASTA in Jobcenter X

In Jobcenter X the overall objective of the caseworkers is to help their clients reach employment but also helping companies with recruitment by matching them with clients: *"We have two assignments, to help the citizen find a job in the best and fastest way, and to help the companies with recruitment."* (Appendix 1.2).

In this statement we see how the caseworkers of Jobcenter X have divided priorities, since it is not just a matter of matching a client with a desirable job, but that there is a certain temporal aspect at play here, which means that the speed of which such a match is made is something to be considered.

"Did you check in?", we asked the panting client. He had taken a wrong turn; he had just informed us, and had been in a hurry to undo his mistake. "*Yes*", he answered as we started chatting about how his job-hunt was going. Sitting in the lobby, we observed how people would check themselves in, or forget to do so. Caseworkers would state, "*I think you forgot to check*-in", or would ask them kindly to do so following them to the exit after a meeting. The system had a double role.

The caseworker is responsible for taking notes and documenting, and registration is a factor in determining whether or not the citizen has participated in the meeting. Furthermore, the registration served as proof to the citizen that he or she had attended the meeting and was not absent. Some clients already had met their caseworker where others had not, which meant

that the caseworker in some instances had little knowledge of their client apart from what they had seen in the system, and in other instances we found that caseworkers and clients would communicate in ways that to an outsider seemed quite implicit.

One common denominator, for every single client that steps through the Jobcenter doors is their legal status as unemployed. All of them share the fact that they are de facto unemployed in the eyes of the Jobcenter, in the sense that they do not work 37 hours a week. This is because some clients have part time jobs or positions, but since this does not amount to an average of 37 hours a week, they are still eligible for unemployment benefits (Appendix 3).

Caseworkers have a lot of different administrative tasks that they need to attend to, which are conducted and jotted down in their case management system Fasit. Not surprisingly we saw how having and maintaining an overview of the client's case were essential to their work. We also noticed how this overview, important in preparing for the meeting with clients, often happened under the pressure of time, making a caseworker's ability to navigate the system effectively essential; "*[...] because it is also about time optimization. If I need to check 10 different things [in the system], and I also need to go check this, then the half hour is gone"* (Appendix 2.2). In the previous quote we see how caseworkers navigate the system to prepare for a client meeting. This is either done on their stationary computers or portable ones, and if there is one object that is used continuously as part of their practice it is the computer screen. The computer screen is an object manipulated not only, although primarily by the caseworker. Clients direct their attention towards the different pieces of texts, icons and tabs in matching and evaluating their job-searching efforts (Appendix 3). The computer is used before and after meetings to create an overview of the case or to document the client-meeting, and what has been agreed upon with the client. These notes are then documented and appear in the system from then on, meaning that they are then used as a way to create and maintain overview for the caseworker. During the meeting caseworkers and clients would take turns in pointing at the screen, such as asking a caseworker to check a certain document - often asking for feedback regarding the structure or content of their CV or asking for advice. Or simply just pointing at the screen and telling the caseworker what job applications they found interesting.

The point is that the computer screen is enacted as part of different practices, in one instance it is used by the caseworker to prepare for a client-meeting or to document agreements made between caseworker and job-seekers and in another setting: during the client meetings as quite literally a common frame of reference.

As a client in the unemployment sector, one needs to fill out a certain CV-template that is filled out online and which is called the Jobnet-CV. We have found that client's do not use this to apply for jobs, but rather it functions as a way for caseworkers and clients to discuss both the job goals and qualifications of the client.

We now take a closer look at the clients CV and its function and meaning for both caseworker and client. The job recommendations that the clients are shown on their Jobnet -profile is based on this CV, containing both qualifications and job goals. In the practice of Jobcenter X, as a municipal rule clients are required to have a minimum of 10 qualifications listed in their Jobnet-CV (Appendix 1.3.) Additionally they work from the organizational framework that the client is required to have a minimum of 3 job goals (Appendix 1.3.) Therefore caseworkers spend time ensuring that these requirements have been met by the client, which mostly happened during the first meeting with the client.

Job goals and qualifications, therefore play a double binding role as they are both part of the formal description of a client's case, as expressed in the Jobnet CV and that in turn job goals and qualifications are discussed between caseworkers and clients, to establish clear agreements between the job-searching strategy of a client as well as making sure that the client has listed important qualifications in their CV.

In Fasit, there is a function called "Journal". The journal provides the caseworker with a complete overview of information relating to the client's case, as carried out in the system. This could be phone calls, jotted down agreements made between the client and the caseworker, notes on the client's case as well as relevant statutory deadlines or internships. In the following quote a caseworker explains the function and importance of the journal in preparing for a client-meeting. "[...] *It provides you with an overall overview of what has happened to this client, and it is surely one thing that I go to check out if a client-meeting is thrown my way, with extremely short notice"* (1.3 Appendix).

This was an interesting finding to us, since representatives of Schultz had highlighted CP's ability to prepare the caseworkers for meetings with short notice. During an interview the product developer had used the allegory of the tools ability highlighted its ability to "*peel the potatoes*" (Appendix 1.2) and during the first interview with sales director of Schultz, he had gone into detail about the tool's ability to conserve information and to make the handling and preparation for a new case both easier and quicker (Appendix 3).

In the following we describe the most important functionalities of CP in order to engage with the practices that unfold in the context of these functionalities.

Introducing the CP module - *job-searching in the last 30 days*

The primary case-work systems used in Jobcenter X are Fasit and the different add-on modules of ASTA. As we have already explained in the problem field, ASTA cannot meaningfully be reduced to just a handful of functions.

The following image shows CP's placement in Fasit, which is in the uppermost toolbar in the system. By clicking the icon that says "Samtale forberedelse" (CP), the following figure marked by a red square, opens CP in a new tab, and displays a range of different modules displaying data about the client and their job-searching efforts.

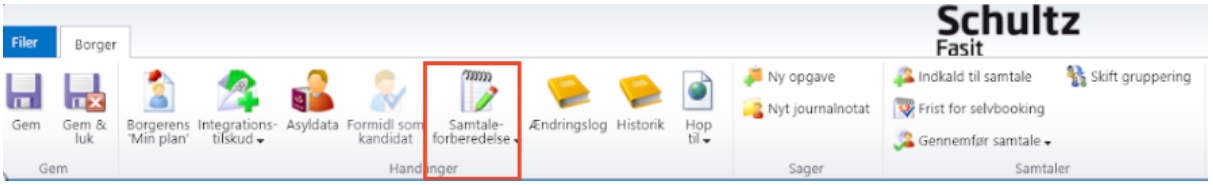

Figure 1

Although CP consists of a range of different modules, we found the 'conversation preparation'-module to be the most widely used and related to. The below figure shows the first module that greets the caseworker, which is called *job search in the last 30 days*. It consists of 6 different values, 4 which are numerical values and two that address the method of application and their status. These values will be referred to as metrics. Additionally, the module also displays a category called *Most recently applied for jobs*, which contains the 5 most recent jobs that the client has applied for.

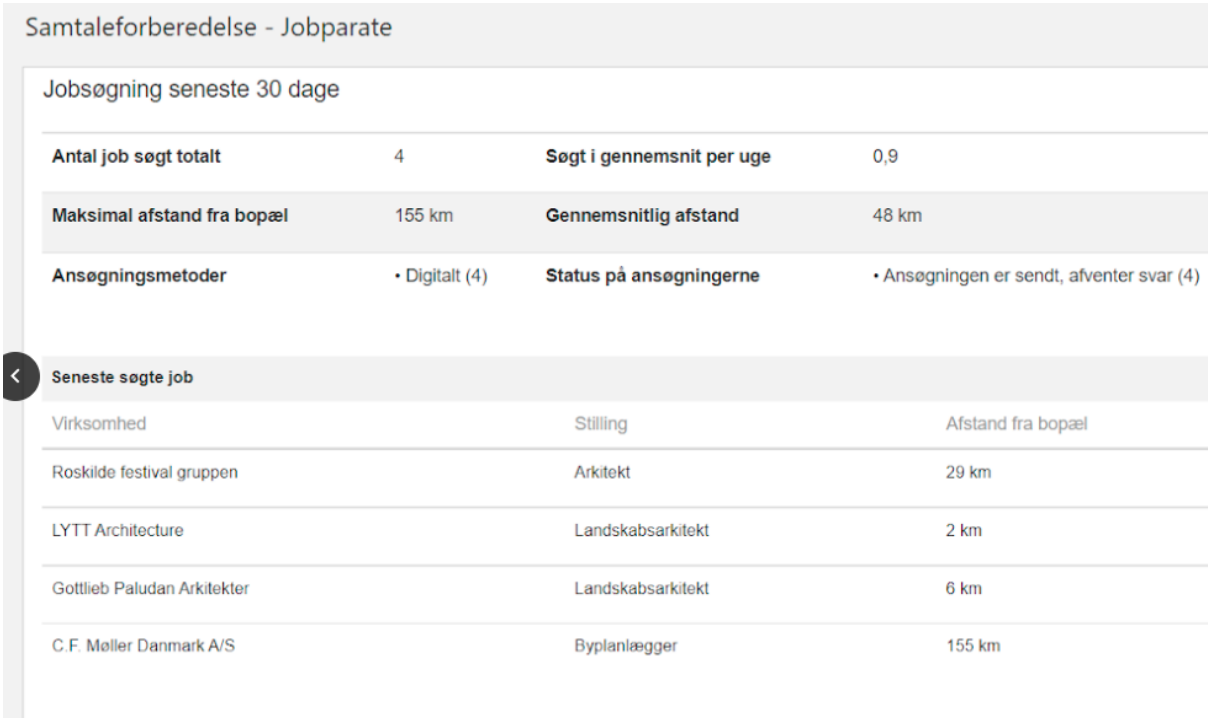

Figure 2

The Practices Surrounding CP

To understand how different practices enact different kinds of unemployment, we have chosen to make space for an analytical chapter that explores the ways that caseworkers engage with the systems and its outputs in various ways, and that they often do not use the functionalities of these tools.

