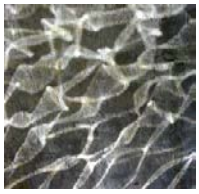

‘MAKING VOICES’:
NEW MEDIA TECHNOLOGIES, DISABILITIES, AND ARTICULATION*

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Articulation: *n*. act or mode of jointing; joint; act of speaking; Articulate utterance, speech. [F, or f. L *articulation* (*articulare* joint, as ARTICLE; see –ATE)]

Introduction

This is a chapter on disabilities and new media technologies – but also on what it is to be a person, a competent person. In daily life we talk, unproblematically, of 'people', or of 'such and such a person', assuming them to be naturally abled. And the habits of daily life also tend to find their way into social science. But – and no doubt this is also obvious – the ease of talk about 'the person' conceals complexity. And it is this complexity that is our topic. We are interested in how it is that 'the competent and abled person' is constructed (or not) under specific circumstances. And with how it is that he or she is constructed (or not) in relation to new media technologies. Disability, then, is the site for our inquiry both because we are concerned with assistive technologies for disabled people, and because we are interested in this more general issue – of what it is to be a person.

What are the disciplinary resources for such an inquiry? Sociology has a long tradition of exploring how the person is shaped by society. Different kinds of people, it says, are produced by different societies and at different moments in history. Sometimes, but not always, these arguments are made on a large scale.[1] Symbolic interactionism, for instance, argues that the sense of self arises in the process of quite specific social interactions. This implies the need for small scale and often intensive methodologies – for instance ethnography – in order to explore how specific kinds of persons are produced in local circumstances. This is an approach that has been extended and explored in considerable depth in the contemporary sociologies of identity. And as a part of this, how it is that some people are given – or refused – a voice in society has also been investigated[2].

We come from the discipline of sociology, and have learned much about the making and shaping of the person from these sociologies. However, in our work on new technologies we have also encountered certain limits – and two in particular. First, though there is much variation, sociology is often ambivalent about a crucially important issue: whether or not there is a more or less stable core to the self, and, correspondingly, whether or not all aspects of the person are constructed in social relations.[3] This issue – the so-called question of 'theoretical humanism' – is in part a metaphysical matter. However, for reasons that will

[1] For instance, in the classic social theory of Max Weber we learn that modern acquisitive capitalism originated in certain personality types which were produced by ascetic Protestantism. And in Marx' writings, social and economic interests which arise from the mode of production of a specific society are seen to shape people, their interests and how they interpret the world. See, for instance, Marx and Engels (1970), and Max Weber (1930).

[2] On symbolic interactionism see, for instance, Herbert Blumer (1969) and Susan Leigh Star (1992). The literature on identities is huge, but for a recent sample see Stuart Hall and Paul du Gay (1996).

[3] See, for instance, the work of Erving Goffman, where he tends to distinguish between self on the one hand, and presentation of self on the other. See Goffman (1971).

become clear in this chapter, we prefer to experiment with the more radical option – that the person is constructed in relations, as it were, all the way through. Our assumption, then, is that there is no stable essence. Second, the extent to which sociologies deal with the body has also – at least until the last decade – been very limited. But (or so we assume, and the point has particular force and poignancy in the context of disability) it is not possible to make sense of the construction of the person unless the body also forms part of the picture. And our thinking here has led us away from sociology to the interdisciplinary field of women's studies where there is indeed a large body of work both on the construction of gendered persons, and on the relation of this to embodiment.[4]

But what, then, of technologies? Though there are exceptions, neither sociology nor women's studies is centrally preoccupied with technologies at least as these relate to the construction of the person. Here we have turned to a third and interdisciplinary field of study, that of science, technology and society (STS). This, as its name suggests, explores the relationship between society on the one hand, and science and technology on the other. During the last ten years within this field a considerable body of work has accumulated on the ways in which persons are produced in and through arrangements of heterogeneous materials – technologies (including for instance, ICTs and new media), architectural arrangements, naturally occurring phenomena, texts and documents of all kinds, and (last but not least) other people. This body of work draws on various theoretical resources, but many of them are semiotic or post-structuralist in orientation. We cannot explore the full significance of this here. However, for present purposes, the most important insight is that of relationality: the claim that everything – people, subjectivities, actions, scientific facts, technological artefacts, texts and symbols – achieve their form as a result of the network of relations in which they are located. This 'material relationality' is at least implicit in the work of discourse analyst Michel Foucault, and it is an insight which has been developed at length in both actor-network-theory and the material semiotics of Donna Haraway.[5] But how does this relate to the person? The answer has to do with the notion of 'subjectivity'. This is a term from structuralism and post-structuralism, and it refers to a location of consciousness and action, on the assumption that these are produced relationally, in the sense we have noted immediately above.[6] So it is such subjectivities and their production that we will explore in this chapter.