This is thought of as an analytical section that, with various empirical events, creates an analytical backdrop for the contrasting ways that the functionalities of ASTA enact the unemployment of the individual. *"It does not make sense*", is something that is heard over and over again during our field-work in the job center. What is valued as meaningful for the caseworkers, and how does the entangled functionalities shape and reshape practices around the unemployed of the individual? Importantly, *meaningfulness* refers to the caseworkers' own native expresion and is a keyword in understanding how exactly socio-technical entanglements are at play in different practices. In particular we have found that the native term *Meaningfulness* plays a double role in the practice of Jobcenter X since it on one side shows the various practices in which caseworkers cannot follow the outcomes or workings of ASTA and at the same time how these results or numbers do not always make sense in the way that the caseworkers in Jobcenter X sees their own role in relation to the client.

A key finding is how the caseworkers' use of the term meaningfulness is integral to understanding how their use of its design features as well as output make for varying enactments of the unemployment of the individual.

The following empirical events are related to the preparation for client-caseworker meetings as well during the meetings themselves. They illustrate the point that *meaning* is essential in illuminating this analytical point.

Conversation Preparation

This section sheds light on the role that CP has in forming an overview prior to the client-meeting, as well as how it contributes to a particular practice. It focuses on how technical artifacts aid in the construction and reshaping of practices that do unemployment in different ways. As Mol would put it; we are not just examining the *disease*, but how through the lens of a microscope it is enacted in a particular way (Mol 2002, 50).

As briefly mentioned in the previous analytical chapter, caseworkers overall experience is that neither Fasit or ASTA provides them the documentational framework needed. As a result of this most of them have therefore invented strategies to compliment in particular Fasit, by the introduction of OneNote.

Several of the caseworkers found that a function or a pop-up textbox for adding text during the preparation for a meeting, was lacking from both the interface of CP and Fasit. Therefore, several caseworkers were currently using OneNote for jotting down notes prior to and during meetings and then documenting their efforts and the agreements made with their clients in Fasit (Appendix 3). Maintaining and preparing for a client’s case is among others about keeping an overview of relevant documents or information relevant to the clients case. This could be statistics relating to effective job-searching strategies, job ads or important statutory deadlines. Using oneNote enabled them to prepare and maintain an overview of the client's case, and to prepare accordingly.

During field work we witnessed how a caseworker would set up his computer between him and the client at the start of a meeting. Throughout the meeting he would repeatedly access OneNote several times during the meeting, drawing on statistics and his own considerations of the client's case, to guide the client about what he should emphasize in his job applications (Appendix 3). We realized that OneNote was essential to the way the caseworker facilitates a particular enactment of how the client could apply faster and better to

get a job, since the use of different hyperlinks allowed him to effectively navigate and relate to different types of information relevant to the client's case. As a result, OneNote supports the demands that Fasit fails to provide for caseworkers, which can be interpreted as a lack of meaning in the system's features.

Another major obstacle for using CP to prepare for a client meeting is that it does not in all instances provide the caseworkers with the needed data to prepare for a client's case as well as a manageable and intuitive first glance of information about the client. As one caseworker puts it;

> *"I would like to be able to move around these modules, so that I could put them in my order, now you can see the order that I used to prepare, it is probably also shaped based on the way that Fasit is structured, but my brain gets really confused when I open CP, because this ordering is different to the usual one."* (Appendix 2.3).

In this statement we see how a certain ordering makes her wish for the possibility of rearranging the different modules in CP. In her case, this would create a better overview as well as fewer mouse clicks. The goal of "fewer clicks" is to optimize the caseworker's procedure according to time and job tasks. This is based on the caseworker's primary goal, which is to make citizens reach employment. This analytical point both shows the practicalities of working with the job-seeker and how overview and fewer clicks provides the caseworker with much needed time meant to prepare for a client's case.

In certain cases, CP does not display chosen data that the caseworker deems significant, or there is a lack of usability since only a few metrics are presented in the system, leaving caseworkers with little choice but to go into Fasit or OneNote.

When using CP, a metric such *as average distance of job-seeking*, is displayed in the module called *job-searching in the last 30 days*. One caseworker explains to us that the average weekly number of positions the citizen has applied for, is a metric that is often imprecise, since periods of vacation, in which the citizen is exempt from applying for jobs are not deducted, thus resulting in a very low number of jobs applied per week. Depending on the regulatory framework of the client's insurance fund the client must apply for between 6 and 8 jobs every month.(Appendix 3)

When presented with an odd-looking number, the caseworker must use Fasit and its job-log module, which will provide the caseworker with a complete overview of the jobs that the client has applied for (Appendix 3). In this practice, the unemployment of the client is done

by investigating whether or not a certain metric holds true. This is an example of how a measure displayed in the system needs to be further investigated by the caseworker.

The idea of CP, as laid out by Schultz, has been to provide the caseworkers with enough information to prepare them for the client's case. Interestingly, the information displayed by CP is in some instances seen as meaningful, by the caseworkers, in making sense of the client's case, but it still does not provide the caseworker with adequate overview. This is the case for the "*Most recently applied for jobs*"-module. Several caseworkers see the showcasing of the most recently applied for jobs as valuable, but argue that it does not provide the caseworkers with the overview needed, since it only displays a few of the most recent jobs that the client has applied for:

"*Well, I mean. It's nice enough that I can see the 2-4 most recent jobs applied for, but if it is someone who applies for 6 jobs every week, it is not giving me any information about what has happened recently [...] I can't really see what he spend his time on the last month"* (Appendix 1.3)

The caseworker argues that the module provides her with an inadequate overview of jobs a client has applied for, over a longer period of time. But this is not everything the caseworker needs an overview of;: *"I can't really see what he spent his time on the last month"* It becomes apparent that having an overview of the recent job-searching efforts, both in terms of *number* of jobs applied for and the *type* of job, is important in their work with the client. This is an example of how the system is designed to provide an overview for the caseworker, which the new features do not provide. It also shows how the frequency of which a client applies for jobs enacts their unemployment in different ways. Clients that just meet the requirements of frequency of job-searches might not be investigated any further in the job-log, whereas the overview that CP provides in instances where a client applies for a lot of jobs does not aid the caseworker in making sense of a client's case.

Most interestingly the presence of *Most recently applied for jobs* in the first module of CP underlines the importance of the client's job-situation. Caseworkers are interested in the employment history of the client and the unemployment of the individual is partially shaped through the kind of jobs that they apply for, establishing the job-searching history of the client as important.

The same caseworker suggested that this could be solved by integrating the job-log of Fasit into ASTA, thus providing her with a more ample overview, since this module can be scrolled and presents her with the complete list of jobs that the client applied for: "*It would be great with a pop-up, where I could scroll down and see everything in the job-log, instead I have to click back, and go into the job-log of Fasit"* (Appendix 1.3). This shows how navigating several systems becomes a time-consuming affair, but that it is needed since examining and having an overview of the clients job-searching history is important in carrying out her work. Caseworkers have a certain amount of time to prepare for each client meeting, in the practice in Jobcenter X, but a very typical structure is two conversations in a row, followed by a *"break",* in which the caseworker needs to prepare for two new meetings. A typical employment center meeting lasts 30 minutes, which includes preparation time prior to the meeting with the clients (Appendix 3).

This aspect is important since all caseworkers in one way or another describe how carrying out tasks quickly eg. to prepare for a client meeting, is valuable to their work: *"What we have been told is that it* [ASTA] *was supposed to make fewer clicks. But I still have to click the joblog"* (Appendix 1.3). The caseworker does not feel that the amount of information displayed in the first module in CP is sufficient in preparing for the client-meeting, resulting not in fewer but in more clicks. The statement from the caseworker tells us that the tool does not live up to its promised and imagined useability. It is within this framework, that a reduction of clicks is seen as desireable by the caseworkers.

When asked about the importance of clicks one caseworker put it in the following way: *"well I have a limited time to prepare for these meetings and fewer clicks mean more time for preparation"* (Appendix 3). This enables her to determine the following steps in the case more quickly and accurately. To sum up, the caseworker's ability to manage the crucial activities that lead to the jobless person's employment is important. Fewer clicks support a more meaningful practice since it mitigates the pressure of time that the caseworker experiences. In this practice we see how caseworkers combine the functionalities of several systems to save time.

Being able to perform machining tasks faster and more efficiently are important. Caseworkers find meaningfulness in fewer clicks and time-saving functionalities as they contribute to the tasks they need to carry out in order for them to help their client's reach employment. In relation to Mol, the caseworker has developed the best "tomato" (Heuts & Mol 2013) so that he or she can do their job. The practice we have observed for this caseworker turns out to deal with structure in design and layout in the execution of practice.

A good "tomato" in this scenario would be a sleeker and more supporting system, implying that the functionality is appreciated and desirable to the caseworkers.

Mol's work on how microscopes shape the way disease is enacted through a lens are parallel here. The functionalities in ASTA and Fasit is the lens that the caseworkers see and understand their practice through. The developed practice builds on the interactions with the system's architecture, laying the groundwork for workarounds centered on assisting job seekers in finding jobs. By doing so, the functionalities actively reconfigure the caseworkers practice. The caseworker's use of ASTA therefore becomes co-creative for how they approach their work tasks, which entails a certain type of practice around the unemployed: *"If I slightly altered the lenses of my ethnographic microscope, or shifted my view sideways a bit, I would tell different stories"* (Mol 2002, 50).

The system contributes with one lens that the caseworker enacts practices through, which has the implications of shaping their practical way of supporting the unemployed. The embedded functions reemerge in new practices that is the result of combining functions of both Fasit and CP.

There lies a tension between how CP displays certain and limited information and how it forces caseworkers to compliment it with further investigations. CP's enactment of the individual through the data is seen as more or less helpful based on the job-searching efforts of clients.

Getting the Numbers Right

This section shows how different metrics and different kinds of unemployed individuals result in varying practices of unemployment in Jobcenter X.

As part of their job, caseworkers are represented with data in a number of ways in both Fasit and ASTA. In this section we want to show how caseworkers use the information displayed in the module *"job search the last 30 days",* differently based on the clients that they engage with. The way that the caseworkers interact with the module *"job search the last 30 days"* is a good example of how different metrics are attributed meaning based on the experience and pre-understanding of the client's educational background. The different pre-understandings and assumptions that the caseworkers hold of their clients create multiple types of unemployment since numbers are interpreted differently.

During an interview a caseworker told us how she valued information displayed in the

module *"job search the last 30 days"* in regards to a specific client's case and educational background.

As an example, a landscape architect needs to have a job-searching strategy different from a nurse in terms of *average distance from place of residence,* because there is a high demand for nurses, meaning that a nurse would not need to search for jobs situated far away from her home, whereas the opposite typically holds true for an architect.

Additionally, she told us that a biochemist should have a high *average distance from place of residence*, since the kind of industry in which they find employment practically does not exist in Copenhagen (Appendix 1.3). Establishing a relation to the metrics displayed in the system enacts the unemployment because the caseworker interprets these numbers as what they ideally should be, based on the profession of the client and the way that the caseworker understands the situation of the client.

The same goes for the qualitative measure *method of application*. The caseworker argues that the metric does not provide her with the relevant information needed: *"there is no consistency between what they can write in the job-blog and what I can see as a caseworker."* (Appendix 2.3)

In this quote the caseworker argues how the qualitative metric of *method of application*, does not really inform her about the job-searching efforts of the client, and that the metric should inform the caseworker in greater detail as to how they have applied for a job, rather than just telling if it was a digital or physical method of application. This point relates to the previous sections focus on how the kind of overview that CP enacts of the unemployment, is in some instances considered lackluster by the caseworkers. Is the application method unsolicited, orthrough networking or coffee-meetings with companies or aquantaincs?

She argues that a more precise definition of method of application could informe the caseworker if the right job-searching strategies are utilized by the client-: *"[...] as an architect you will get a job through your network and not through job adverts, so for this reason I need to know, I mean it's fine that you don't apply for a lot of positions, but I need to know what you are spending your time on"* (Appendix 1.3). Although she sees 'method of application' as a useful metric in her discretionary assessment of whether or not the client is searching for jobs in a meaningful way, the current metric of *digital* as displayed in the module *job-searching in the last 30 days*, currently is not specific enough to inform the caseworker about whether a not the client are applying for jobs in the right way-

As such an understanding of unemployment of the individual is shaped by how the

caseworker relates metrics to both the job-searching and background of the caseworker. She uses her previous experience with the same type of candidate to establish the meaningfulness of the numbers. This means that the unemployment of the client is enacted as an ever-shifting relationship between numbers, experience and pre-understanding of a specific client's case.

The information within CP is seen as relevant since it can be used to relate to meaningful steps in regarding a client's case and the individual's job-searching strategy. The way that the caseworker and the numbers of the CP module interact shows how there are various and ever shifting practices that do the unemployment of different individuals. Additionally, caseworkers advocate for more flexibility, and as previously shown, the increase in jobs displayed in *Most recently applied jobs,* demonstrates how different caseworkers engage in different but somewhat similar practices of establishing an understanding of the client's situation through the numbers displayed in CP. They do unemployment as a number that holds a certain value through the caseworker's understanding of the client's situation and their profession.

These two previous analytical sections have illustrated how the socio-technical processes that do the unemployment of the clients in Jobcenter X are fluid and always depend on systems, the pressure of time, clients, caseworkers and their preunderstandings. The different functionalities of CP do not in all instances provide the caseworker with the information needed in making sense of a client's case, making it necessary for caseworkers to use a combination of Fasit and OneNote as part of their work. Additionally, meaningfulness or a lack thereof is something that caseworkers experience as a consequence of the way that they interpret the metrics displayed in CP.

Having shown the different practices surrounding CP, especially the module of CP called job searching in the last 30 days, we now take a closer look at the different practices surrounding IM, starting off by introducing the relevant functionalities that play an important role in these practices.

Introducing the Modules of IM - *CV and Find Jobs*

The 2 modules that we wish to introduce, before discussing the different practices that they take part in, are both integrated into the design of CP. However, they differ from CP which is

an RPA-technology, whereas the two modules of IM are based on statistical models trained by means of machine-learning.

The first module is called “CV”, and placed a little further down on the page of CP. The other module, “find jobs” is presented by a button that the caseworker can press which will open up a new tab. We start off by introducing the three main features of the “CV” module.

The CV-Module

The “CV” module in CP looks like this:

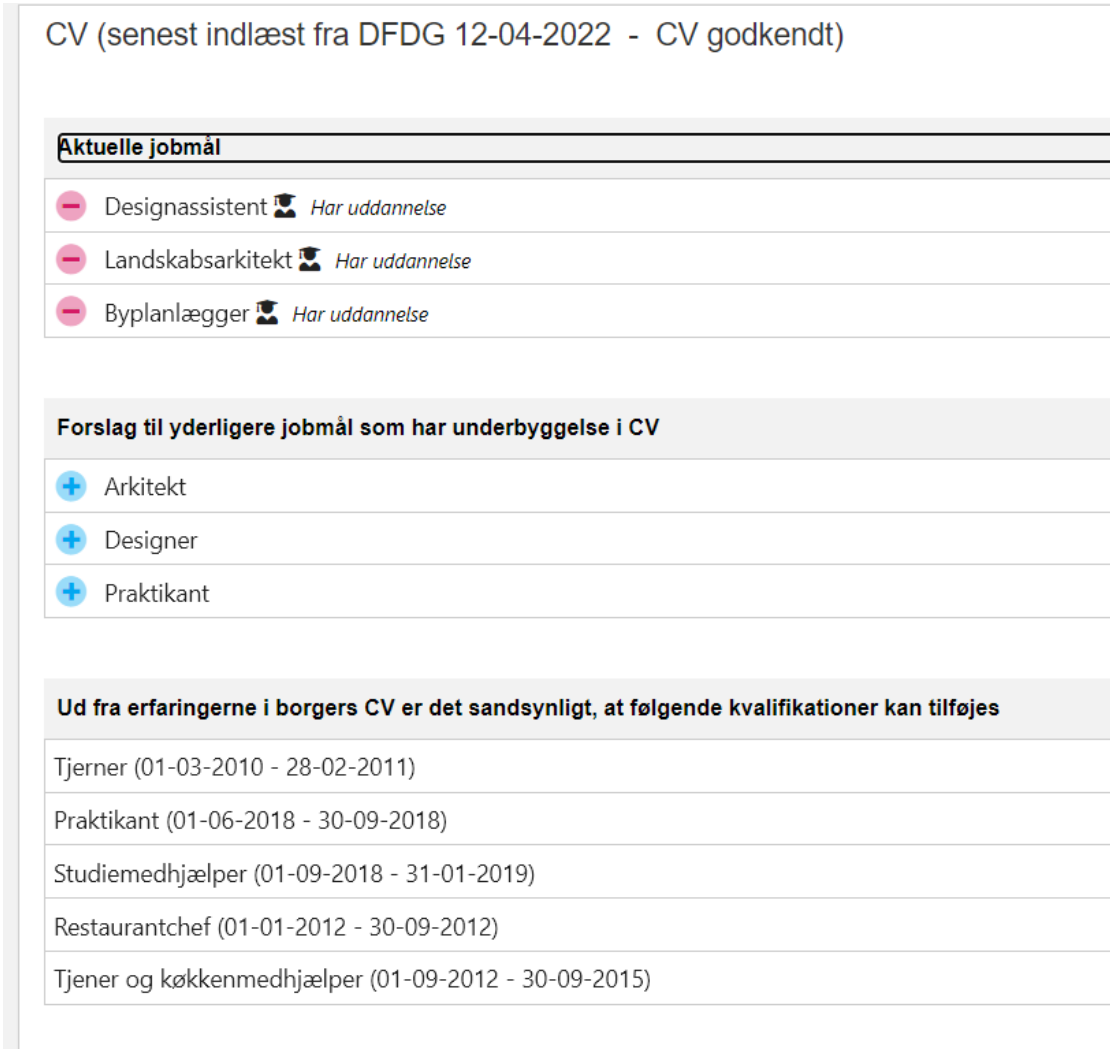

Figure 3

The “CV” module consists of three main components: Firstly it displays the current job goals of the client which are the job goals listed in the clients Jobnet-CV. Secondly, it shows recommended job goals, which are based on the clients qualifications as well as their

employment history eg. experperience (Appendix 3). Finally, the last component of this module suggests different qualifications that can be added based on the Jobnet-CV. We refer to this as additional qualifications.

The Find Jobs-module

The second module is called *Find job*, and is likewise presented on the page of CP .The placement of this tab can be seen as indicated by the red square in the following figure. Pressing the button will open up a new tab, which can be seen in its entirety in the appendix (Appendix 5).

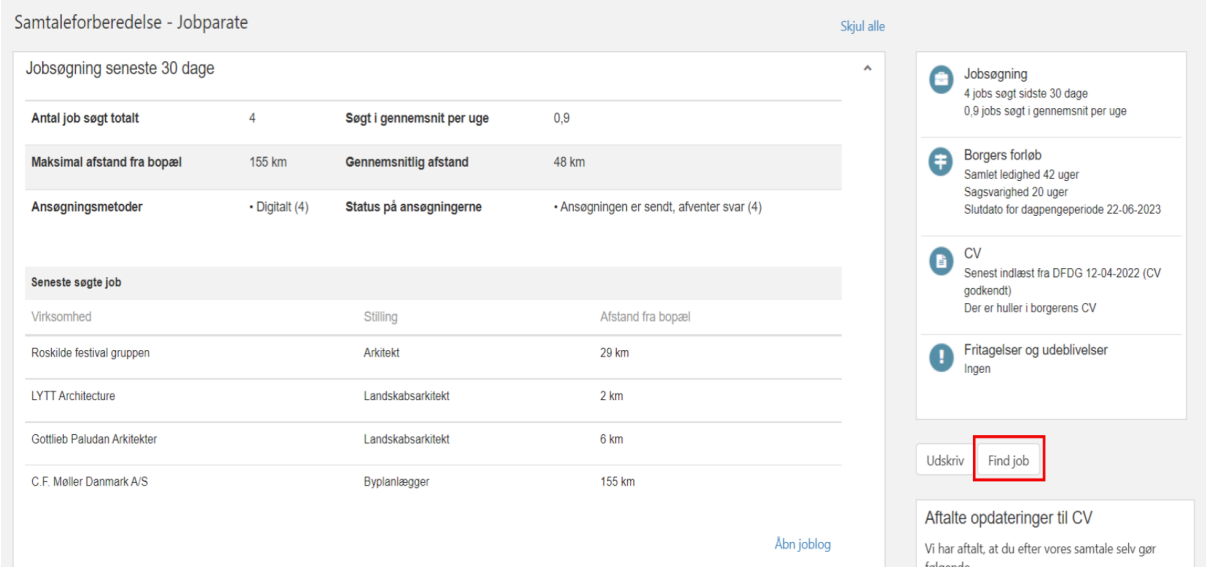

Figure 4

The *find jobs*-module (figure 5) consists of 3 columns that each have a title. The first one contains the title of the suggested job-ad, the next one is the description which includes the first line of the job-ad. Finally, the column farthest to the right is called *Match in percentage*, and the job-ads have been listed hierarchically, based on the percentage from highest to lowest.