And this is where we start: with the person, and how it is that the person – or the subjectivities which make up the person – are articulated for people who are disabled. Our particular interest is in the significance of new communication technologies available to disabled people, and in a specific technology that has been developed by a Norwegian firm called IGEL Kompaniet. This, which is called 'Rolltalk', is an integrated computer system, comprising hardware and software, for multiply disabled people. It commands a series of functions, for instance allowing the user to express needs or wishes, to steer his or her wheelchair, or to control aspects of his or her living environment.

[4] Again the literatures are large. But see, for instance, Judith Butler (1990).
[5] See, for instance, Michel Foucault (1979), John Law and John Hassard (Law and Hassard 1999), and Donna Haraway (1991c; 1997).
[6] The term subjectivity has a wide currency, is used in many different ways in different discourses, for instance in law, politics, and philosophy. In the present context, it is the semiotic or post-structuralist usage that we adopt.

In this chapter we tell short stories about disability and Rolltalk.[7] Alongside these empirical stories we offer theoretical commentary. That commentary first explores the ways in which Rolltalk – through the kinds of voices and functions it offers – helps to constitute and articulate certain forms of subjectivity or personhood. Then, more briefly, it turns to the ways in which Rolltalk relates to other forms of subjectivity which in one way or another tend to escape it. Our thesis – and we would like it to be clear from the outset that this is not a criticism – is that Rolltalk (and doubtless other similar systems) tends to constitute subjectivities in specific ways, while allowing others to escape.

A brief word on the notion of articulation. In the title to the chapter we talk of 'Making Voices' and we place these words in quotations. This reflects our desire both to index one of the most important tropes of feminism and radical sociology – the idea that voices are somehow taken from those who are powerless – and our simultaneous unease about the not infrequent essentialism of such moves. The radical argument is that it is important to find and to give voices to those from whom they have been taken – and this is a commitment which we share.[8] But it is also a move which needs to be recast. Our post-humanist suggestion, and it is hardly novel, is that 'voices' do not exist in and of themselves. They do not reflect something that is pre-given. Rather they are constituted or 'articulated' into being in material arrangements which include social, technological and corporeal relations. To say this is not to say that new voices or articulations cannot or should not be made – for instance in the ways they are being made in or through Rolltalk[9]. Remaking and re-articulation are clearly important: 'voices', like experiences, are cultural products and political constructions[10]. Which explains our concern about the character of the voices and subjectivities granted to, or claimed by, those who are disabled. But the point is yet more complex than this. This is because to talk of giving 'voices' is to take the risk of limiting articulation to that which is verbal, textual or linguistic. But this, at least in the context of disability (though the point extends, or so we would suggest much further) is to prejudice the result. Indeed it is to take the risk that 'voices' that happen to be non-verbal are simply not recognised, or disqualified. Which is yet another reason why we prefer to talk of articulation[11].

'Please take the money from my bag'

Here is a Rolltalk.[12] It is a computer system mounted on an electric wheelchair. The box which holds the computer itself is on the back, behind the seat. In front, where the user can see it, there is a flat screen. It's a red box which is about the size of an A4 sheet of paper, and

[7] In order to protect the confidentiality and anonymity of our disabled informants and their families all the names are changed, and where necessary we have disguised fieldwork material in other ways.
[8] For recent instances in STS see Susan Leigh Star (1991) and Marja Vehviläinen (1998).
[9] Or in the more overtly political context of deafness and the desirability or otherwise of the cochlear implant. For discussion see Blume (1997; 1997) and Lane (1997).
[10] See for, instance, Donna Haraway (1991b)) and John Law.
[11] The term 'articulation' draws on and resonates with the work of both Donna Haraway (1991a) and Thomas Kuhn (1970).
[12] Rolltalk's website – with images and further descriptions – is at http://www.rolltalk.com/index2.html.

perhaps five centimetres deep. When the Rolltalk is powered up three coloured icons appear on the screen. This is the first level, so to speak the 'welcome' screen. On the left, we see the profile of a head with an open mouth and a series of semicircles spreading out from the mouth. We understand straight away that this has something to do with speech, with being heard, with speaking. The second icon, in the middle, shows various objects in the immediate environment – for instance a door. We learn that this has to do with 'environmental control', that is the control of various aspects of the user's living environment. The third icon, on the right, shows a wheelchair. This has to do with moving and steering – that is with mobility.