Titel	Beskrivelse	Match (i %)
Landskabsarkitekt søges	Jobbeskrivelse Gottlieb Pa	88.31
Senior Architect	Job Title Senior Architect I	87.96
Technical software architect – C#	EIVA is a hardware and sof	87.96

Figure 5

IM and The find Jobs-Module

The following analytical sections will evolve around the way that the unemployment of the individual is enacted in tandem with the different functionalities of ASTA. In laying out the different enactments of these functionalities we do not attempt at presenting either caseworkers or Schultz employees to present or convey the tools functionalities as more truthful or correct. Rather our strategy is to simply show the different practices at play and to not consider one to be more real than another.

This analytical chapter tells the story of IM and how the *find jobs-module* plays a role in enacting different unemployments of the individual. We will explore the various practices that relate to IM and how there appears to be not one practice but rather ever shifting practices that enact both tools and the unemployment of the individual in varying ways.

The following empirical situation is from the third meeting in the Jobcenter between Caseworker C2 and a newly graduated client, seeking employment within the finance sector. We were watching from the sideline, as the caseworker handed over the printed versions of the job ads. Prior to the meeting he had printed the two first recommendations from the *find jobs* module. The client briefly looked at them, as the caseworker explained in detail why these jobs would be interesting to the client. The caseworker was then interrupted by the client, who pointed at one of the printed job ads, saying: "*Well, this position is in Århus C"* (Appendix 3).

After the meeting, the caseworker told us that it had been his mistake not to check the job ads well enough, and that it was embarrassing to him. Although the positions had a 78 %

and 83 % match in the *Find jobs* module he explained to us that the model did not take into consideration the geographical placement of a job (Appendix 3).

In this concrete example, the caseworker establishes the match percentages as a measurement of relevance. Interestingly his understanding of a relevant match differs from that of IM, since the distance to a job is not considered by the statistical model of IM. In this example we see how the *find jobs* module enacts the unemployment of the client in regards to their job-searching preference, without taking into account geographical preferences.

Although the caseworker argues that the find-jobs module sometimes make relevant suggestions in a client's case, numerous interactions have taught him that he always needs to go through every suggestion since he knows his client and his or hers job-searching strategy:

> "*I mean the first time I used it I thought to myself, okay this has to mean...[That it is relevant] But because of the example.[...] but yeah I would look at the number, but I still have to open up the job ads one by one, and the the question is, is this different from what she would do as a job searcher?"* (Appendix 1.2).

The caseworker's statement shows how his practical use of this functionality of IM makes him evaluate the percentage measurement differently, from when he first used the "find-jobs" function. Additionally he argues that his experienced use of this function resembles the way a job seeker would go through job ads. However in his current practice he still pays attention to higher ranked recommendations, by looking through the job-ads, which have been ascribed a higher match-percentage by IM. Although he doesn't fully trust the job-ads recommended by IM, in this practice the percentage still plays a part in introducing a certain task-order. If investigation is constantly needed to ensure that a job ad is relevant for the client the functionality becomes less meaningful when considering the already established value of reducing clicks and having overview of a client's case.

In this sense the job-searching process using IM is enacted through a combination of the task-ordering proposed by IM and the caseworkers focus on assuring its relevance for the client based on his knowledge of the client's preferences and job-searching strategy. This forms a multiple practice around the caseworker's approach to the recommended job ads. Job search depends on how the caseworkers understand the clients case and thereby which job ads that are deemed desirable for the individual client by the caseworker. Therefore, the

multiplicity consists of their own professional judgment as well as to assess whether this is in accordance with the client's wishes.

The *find jobs-module* seems to have different problems when it comes to recommending job ads that are seen as relevant or viable by the caseworkers. In many instances job ads are deemed irrelevant by the caseworkers, even if it was listed high up on the list. A classic recommendation that would figure in both *recommended job goals* and when pressing the *find job* button in CP, would be different student jobs (Appendix 1.3, og 1.2).

A lot of clients are recent graduates who have prior experience in student jobs and have little, if any experience with the types of job jobs that their education entitles them to. However since their employment history contains their student jobs in their Jobnet-CV, this type of job is suggested by IM.

IM presents the caseworker with jobs that enacts the solution to the jobseekers unemployment by matching the qualifications of the client, as displayed in their Jobnet CV, with other jobs that require these kinds of qualifications. Additionally, it recommends both job-ads and additional job goals based on the prior employment of the client.

This is not considered relevant by caseworkers, since recent graduates have had student jobs, but are now generally on the lookout for full time positions where they can use their skills and experience (Appendix 3). This shows the tension at play between what the client has listed as their current *job goals* in CP, and what job ads are actually presented to the caseworker, when the *find jobs*-button is pressed.

In the following example a caseworker addresses an instance where the find jobs recommendation does not make sense to her, making her loss trust in the system based on its recommendations:

. The client in question has an education as architect and the 3 current job goals of the client are *Design assistant, landscape architect and Cityplanner*:

> *"When we get down to number 6, it says waiter, kitchen-helper, electrician. It does not really make sense[...] so it's some of these, in particular kitchen-helper and electrician, that mean that I don't really trust that the system is functioning."* (Appendix 1.3)

The caseworker experiences a discrepancy between the listed job-goals of the client, and the suggestions of *find jobs.* The caseworker loses trust in the overall precision and logic of the

system as it suggests jobs that are irrelevant to the clients own job wishes.

Evaluating the relevance of jobs, depends on the point of departure. Roughly speaking IM presents job ads and suggests the adding of new job goals, based on the trained data in the statistical model and the employment history and qualifications of the candidate, whereas caseworkers evaluate the relevance of a match based on their knowledge of the candidate and what they want. This makes for two different ways of enacting the unemployment of the client. Whereas the ontology of IM bases it's suggestions off the qualifications and the employment history listed in the Jobnet-CV, the caseworkers consider a job ad meaningful when it overlaps with the individuals wishes- or job preferences.

IM and the CV-Module

This section tells the story of how *current job goals* are seen as lacking in meaning and how caseworkers (and ethnographers) struggle in understanding how the system works. The central actor of this story is a small red icon that looked like a 'no entry' sign.

During a caseworker-interview we were seated in front of a computer, exploring ASTA by going through the case of a well known client of the caseworker. At one point we get confused as to the meaning of a red icon that in some of the client's *current job goals* would figure just to the left. a red icon that in some of the client's current job goals would figure just to the left.

We don't have a screenshot of this exact scenario, but figure 6 shows an identical scenario in a different client's case:

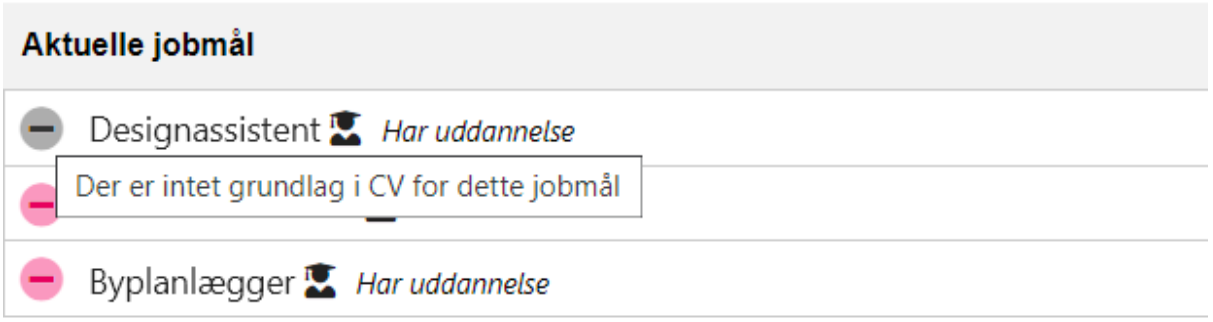

Figure 6

The caseworker then recalls that in Fasit, if you hover the mouse over any icon, a small textbox-explanation will appear. The caseworker curiously hovedered the mouse over the red icon and a text-box appeared: ***"****There is no basis for this job goal in the CV"*.To this, the caseworker promptly replied:

> *"Well this is a lie, it is a lie, not only did it say looking for employment as a psychologist, but developmental psychology was also listed as a qualification [in the Jobnet-CV]."* (Appendix 1.1)

The caseworker expresses dissatisfaction with what the system is telling him, since his client is indeed a psychologist and also has the qualification *developmental psychology* listed on his Jobnet-CV. This means that the caseworker interprets the textbox as a straight lie, because the jobless individual possesses the education necessary to qualify for this sort of position. In this practice the tool is enacted as inadequate in describing the real life competencies and educational background of the citizen and its output is seen as untrue.

In a similar instance, another caseworker expresses both her frustration and confusion when interacting with the *current job goals* of IM, once again referring to the presence of the 'no-entry' sign and the complimentary text-box that reads ***"****There is no basis for this job goal in the CV"*

"*Well, when looking at this, I just get quite a bit annoyed*" (Appendix 1.3), she says and points to the 3 different jobs listed as the client's current job goals:

> "*[...]it says that he can't have these*[job goals]*; Design assistant, landscape architect and City planner, because his CV does not match. So he should not have these job goals, I have been told. Where does it go wrong? Why is it that he can't have these job goals, from the side of the computer's brain, or how one might put it?*" (Appendix 1.3).

When referring to the *"computer's brain"*, we understand that she is referring to the way that IM treats the data concerning the client, and that she gets annoyed that it makes suggestions that are so blatantly wrong, since these job goals have been chosen by the client and discussed with the caseworker.

She gets frustrated, since she experiences that the system is telling her that the client needs to find other job goals, based on the qualifications that are displayed in the Jobnet-CV. This enacts the chosen job goals of the client as a mistake, which means that the caseworker experiences the internal logic of IM as inadequate in assessing if the job goals are relevant. Just as in the previous example, the tools enactment as inadequate in describing the real life competencies and educational background of the client. The difference between how the two

caseworkers enact practice through the functionality of IM, is that where the first caseworker focuses on the system to be blatantly wrong, the other relates this to why exactly the computer comes up with an output like that. These two ways of enacting the tool's functionality, show similar signs of distrust and frustration in understanding and making sense of the output as displayed in the system, but differ slightly as one caseworker reflects on why IM's treatment of the client's data produces a result that does not match up with the actual reality of job-searching.

In many situations we shared the frustration and curiosity that was expressed by caseworkers when using IM as part of their practice. However, *"There is no basis in the CV"* can be understood differently by adhering to the embedded ontology of the statistical model of IM as, as laid out by the product developer Simon:

> *"[...] it creates a connection between a job-title and which qualifications relate to that job title. It* [the job-title] *has been given a distance which is expressed by a value. This means that those qualifications that have a short distance to the job-title are very important for this job title, they are very typical for this job-title. Those who have a longer distance[from the Job Title] are less typical[...] and then at one point we say, when we get beyond this distance, the qualification is not relevant and we dump it."* (Appendix 2.2)

Simon's description can be seen as the embedded rationale for connecting the relevancy of a job goal to the clients qualifications. The values connected to one qualification is what shows as *ok-signs* or *minuses* as visualized in the system. IM's variables are provided with a 'distance', which is related to the value of how closely related the suggested qualification is to the client's job goals. The distance between qualification and job goal is what is decisive in establishing the recommended qualifications as relevant.

As such the sentence *"There is no basis for this job goal in the CV"* enacts the unemployment of the client in various ways depending on the practices in which it exists. From the way that the caseworkers engage with it in practice, it is seen as wrong or inaccurate, and lacking in meaning since it clashes with their way of making sense of the situation of the unemployed individual. This is different from the way that Simon describes the functionality and scope of this function, which enacts the unemployment of the individual by establishing a statistical relationship that informs the caseworkers that the qualifications listed in the Jobnet CV are *less typical* in describing the job goals of the client.

These different enactments of "*There is no basis for this job goal in the CV", s*hows how the understanding of this technical artifact shapes the socio-technical configuration, since caseworkers enact the unemployed by virtue of their interpretation of the visual presentation of IM in CP. In this practice the way that the caseworkers experience the 'no-entry' signs next to the *current job-goals* does not align with the caseworkers' way of making sense of the client's job goals and qualifications in their Jobnet-CV. This is contrasted by the way that Simon explains the statistical models way of establishing a relationship between the job goals listed in the current job goals, which enacts the 'no-entry' sign as indicating that there might be qualifications that describe the job goals of the client more fitting. This contributes to the story of the multiple ways that IM and the unemployment of the client are enacted.

IM - The *Fast-Job* or the *Best Job*

In this section, we will demonstrate the contrast between the two primary enactments of the way to employment, one being the fastest and the other being the best.

It would be too simple to cast IM as enacting unemployment solely through job goals and qualifications, or to understand the practices that caseworkers are a part of to be focused only on the wishes and needs of the clients. Instead, the practices that make out the unemployment of the citizen, vary across contexts, and overlap.

The effort of matching clients with jobs is perceived as one of the most important tasks by the caseworkers and when engaging in discussion about the role or potential of IM in their practice, a lot of reflection goes into what it means to match a person with a job. In the Jobcenter X, there is a need for striking a balance between following the wishes of the individual, but also to address alternative job-seeking strategies as the job search process drags on:

> *"Well I mean here lies the point of balance. As a jobseeker you have the right to have both a plan A, B and C and our job is of course to support you in the best possible way in plan A, but also, as time goes by, to challenge you to also start searching for plan B and C."* (Appendix 1.2).

The situation of the unemployed individual is in this case portrayed as the right for the citizen to follow their own strategy or preference, plan A. The role of the caseworker at the same

time however also is to challenge plan A, and maybe suggest or talk with the candidate about whether it might be relevant to consider plan B or C.

However there is a difference between what kind of job goals that are proposed or discussed with a client. In the following statement the caseworker reflects on following IM's suggestion of a job as a waiter, and the consequence of working in a direction that would force the client to go for a less desired job: *"[...] I mean you can apply for a job as a waiter, but are we going to see you here again in half a year?"* (Appendix 1.3).

This quote relates to what consequences a strategy of pursuing a C-goal might entail for the individual's employment situation, arguing that unsatisfactory employment for the client might mean that they will become unemployed again quickly. Forcing a client to search for a job, that IM has suggested to them based on qualifications or employment history, is seen as lackluster in securing the client's stable employment. We believe that the previous quote encapsules a tension between two dominating ontologies that exist and are expressed as part of various practices in Jobcenter X, *the fast job* and *the best job.* The tension that exists as part of caseworker practice, between these different ontologies, can be further illustrated in the following quote:

> *"In this center [Jobcenter] we work with the notion that one needs to take the jobs that are available, but we also take the point of view that one needs to search within their own field, at least to begin with"* (Appendix 1.3).

The caseworker's reflection, encapsules the tension that exists between the client's job preferences and the Jobcenter's need to shorten the period of unemployment. The job-searching process of the client is enacted as one that should take a point of departure in the client's professional field or one that should match up with their educational history, making the *best job* one that is desired by the client, their A-goal. Very importantly, she briefly touches on another aspect of the way unemployment is done by IM; "*that one needs to take the jobs that are available"*. This can be seen as related to the way that the individual's unemployment situation seen through the lens of IM enacts *the fast job* as an answer to the individual's unemployment.

This ontology can be further understood in the way Schultz Business Manager Nanna argues about a sort of dualism at play between how caseworkers and IM approach the clients. Her statement indicates that IM will suggest types of jobs to clients that the caseworkers would

never suggest:

> *"[...]and instead the algorithm will suggest to you to get a job in cleaning for example, if you have ever done something remotely related. And you do not want to do that anymore, and as an employee [caseworker] you know that he[client] is not interested in that kind of job, but he would be able to get a job by tomorrow"* (Appendix 2.3).

The quote shows how the qualifications or the employment history of the client is enacted by IM in a way that can be used by caseworkers to suggest jobs for their clients that would entail a fast employment. It enacts the unemployment of the client through qualifications and job goals, instead of wishes, thus enacting a kind of unemployment that can be referred to as the *fast job*.

To Nanna, IM's way of drawing attention to a faster job, is also relevant since it coincides with both the wishes of the client's and the employment sector.

> *"Because I mean that the whole jist of it right, you need to be there as short a time as possible right, go earn your own money or get well. [...] because those two things are what… it's the cheapest for society, and the cheapest for you."* (Appendix 2.3).

The *jist* of unemployment of the individual is seen as a matter of taking a job that the client possesses the qualifications for, but not what the client wants. This enactment of IM's ability to perform the unemployment of the client in a different way than that of caseworkers, foregrounds a certain understanding of the *fast job*, as the *best job*, since it is portrayed as aligned with both the goals of the clients and that of society. The logic Nanna presents is the same embedded ontology to be found in IM, as it recommends the job that is most likely for the client to get, based on your qualifications.

Enacting unemployment as a matter of matching qualifications with job goals, is generally, as shown, contrasted by caseworkers who consider the job-searching strategies and the wishes of the clients as part of casework. As such, *the best-job* is not just a matter of speed but in the first place about adhering to the needs and wishes of the job seeker in their job-searching process. In the following quote, a caseworker deems a job-ad suggested by the *Find jobs*-module as *not-good*, based on his knowledge of her job-seeking strategy and the client's

own wishes for future employment.

> *"When I say, that this is not a good match, it might be that based on the fact the she must be available [to the job-market] based on her affiliation with the job insurance fund, it is a good match…but from what I know that she wants and the conversations that I have had with her, it wouldn't be. Because I know she wants to go into another direction, and that is why she has taken all of this continuing education"* (Appendix 1.1)

The caseworker draws on prior meetings with the client and the fact that he has an insight into her job wishes and job-seeking strategy. This shows that the ontology of IM does not align with the caseworker's discretionary assessment as what counts as a good match for the client. But seen through the lens of the insurance fund, where job-seekers must be available for the demands of the job market, a fast-job, as suggested by IM, is seen as a good match.

What Counts as Best Is Multiple

The different practices of Jobcenter X, tells a story of how individual assessment is essential to what good and meaningful practice is and how it is achieved. What we understand from the caseworkers' way of relating to the *best job*, deals with ontological choices about how, (from their standpoints), the individual is helped to reach employment, which is therefore about helping the client in reaching a desired job, also seen as stable. Therefore what should be considered the quickest way to employment is multiple. Through the ontology of the *best job*, although the slowest in reaching employment, will be the fastest in securing stable employment.

Nanna's argument of supporting clients in reaching a *fast-job* is in essence an ontological approach that performs the *fastest way* as the best one. We believe that the different ontologies that perform the unemployment in Jobcenter X, are highly interesting since they enact the client in different ways that deal with choices about how and what kind of employment should reach.

This tension can be related to the following quote by Heuts & Mol, who argue that different kinds of ontologies entail different ways of doing good: *"*[...] *different kinds of goodness, in their turn, come in variants*" (2013, 143). They argue that what is good for one is different for another. Therefore, the good must be understood as being something that is being performed in the practice and enacted differently accordingly. In this way, what counts

as the best kind of employment in Jobcenter X is a matter of how this employment is performed.