As we watch we notice that each icon is highlighted in turn. A white box first frames the icon of the speaking head. Then after a few seconds it moves to the icon of the door. Then, a few seconds later, it shifts to the icon of the wheelchair – before returning once again to the speaking head. This system we are looking at is being prepared for a boy. When the speaking head is framed the person doing the demonstration clicks on a little button. Suddenly, the display changes. We are in a new menu, so to speak down a level. Most of the icons now have to do with speaking and there are many more of them. For instance, there is an exclamation mark that leads to another menu which has to do with the user and the ways he might present himself. There is a red heart – this has to do with the expression of feelings. There is an icon for food and another for drink. There is one for clothes. There is one which has to do with work. And then there is one to do with shopping. Our guide clicks his button again, and now we see the contents of the shopping menu: clothes, the greengrocery, the grocery, and the record shop, each of these and more has its own icon. Another click and we find ourselves down a further level, in the record shop with its icons. Now we get, so to speak, to the action. For if we click on these then we hear a man's voice. First click: 'Do you have the most recent album by DiDerre?' Second click: 'How much does it cost?' Third click: 'Please take the money from my bag on the back of the wheelchair.' Ingunn is smiling. She recognises the regional dialect of the voice. It is her own, from the west coast of Norway. Our guide explains – he scarcely needs to – that the boy who will use this Rolltalk likes music and lives in the fjord country.

Prosthetic Articulation

The Rolltalk system is a hierarchy, a tree[13]. The user enters the tree at the top, with the 'welcome' screen and moves down the branches of the tree until s/he reaches the activity, the place, the function, which s/he wants: for instance buying a record. Then we hear the words. The boy for whom this particular system is being made cannot speak: he cannot go into a record store and ask for the latest DiDerre CD with 'his own voice'. Instead the Rolltalk 'speaks for' him and articulates his wishes. An implication of this is that he has a clear idea of the nature of his own wishes. For instance he likes music, particular styles of Norwegian pop music, and his favourite group is DiDerre. It is for this reason that we want to say quite straightforwardly that Rolltalk is a prosthesis, an extension. It enables the boy to articulate

[13] For other discussion of related information technologies for disabled people and their tree-like structures see Moser and Law

and fulfil his desires, his wishes. And – as is indeed certainly true in the present case – it also implies that those wishes are indeed clear, and may be clearly articulated[14].

To use the language that we have said we would prefer to avoid, the boy is being given a voice. To use the language which we want to develop, his personhood or subjectivity is articulated by prosthetic means.

'Can I have two apples, please?'

In this demonstration the boy who will use the Rolltalk asked for the latest CD by DiDerre. But he might have gone to the greengrocer instead of the record store. IGEL have created a similar menu here. Apples, bananas, cherries, oranges, pineapples – all of these and more are included in the menu for the greengrocer. Pressing the demonstration button again has a similar effect. The voice says, 'Can I have two apples, please?' And the interaction proceeds in the same way. There is a function which activates the voice to ask a question about how much they will cost. And then there is an instruction about where to look to find his money.

Articulating Discreteness

As with the record store, the idea or the notion of 'giving a voice' works well here. But why?

Well, we have already given part of an answer. First, there is indeed a voice. Words are heard. Second, the boy knows about fruit and has a clear idea about what he likes best. But something else is happening too, and this is a third point. It is fairly easy to frame definite, discrete and well-ordered likes and dislikes of this kind in a way that is, indeed, definite, discrete and well-ordered. Indeed, these are some of the conditions of possibility for the exercise of what we sometimes think of as 'rational' discretion: options that are similar in kind but different in their specificities are arrayed alongside one another. Clear – yes, discrete – contrasts which may for the time being be fixed and programmed into the machine or into the world are being framed.