Progress

In the previous analytical section, we have showcased the two main ontological enactments, related to the IM-modules. The next analytical section will show how the caseworkers' understanding of progression is necessary for supporting their clients in reaching employment, and how the absence of progress prompts the caseworkers to investigate why progress isn't taking place, thus influencing the caseworkers of the next relevant step in a client's case- We argue that progress is linked to what kind of job goal is pursued by the caseworker as the absence of progress might prompt the caseworker to work towards a client's C-goal.

As shown in the previous analysis caseworkers approach their client's with the notion of supporting them in reaching types of unemployment that coincides with their A-goal. However, the passing of time might mean that a caseworker will start working towards B- or C-goals. The caseworkers experience of *progress in the clients case* can be related to the client-caseworker relation as well as the caseworkers need to make order of the client's case: *"[...] the most important thing is that some kind of progression takes place, and if there isn't any progression, we need to go take a look at why, why isn't there any?"*(Appendix 1.3).

The question, why isn't there any progression, is a typical question that is asked in various contexts of the Jobcenter. As we have shown earlier in our analysis, caseworkers employ statistics as part of their practice to instruct and guide job seekers as to what kinds of strategies that might increase the likelihood of the client reaching employment. This, we believe, can be related to the caseworkers' wish to experience progress in the client's case.
In the following quote we see how the caseworker establishes the job-searching efforts of a client in the following way:

> *"There are cases where they[clients] do 4-job interviews a week, and you can feel that they are doing all the right things and it's just a matter of time. And then you might wait a couple of months, and if there is no progression in the form of a job, then we have to rewind, right?"*(Appendix 1.3).

The quote shows how the caseworker's impression of the client doing *all the right things*, can be seen as a presence of progress in a client's, which will increase the likeliness of the client reaching employment. By, *"then you might wait a couple of months"* we understand that the caseworker sees the job-searching efforts and strategy of the client as satisfying in securing progress in the client's case. As such the presence of progress, means that there is no reason to work in a different direction with the client.

However, as time passes and the client has not yet reached employment the job-searching strategy of the client should be reconsidered. The caseworker describes how progression in a plan-A goal postpones plan-B and plan-C. We see this expressed through the caseworkers' considerations about progress and time as decisive for which plan to carry out. As such progress is multiple since what counts as progress in one case might change as a result of the passing of time.

When asked why progression is that important, the caseworker can't help herself from laughing. "*Because I mean… I'm laughing now since it goes without saying. If there is no progression, the client will not find a job"* (Appendix 1.3). The experience of progression, as described by the caseworker, is therefore linked with the overall goal of the Jobcenter: making sure people reach employment. At the same time however as she reflects more, there is also an element of the caseworker's wish to contribute to the progression of the client's situation.

> "*I think that in our job center, for us to feel like our work is useful, we also need to be able to bring something to the table. If we can't contribute or if we cannot see that work is being put in [by the client], or that our advice or recommendations are not being listened to, do we even contribute to anything at all?"* (Appendix 1.3)

In this sense, the presence of progress is understood as important in adhering to the overall goal of making clients reach employment because progress is linked with the caseworker experience of contributing to, creating, or maintaining progress. Very importantly, the caseworker's possibility of contributing to the client's case creates a strong sense of meaningfulness for the caseworker.

The presence of progress, as experienced by a caseworker enacts the unemployment of the individual as a qualitative matter in which the caseworker's experience of progress in the case, makes the unemployment of the client more acceptable. This creates multiple kinds of

unemployment of the client, that are also conditioned by progress.

The Different Enactments of RLU

In the previous sections we have shown how different types of practices of unemployment are enacted in relation to the technological functionalities of ASTA and furthermore, how some types of unemployment are made more visible or are seen as more meaningful since they help *do* the unemployment of the citizen in a certain way.

In this analytical section, we want to shed light on practices in which the functionalities of *Risk of having a long-term Unemployment* Case-tool (RLU) are enacted in certain ways and how these different practices overlap or relate to each other in ways that at times seem contradictory.

Initially our project was focused on the significance and implementation of predictive technologies, such as RLU. Our research was thus primarily focused on observing myriad activities around the tool and examining what this particular strain of predictive technology would entail for case-management in employment agencies. When approaching Jobcenter X, it was with the expectation that the tool would have been implemented before our field work took place. The implementation had however been postponed. This meant that the caseworkers had been notified and in general terms. We got the impression that the introduction of this specific kind of predictive technology was something that the caseworkers knew about or would occasionally discuss or reflect on and during fieldwork. During fieldwork, several of the caseworkers would mention the first predictive tool for profiling the risk assessment of becoming long-term unemployed, developed by STAR, which had been the subject of a lot of public debate since its implementation 2015 (Moreau & Frederik Kulager 2021). During visits in both the Jobcenter and at Schultz the mentioning of the tool was always a very hot topic and evoked a variety of different feelings and opinions of its usefulness in their own practice as well as the use of predictive technologies in general.

The following sections will illustrate the different convictions and understandings that are linked to the enactment of the tool and its assessment of a client's risk of becoming unemployed: its output. The first section showcasing Schultz enactment of RLU as a dialogue tool, whereas the second section deals with the way that caseworkers argue that RLU shapes

a certain kind of dialogue and client-caseworker interaction.

Schultz's Enactment of RLU As a Tool For Dialogue

Although caseworkers in Jobcenter X, think of the tool as one meant to instigate dialogue, they are at the same time aware that it can reshape their entrance to the dialogue. Our findings support the notion that there is a certain scaffolding to the dialogue. This is in stark contrast to the way that the product owner of Schultz envisions the use of the tool in practice, as a *tool for dialogue*.

Schultz's primary enactment of RLU, is one that argues that predictive technologies are not meant to make decisions on their own, but should only be used as a way of supporting or guide the caseworker's decision-making. The product owner of Schultz, Alexander argues that the discrepancy between the intended use and what he sees as a potential risk for misuse:

> *"this is not a final decision, this is a decision support for someone[a caseworker] who is taking these decisions, or a starting point for a dialogue, so we are very aware that we do not make tools as decision-making, we are also aware that these tools are incredibly easily misused"* (Appendix 2.1).

In the framing of the RLU, lies the perspective that this kind of tool cannot in itself be used as the foundation for decision-making, instead it is to be understood as a *starting point for dialogue*. Not only does he believe that one should use the statistical measure of the tool as a starting point for dialogue, he also recognizes the possible misuse that happens when people take its output for face-value. As such the product owner argues that the user should adhere to a *positive result* (an output that shows the client to be at risk of unemployment) of the tool as a statistical measurement of probability:

> *"It's a probability. And it's a decision support system, and that's why it's so important to say that it is. It does not come with the truth, it does come with some probabilities, based on the data we have, on this population group in advance, we have seen this."* (Appendix 2.1).

His rationale is that there is only a probability that this citizen can end up with a long time unemployment, based on the data that was available to the model. The probability is based on

the data that was available to the model, and therefore this output is a statistical representation, which solely reflects the statistical probability of a client becoming long-term unemployed. With this reasoning, Alexander argues for its role in practice as a decision support system.

As we will later show, this way of enacting the tool's output is contrasted by how caseworkers consider an output that shows the client to be at risk of unemployment, as something that scaffolds a certain kind of dialogue.

For Alexander and Schultz the statistical models and the data of the individuals that are targeted with the predictive functionalities of ASTA, are understood in terms of probabilities, and that there is a limit to what a probable outcome should and can be used for in the context of the employment agency.

At this point in the analysis, we find to briefly reflect on how RLU's ability to produce a *probable result* is a socio-technical construct in which the present situation is considered or taken into account in judging its results. An example of this is how the historical data on which the tool's measurement of probability is based, are considered imprecise, by Nanna, in wake of the Covid-19 crisis: *"We have been modeling within a certain premise, and corona is a completely different premise, in that some people are just layed-off and others get to stay home and receive unemployment benefits[...]" (*Appendix 2.3). This is an example that illustrates how the socio-technical performs the results of the tool as predictive.

From the way that Alexander frames the understanding of statistical probability, it seems as if there is one right way of understanding this statistical measure when used in practice; as a measurement of probability. During the interview, Alexander describes the inaccurate ways that caseworkers in some instances, according to him, relate to this measure, suggesting that they do not interpret the statistical model's output as intended:

> "*When are you at imminent risk of becoming long term unemployed… is it when you have 20, 50 or 70 % of risk? It is quite individual when people think that it looks grim or not…[...] So this is what the data can tell us, and the best we can do is a 50/50, if you can do better, fine. But don't get mad that the machine says 50 %[risk], because what it's in reality is saying is, "I actually don't know"* (Appendix 2.1).

In the previous quote, Alexander argues how probabilities are understood differently, but also that statistics are no magic bullet in that for example 50 % risk, could indicate a high degree

of certainty regarding the calculations of the tool. In the way that Alexander frames the statistical outcome of the tool as one that an individual relates to in different ways, but that at the end of the day it only produces a probable outcome.

In the above argument, Alexander showcases how probability is easily misunderstood. It should in his eyes, rather be seen as an outcome that is 50% probable. With this, Alexander does not attempt to tell that 50% means that the client is at risk, the 50% is a coin flip.

However there lies a contrast between the way that the product owner enacts the tool as one meant for a dialogue, when compared with Simon, the product developer of Schultz. Whereas Alexander enacts the tool's as a measurement of probability, Simon emphasizes the potential it holds in allocating resources to help client's in risk of becoming unemployed. We do not regard the ontologies as opposing, but rather complementing and contrasting ontologies that enact RLU and the individual's unemployment in somewhat different ways.
In the following quote he reflects on the fact that the output of the tool will sometimes be wrong and what this might imply for the client-caseworker meeting:

> *"Basically, I think that one must make the assumption that citizens who have an unemployment case in the Jobcenter themselves think that they are in an unwanted situation. They are not interested in being unemployed, they are interested in getting back to work [...] this means that those who need a lot of help will get it, and those who need less, get less help[…]* (Appendix 2.2).

The inherent argument that the individual interprets their own lack of unemployment as unwanted and calculating their likelihood of becoming long term unemployed based on a statistical model is therefore interpreted to serve a greater good achieved through the resource allocation that the tool can be used for. To Simon, possible imprecisions of the tool are of no concern since RLU's purpose is not to support decisions, rather its overall goal is allocating resources in the most effective way possible. The profiling of the individual is therefore justified in that unemployment is unwanted, both for the employment agency and the individual and that RLU can help to direct resources that make the client reach employment.
In this analysis we have illustrated how s RLU is enacted as a tool for a dialogue, ascribing a sort of mathematical precision to its output. However the *positive result* is interpreted and related to differently, by various caseworkers as the output shapes their approach to a client's case.

The Caseworkers Enactment of RLU As a Tool That Shapes Dialogue

In the following sections of our analysis we shed light on how the caseworkers of Jobcenter X enacts the tool and its output, not as a measure of raw probability but one that shapes the dialogue with the client and makes for a certain approach to the client's case. This also goes to show how both Schultz employees and caseworkers cast RLU as a tool for dialogue, but that they do so in very different ways, as caseworkers reflect on the ways it might scaffold dialogue in a certain way. Rather than relating to the output as a neutral measure of probability, the caseworkers in Jobcenter X argue that the output makes for a certain kind of client-caseworker meeting, a certain kind of dialogue.

In the following statement a caseworker reflects on RLU's output. He argues that a positive result might contribute to a certain negative perception of the client, prior to their first encounter. Additionally he addresses that one doesn't know the exact reason for a citizen to be at risk of becoming unemployed:

> *"It can be all sorts of things, it can be that some numbers have been interpreted falsely, which alerted the system, or maybe the person has had something that meant that he has had a very unstable labor-market attachment[...] so it might be that I have a certain bias towards bias or a certain perspective towards him, and that might also change, I mean this can be felt, if you go into a meeting with me and I already made up my mind about, okay this is someone who is not motivated. You would be able to pick that up and it wouldn't make for a good conversation, so you should really focus on meeting them where they are, and then take the assessment during the meeting"* (Appendix 1.2).

In this statement the caseworker addresses how the output might be based on circumstances in the client's life that have resulted in a misleading judgment. Secondly, he addresses how the risk-assessment of the individual shapes his pre-understanding and approach to the client-meeting, which he deems as problematic in ensuring a good type of conversation with the client.

His own reflection on how the model's output shapes his pre-understanding and therefore meeting with the client goes to show the double-binding character of using predictive technologies. Although he is aware that certain data might skew or produce what

he deems unjust results, it still makes for a certain enactment of the unemployed individual, in the form of a certain bias as well as what he describes as a sort of negative attitude that might impact the encounter. Interestingly, his way of relating to the output of RLU, is not one of probability but rather how the result leads him to have a certain unethical prejudice against a client.

The unemployment of the individual is not enacted as a measure of probability, rather the different data variables that the system holds of the client are understood as the different and unique life-circumstances of the client that have resulted in the assessment of risk.

The variables that can be used to understand the individual's unemployment are seen as unique to the client, rather than data points that predict the client's risk based on thousands of other clients with similar characteristics.What's at stake here is the caseworker's recognition of something as unique to the client and that certain life-circumstances might influence numbers that in the end result in an output of risk. In the following quote, the caseworker's reflect on what a *positive result* might entail for the type of conversation that he would engage in with the client.

> *"It is a tool that could be used to say… well when working with this target group we might need to be a bit more aware [...] that I might need to make a conscious effort in asking questions and in figuring out, is it true or not?"* (Appendix 1.2).

The key difference between the enactment of the tool, as one for dialogue, and the way that the caseworkers present it, lies in the key phrase, *is it true or not*? This is very different from the understanding of Alexander in which the statistical output is a measure of probability that should be used as a neutral measure.

Instead the caseworker argues that he must relate the output to his approach to the client in understanding why he is at risk of becoming unemployed. Examining or looking for circumstances in the client's situation that might explain a *positive result*, enacts the unemployment of the individual as something that might be explained by uncovering or relating the screening based on either metrics displayed in the system or through conversation. As such, the output of the tool is established as significant in making sense of the client's case. RLU serves to inform, communicate and assign an importance to the act of looking for circumstances in the client's life that might result in them not reaching unemployment.

That caseworkers engage in efforts of relating the measurement to the clients case, is seen in another instance, where a colleague argues that a mere statistical result would not be of any help in her work; *"If I don't know why, I can't use it for what I need to do, it's just gonna draw my attention to a risk and I will be looking for that risk instead."* (Appendix 3). Again, attention is drawn to the way that a *positive result* makes for an understanding of the client, as *in risk*. However, without a more precise understanding as to what variables that have resulted in the client being at risk, the caseworker cannot make sense of the output in relation to the client's case.

We speculate that the caseworker's argument that a mere statistical result does not help her in making sense of the client's case, might be related to the overall way that caseworkers perceive or interpret the output of ASTA as meaningful. As demonstrated in the analytical section 2.2, caseworkers interpret metrics as displayed in CP, such as *average distance from place of residence,* to understand whether or the job-searching efforts of a client brings the client closer to reaching employment. This is based on her pre-understanding of the clients professional background. The output of RLU is not seen as meaningful, since it does not allow the caseworker to establish a qualitative or quantitative metric of the client's case, which could be used to adapt or change the job-searching efforts of the client. Therefore, RLU does not provide the caseworkers with an answer as to *why* a client might have a harder time in reaching unemployment, which is why it cannot be used as an indicator of the next meaningful step in a client's case.

Until We Know Better

The caseworker is not ready to apply the result of RLU since it does not provide her with a sense of addressing her tasks of what kind of effort she needs to proceed with. This relates to the progress being slowed or impacted by the uncertainty of why the client is at risk.

Overall the caseworkers express a general mistrust towards the tool's ability to aid them in their work. However, one concrete use is suggested by a caseworker, which bears resemblance to Simon's argument of the tool as an effective resource allocator: *"So instead of a 4-week deadline you could say that with this target group, we might, until we know better, give them a deadline of 2-3 weeks"* (Appendix 1.2). The act of introducing a temporal displacement between client's screened at risk and those not screened at risk, would mean

that client's in risk would have their first encounter with the caseworker take place earlier in the case process.

But interestingly, *"Until we know better"*, shows how a *positive result* in relation to a client, still establishes their situation of unemployment as one that needs to be examined. As such in this instance using the tool to change the temporal ordering of client-caseworker meetings still posits a certain way of engaging in dialogue with the client. To investigate whether or not they are at risk, as a precautionary measure. This enacts the unemployed at risk as an individual which' case should be investigated further in the initial client-caseworker meeting.

In this analytical section we have shown the various and contrasting enactments related to RLU and its output. Schultz employees and caseworkers have different understandings of what the output means and how it should be used as part of casework. This creates different practices surrounding the tool and calls attention to the ontological differences that exist between how caseworkers argue that the output tool will create a certain type of biased dialogue, as opposed to the enactment of the output of RLU as a somewhat neutral starting point for dialogue.

Practical Data-Competencies

In our analysis we have shown various practices that enact the unemployment of the individual and how the functionalities of ASTA are in some instances seen as lacking in meaning and at other times seen as complementary in making their clients reach employment. The caseworkers of Jobcenter X display an ability to relate to certain measures of the system or to reflect on how the different ontologies created in tandem with ASTA do the unemployment of the client in various ways.

These are practices in which the caseworkers' understanding of the system or the way they deploy its functionalities illustrates what we identify as a *practical data-competency*.

The term *practical data-competency*, is one that we introduce as a descriptive term for the caseworkers ability to reflect on the socio-technical contexts that they work in.

One example was a caseworker's reflection on how the metrics displayed in *recent job search* could be used to make sense of the client's job-searching strategy and evaluate or recommend changes to the strategies based on her knowledge of how client's with different educational backgrounds reach employment in different ways. Another example of this is

related to the output of RLU, and shows how the caseworker reflects on the way that a *positive result* might produce a certain bias as part of the client-caseworker meeting is one instance that shows their ability to reflect on how RLU's output affects their practice and interaction with the client.

Caseworkers also exhibit the ability to reflect on how the configuration of the system or certain features might influence or skew their perception of a client's case. In another example we see as emblematic of the caseworker's ability to reflect on the kind of unemployment that the system entails, the caseworker envisions a practice that effectively combines the two overall ontologies that we identified in relation to IM. A *fast job* and the *best job*. In the following quote the caseworker addresses the fact that working towards a C-goal for a client should not necessarily be seen as something unwanted by the client:

"Does it need to be something[a job] seen as way down the ladder or completely unrelated to your competencies[...] might it instead be something [a job] where you could utilize your academic competencies." (Appendix 1.3)

IM's way of enacting unemployment of the client by means of job goals and qualifications, can be used actively by the caseworker in ensuring a job that although different from the initial wishes of the client might still contain some of the wishes that the client is after. There is a focus trying to ensure that a so-called *C-job* is not necessarily a job that is viewed as undesirable by the client, since there might be some competencies or conditions of that job which are seen as desirable. This enactment strikes a balance between the different ways of doing unemployment in Jobcenter X as the caseworker shows how adhering to the needs and wishes of the clients, can be combined with the recommendations of IM.

This is an example of how the caseworker's understanding and creative use of the functionality of IM can be seen as a *practical data competency*, and her proposal is effectively a hybrid between the *fast job* and the *best job*.

In the next example a caseworker proposes a use of IM and CP in which understanding *how the system works* could be used actively as part of casework. One concrete idea on how a small tweak of the system could lead to an increase in the functionality of IM is suggested by the same caseworker who took a critical stance regarding the system's tendency to suggest job ads that did not match the educational background or aspirations of the client:

> *"When a change of industry needs to be done, or the client is newly educated, I mean how to make a kind of blockage in the system so it doesn't draw on that part of the CV? Could you be allowed to go in and tick something off, as to not be shown any job ads with waiters but could you then also enable it again?* (Appendix 1.3)

Clients' job wishes and needs change and do not necessarily follow their employment history or their most sought after competencies. This call for flexibility would heighten the caseworkers' possibility to support the search strategy of the client in a meaningful way. Most interestingly, exactly in cases of a change of industry the opposite would hold true and maybe only some elements of the educational background and employment history of the client would be deemed relevant by the caseworker in optimizing the use of the system.
In this example the caseworker adapts and tweeks the functionalities of the system to instigate a type of dialogue with a client that aligns with the wishes of the job-seeker.
In the term *"practical data competency"*, therefore lies both learning how the system works and the ways that it performs the unemployment of the client, but also the shaping of new practices turn this understanding into an asset in making their clients reach employment.