This is our argument. Under such circumstances – for instance those of going into (certain kinds of) shops with their array of discrete and distinguishable goods – it is relatively easy to articulate the conditions for discretionary subjectivity. Indeed no doubt shops demand this – and at the same time produce it. Menus in restaurants work in a similar way. Those who read menus are confronted with discrete items and choices. And the making of discrete classes presupposes and helps to produce a certain kind of person – one who can distinguish instantaneously between possibilities. All of which is no doubt consistent with, indeed necessary for the discretionary subject or what is sometimes called the modern subject[15].

[14] Prosthesis does not necessarily imply the extension of something that is already given. For discussion of emergent cyborg-like qualities of partial connection see Donna Haraway (1991a).

[15] Here we are no doubt all pupils of Michel Foucault (1979). But the discretionary subject is particularly lauded within the individualist and certainly also gendered – masculinist – discourses of active and autonomous

He likes to play his music very loud

IGEL adapts its Rolltalk system to each individual user. It does this because it seeks to reflect the desires, concerns, needs and abilities of each person in his or her menus and the options that these articulate.

For instance Per who has cerebral palsy and is 36 still lives with his parents in a specially adapted part of their house. Despite the fact that he has few voluntary movements, his Rolltalk has many functions. He works it with a head switch which he operates by shaking his head, one way or the other. With this, he can control his wheelchair, he can link it up with various pieces of kitchen equipment – for instance the electric mixer. He can play a range of computer games. He can switch the television on and off and choose between various channels and the video. He can play music on the CD player, choosing between nine preloaded CDs and controlling its volume (in fact he likes to play his music very loud). He is also able to work a model electric railway and can use the telephone. His Rolltalk does not do absolutely everything that he would like. One day, or so he hopes, it will be linked to a robot arm which will allow him to maintain cars. Nevertheless, his Rolltalk has many, many functions. And, this is the point of the story – all this multiplicity is arranged in an elaborate hierarchy of menus and options.

Centered Articulation

What is implied by a menu with its discrete and separated elements? We want to make three points.

First, the argument that we draw from the studies of science, technology and society is that a menu or a table 'draws things together', things that would otherwise have been distributed heterogeneously through time and space[16]. So the argument (again from STS) is that structures like tables or Rolltalk displays create new relations by juxtaposing objects, bringing them together and arraying them at the same time and the same place. They operate, that is, by making a centre – a mini-panopticon, a subject-singularity from which all the various possibilities may be seen. And then, as a further performance of competence, it supports (or requires) the ability to distinguish between these possibilities. In the present instance Rolltalk thus turns Per into a centre when he chooses between CDs, allowing him to command his music in a way which would not be possible if he were only able to select the CD that happened to be in his player – or indeed, if the CD options were spread across a series of different menus.

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agency. See, for instance, the discussion in John Law (1994) and John Law and Ingunn Moser (1999) where it is primarily linked to the ordering mode of 'enterprise'.

[16] The expression 'drawing things together' comes from Bruno Latour's (1990).

Second, since Rolltalk is also a hierarchy of menus and options this means that its centering effect is multiplied many times over. For a user like Per with a complicated system the tree of possibilities is enormous, and its centering effects are startling. He is being made as a centre with many, many possibilities. Again, a version of the argument has been made within the sociology of science. The idea is that centres are made, not only in form of single tables or menus, but also as tiers of simplifications and juxtapositions which combine to produce ever more powerful combinations[17]. Something like that is happening here – though there are also important differences. This is because, unlike a laboratory scientist or a manager with his overview of bar charts or tables, Per has to move down through the tiers to the right location in the tree. In order to make action things are not simply being drawn together, but are also being drawn apart again. The simplification of the welcome menu precedes the re-elaboration of moving down the tree. This means that for Per there is no view from nowhere. Per is always somewhere. He is centred, but he is also local[18]. Though the original point still stands, for as he confronts the welcome menu, Per is indeed being strongly centered, articulated as a centered and discretionary subject by the Rolltalk hierarchy of menus.