Conclusion

Based on our analytical findings we can conclude that ASTA, and its predictive elements, reconfigure caseworker practices of Jobcenter X in a number of ways. Overall, the practices that we have described in Jobcenter X can be seen to configure the case-management of practice through a combination of both design features and the results as displayed in ASTA and how caseworkers engage with these.

Inspired by Mol, our praxiography of the Danish Jobcenter X has revealed that multiple ontologies are performed through the different practices that we have identified. As such the multiple practices that we have identified in Jobcenter X happen as a consequence of mutual socio-technical reconfiguration between both caseworkers and the different functionalities of ASTA, that enacts the unemployment of the individual differently in various practices.

In many instances caseworkers experience the functionalities of CP as lacking in meaning since they do not provide the caseworker's with ample overview and because its

inflexible task ordering does not support them adequately in maintaining such overview. Our findings show that the inability of CP to accommodate the caseworker's demand for an overview, has led to the deployment of the coping strategy that undertakes invisible work. Additionally, we have shown how caseworkers ascribe meaning to the metrics displayed in CP by means of their knowledge of how different kinds of job-searching strategies change as a result of the educational background of clients.

In general, the forecasting features of IM might not always offer meaningful recommendations to the caseworker in the form of job-ads, job-goal recommendations or additional qualifications, since the predictive features of IM does not take into account the needs or wishes of the clients. This results in the caseworkers losing confidence in its outputs due these inadequate recommendations.

Most interestingly the suggestions of IM are seen as meaningful in instances where they support or perform a practice that presents the caseworker with recommendations that are in accordance with client preferences. This is significant because caseworkers operate under the assumption that caseworkers must align their efforts with the job-wishes of the client in order to reach steady employment.

Additionally our findings show how two overall ontologies can be identified when considering what kind of practices that IM take part in shaping; the *best-job* and the *fast-job* shows how there is multiple practices that either enacts the job-searching strategy as a matter of reaching quick employment or in reaching a job aligned with the wishes of the client. The embedded ontology of the functionalities of IM, shows how it favors enacting the job-searching efforts of the client through the *fast-job*. As such there is a certain tension at play in the practice of Jobcenter X, in which the caseworker’s need to find a balance between these two ways of doing the unemployment of the client.

There are opposing and overlapping ontologies at play regarding the role of RLU in caseworker practice. In particular the measurement of statistical probability is enacted differently from the side of caseworkers and Schultz representatives, as caseworkers enact a positive result as conflicting with the wish of ensuring a respectful dialogue with the client.

Finally, we have shown how the caseworkers' ability to adapt to or incorporate the functionalities of ASTA in shaping practices that enact the unemployment of the individual in a way that reconfigures the functionality of the tool in practice can be identified as a display of practical data-competency.

Discussion

In the following we illuminate the importance of *expectations* as an enactment of practice, and discuss how this understanding contributes to shaping present- as well as future practices. Expectations should be seen as performative (Borup et al. 2006), in that they shape or impact the socio-technical configuration in very practical ways through things, systems or statements, and that this present day ordering will impact the future enactment of that technology or system. In this section we want to focus on the different expectations of RLU that exist in practice, which shows how expectations may shape future behaviors.

Expectation studies provide us with a broader understanding of how expectations can shape artifacts, or in our case, practices. Borup et al. argues that expectations and visions of the present are contributing in shaping the future practices (ibid.).

We believe that dealing with expectations regarding a type of technology as RLU is important, as it has not yet been widely implemented in the employment sector, but will be. Therefore we find it relevant to include how expectations contribute in shaping the future socio-technical enactments of these tools. The many ways in which these technologies are performed by designers and product owners draws attention to how different enactments of the tool foregrounds particular difficulties over others (Seaver 2017).

As shown in the analytical section, *The Different Enactments of RLU*, we have found that there is a mismatch between the expected configuration of the tool within caseworker practice. This mismatch is related to the way that caseworkers argue that the *positive result* will scaffold their way of engaging in dialogue with their clients and inevitably shape the kind of dialogue that takes place. This is contrasted by the expectations of Schultz, which sees RLU as a tool that should contribute to caseworker practice through dialogue, merely by understanding its risk assessment as a statistical guess.

Therefore we want to point out that there are misaligned expectations between the envisioned and enacted practice.

We believe that there lies a potential in trying to bridge the gap between these expectations as we identify opportunities for reshaping new practices based on our empirical findings on the enactments of the unemployed.

Schultz needs to take this gap seriously, and consider if changes could be made to the way that the tool is displayed or presented to the caseworkers which would make their vision of its role in practice materialize accordingly. Most importantly it should also be considered whether their envisioned use of the tool is unrealistic, taking into account the practices that

we have covered in Jobcenter X. The envisioned use of RLU should therefore be reconsidered as the visions of the tool materialize differently than expected.

These different considerations on the envisioned use of RLU, has made us realize how the dominating enactments plays an important role in configuring the future use of a predictive technology such as RLU. In the following we therefore wish to propose an envisioned enactment of RLU, which entails referring to the tool in caseworker practice as *the predictive artifact* instead of using Risk of long-term unemployment or other enactments.

This way of enacting the tool calls attention to the way that it might configure case-management as a result of socio-technical interactions.

By renaming RLU, we do not mean to neglect or to push aside the native language of our informants. Instead this is our attempt at enacting a specific kind of socio-technical attunement to further discussion and examination of the predictive artifact. We consciously use the word artifact, instead of tool.

Although the tool has in some instances been referred to as a *profiling tool*, we believe that the word tool is too closely linked to the predominant idea of the predictive artifact as something solely *used* by the caseworkers, which is contrasted by our findings in Jobcenter X. Additionally, referring to this artifact as a tool does not leave space for the perspective of how it in turn uses the caseworkers in how the unemployment of the client is done. Using the word artifact, we wish to draw attention to the multiple ways it might shape the contexts that it is introduced in. The online dictionary Merriam-webster defines *prediction* as *an act of predicting* or *something that is predicted* (Merriam-Webster.com 2022).

The use of the adjective form of this word underlines that something is being predicted or forecasted, but that the artifact's predictive character is something that is being enacted, rather than an inherent value. The idea that it predicts the future, is a socio-technical construct, which we wish to highlight.

With our definition we wish to emphasize that the predictive artifact should be examined in its context of implementation.

As such this enactment tries to strike a balance between different empirical observations that allow for curiosity and openness, when investigating the socio-technical entanglements of predictive technologies.

Additionally we argue that this enactment is not just an ethnographic argument for paying more attention to socio-technical manifestations of predictive technologies, but also highly practical. It is practical for the caseworkers, since we believe that this enactment might bring attention to how they implement and use the predictive artifact as part of practice and what it

might entail for their work. It is also practical to Schultz since it brings attention to how the predictive artifact might be used differently than envisioned. This highlights our point that Schultz should pay more attention to how their tools materiale as part of different practices.

Recommendations

In this section we want to introduce a set of recommendations ranging from technical, organizational and professional ones. We outline 4 recommendations that we, based on our analysis, see as relevant for the further development and usability of the socio-technical systems of ASTA and Fasit. We consciously use the term socio-technical, since further design implementations should be seen as a mixture of training caseworkers and in turn use their ideas, experiences or ways of using the functionalities of ASTA, to inform design decisions. This also means that an overall recommendation is that future design-processes regarding ASTA should be more locally grounded.

Recommendation number 1

The following recommendation is based on caseworker interaction and experience with IM, that in a lot of instances were seen as lackluster or inadequate by the caseworker. By adding a box that could be ticked off by the caseworker with a title such as, "*Do you consider this job goal relevant for the citizen"*, the caseworkers knowledge of the candidate and their job-searching strategy could be optimized by trying to use this data feedback as a way to optimize the output of IM

The recommendation tries to acknowledge the necessity of integrating -caseworker assessment of the client's situation into the data-structure of IM.

Recommendation number 2

The second recommendation addresses the necessity of introducing a greater level of flexibility when it comes to the layout of CP, as well as the information displayed in its different modules.

If caseworkers could move around the different modules, they would be empowered in developing specific and individualized ways of creating and maintaining overview of a client's case.

Not only modifying the ordering of the modules, but also introducing flexibility in the way that a caseworker can decide what variables and how many that should be displayed in these modules would make the tool serve its purpose of preparing the caseworker for the client meeting, by providing them with an adequate overview and at the same time resulting in fewer clicks.

Recommendation number 3

The third recommendation proposes that the caseworker should actively be able to select the kind of *job-ads* and *recommended job goals* displayed by IM. Such a modification is recommended because introducing a specific component that allows the caseworker to personalize IM suggestions might make them more relevant to the client's case.

This would allow for the caseworkers to use the tool actively in making it align with job needs and wishes of the client, and might also result in greater appreciation for the tool from the side of the caseworkers, since it helps to establish its suggestions as more meaningful.

Recommendation number 4

Our final recommendation is based on the different practices surrounding the predictive artifact. We recommend integrating our proposed enactment in the way that design-processes relating to *the predictive artifact* are carried out. Especially in considering how the output of *the predictive artifact* might shape a certain kind of dialogue.

We strongly believe that Schultz should invest more time in both conveying their proposed use of *predictive artifact* to its users, as well as integrating the professional considerations and practices of the caseworkers with the *artifact* as part of the design-process.

Therefore developers should not see the design-phase as confined to the training of the statistical model, but highly consider the local context and consequences of use, in the design-process. Such an approach would take into account the implications of the way that the predictive artifact materializes and shapes practice.

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