Third, centred articulation also makes – or unmakes – that which falls off the edge. This happens in various ways. For instance we will talk of the difficulty of achieving fluidity below. But here we want to make two simpler points. These have to do with the fact that the scope of any menu is limited. Point one: there is only room for nine CDs in Per's CD menu. This means that for the time being all the other CDs in the world disappear, fall off the edge. Point two: any menu is restricted to functions that are closely related to one another. Others are indeed far removed, being located somewhere else in the tree. For instance, Per's CDs are distant from his vocal options for supporting the local football team. This means that moving from the CDs to the football team menu is a longwinded process of moving up three or four levels in the hierarchy and then back down again, along another branch – though, to be sure, this is a journey which scarcely matters since choosing CDs is not important when watching football. Both points, then, tell us that 'giving a voice' also takes away other possible voices. Or that in this technology (and no doubt others) locally centered subjectivities are articulated but the scope of any particular subject position is restricted. That which is not for the moment within the field of vision, falls off the edge.

'Listening to Bjørn Eidsvåg'

Now we are in the flat of another user. He is sitting in his electric wheelchair and we are watching a demonstration of his Rolltalk. Like Per this user – we'll call him Knut – has only voluntary control of his head and neck. To operate the Rolltalk he moves his head and presses a polystyrene ball attached to a joystick. He starts at the top of the hierarchy that we have already seen: speech, environmental control, and wheelchair. He knocks the switch with his head and the next menu pops up on the screen: television, CD player, doors, and lights. We watch as the Rolltalk moves from television to CD player, and again he knocks the

[17] See Bruno Latour (1987).

[18] In feminist STS there has been much critical comment on the notion of 'modest witness' and its fiction of a 'view from nowhere'. See, for instance, Donna Haraway (1991d; 1997).

switch. For a moment nothing happens. It turns out that the infrared signal from the Rolltalk to the CD player is not working. Someone gets up and rearranges a table cloth. Now Knut knocks the switch with his head again. This time, after a moment, the CD starts to play. Like Per and the DiDerre fan we mentioned earlier, Knut likes Norwegian music. The familiar sound of Bjørn Eidsvåg fills the room. He relaxes.

But his mother wants us to see how the system works. She speaks to him: 'Can you switch the television on now?' Knut considers her request for a moment, and then he turns his attention back to the Rolltalk. This is still moving through its slow cycle: television, CD player, doors, and lights. Finally it reaches the television icon again and he knocks the switch with his head. A new menu springs up. There are icons for three different television channels, video and another for turning the television off. Knut knocks the switch with his head to select one of the channels, NRK1. The television turns itself on and we are watching the winter Olympics – a little bit of Japan in Knut's living room.

Articulating Autonomy

Here we are witnessing subjectivity in the form of discretionary choice. It is the kind of context in which Rolltalk works best. Do you want to listen to a CD? Do you want to watch the television? And if so, which channel do you want to look at? In his own flat, and equipped with Rolltalk and the environmental control, Knut has been 'given a voice'. He is able to articulate a desire to watch NRK1 and switch it on. This means that he has been turned for the moment into a relatively autonomous person able to make discretionary decisions. But here the verbal trope, the talk of 'giving a voice', is troubling. Since what is most important is autonomous action rather than the use of words, choosing to watch a television channel does not involve the literal use of a voice at all. This means that to talk of 'giving a voice' is both correct and rather misleading. And explains why we would prefer to talk, more inclusively, of articulation – that is, the articulation of different forms of subjectivity.

'I am thirsty'

We are still with Knut and his Rolltalk. He is clicking on the communication silhouette in the 'welcome' menu. A new menu pops up. Choosing the icon for drink, he opens a third menu. Here there are three choices: water, tea and coffee. As it happens, Knut never drinks tea. He almost always drinks coffee. But when the drink menu appears, tea is framed and highlighted first. We sit while the Rolltalk counts away its seconds. It moves to water. Again we wait. Finally, the frame jumps again and highlights the icon for coffee. He knocks the joystick with his head and a voice says 'I am thirsty. Could I have some coffee, please?'

Articulating Agency

There is a peculiarity about this scene – a peculiarity that Knut has to live through a dozen times a day. The peculiarity is that while he usually drinks coffee, he has to sit each time and watch while the Rolltalk offers him the options of choosing tea and water. So what is going on? Why doesn't coffee come first? Or for that matter why, since he never drinks tea, is this included in the menu at all?

And the answer? It is that if he wants to ask for a drink Knut is being made to be active, and indeed more active than is strictly necessary. As his mother puts it:

> '(Though he usually drinks coffee) we have put water and tea in first so that he has to get past their icons and choose coffee. In this way he gets to exercise the use of Rolltalk.' (interview)

She says this because she knows that Knut, who is also quite severely cognitively impaired, needs to practice with the Rolltalk every day if he is going to use it and its functions at all. Indeed, in the past she has watched Knut slide towards inactivity in other circumstances when he has not been challenged by the need to initiate activity. And some of Knut's carers think that it is neither necessary nor worthwhile for him to deal with the complexities of Rolltalk: they wonder whether it should be taken away.

All of which tells us something more about Rolltalk and the forms of subjectivity and agency which it articulates. Competent subjects are, or are taken to be, centered, discretionary and autonomous. But they are also, and necessarily, as a part of this, active agents. To be passive is not, or so it seems, an acceptable option.

'On and off'

Knut's Rolltalk is relatively slow, stopping at each of the icons in the menus for about five seconds – much longer than for some users. It is also relatively simple: many of the menus have relatively few options. For instance, in the wheelchair menu there is only one option: to move the wheelchair forward, along the magnetic tape on the floor. Knut can neither reverse it, nor steer it round corners. Again, he has only a few environmental control functions: light, door control, CD player and television. And within each sub menu the range of options is similarly limited. For instance, in the case of the CD player it is only 'on' and 'off' – quite different from Per's system with its choice of nine different CDs and its volume control. And Knut is even further removed from some users who are able to use their Rolltalks to work a word-processor.

In short, Knut's system is relative simple. Slow and simple.

Pacing Articulation

This is our hypothesis. The IGEL task is to articulate Knut so far as possible and in specific circumstances into a centered, discretionary and autonomous subject and agent. But this is not easy. This is because the extent to which he can handle complexity, and do so rapidly, is very limited. He finds it physically difficult to operate the switch for moving between functions. Even more difficult is the task of operating it at just the right moment, when the menu item that he wishes to choose is highlighted. Sometimes making a choice involves numerous and frustrating false starts and mistakes.

IGEL tackles this in the way we have described above. Compared with many users, the options available in Knut's system are few. Perhaps this sounds like a limitation, restricting Knut's capacity to operate as a discretionary and autonomous subject. Obviously there is one sense in which this is right. But to put it this way is too negative because the restrictions also work the other way round, articulating Knut as an agent with independent capacity to choose – all be it within a limited range of options.

A similar argument applies to pacing. For both physical and cognitive reasons, Knut cannot 'make decisions' rapidly. His Rolltalk with its slow shuttle between the different menu options thus enables him and works to increase his discretionary capabilities – even if its stately pace leads to its own frustrations. To put this in a slightly different way, the textures of social life run at different paces but they are almost all too fast for Knut. But Rolltalk displays a flexibility about pacing which most social interactions do not. It is a trivial task to program the speed of movement between the icons. So, at least in principle, it is a trivial task to slow that movement down to the point where Knut and the machine can interact successfully. In this way Rolltalk helps to order a set of relations between Knut and his faster-moving environment, translating between different streams of events and their different time. In its (re)pacing and its simplifications it thereby articulates him as a discretionary subject, one who can indeed turn his CD player on and off.[19]

'It is boring. It is difficult'

Thomas is 22 and lives in his own flat in a modern and un-institutionalised home. He is demonstrating Rolltalk and its capabilities. He has been doing this for some while when he suddenly starts to move through the menus of options and clicks on the icon for communication. Then he clicks again on the icon for 'feelings and emotions'. Now, at the

[19] There are subtleties here that require much further consideration. These have to do with level of complexity. In what we have written we indicate that Knut is unable to cope with levels of complexity which can be handled by those who are not cognitively impaired. This is an argument which assumes that complexity is indeed something that varies. There is an alternative position which suggests that complexity never varies – that level of complexity is, so to speak, self-regulating. This appears in Michel Callon and Bruno Latour (1981) where, in talking about black boxing, they suggest that it is no more difficult to send tanks into Kabul than to dial 999 and call for the emergency services. It is explored much more fully by Marilyn Strathern (1991) in her work on self-scaling . The deeper argument here is that scaling, size, and complexity are effects rather than facts of life. See also John Law (2000; 2001).

third level, he clicks again on one of the faces which make up this menu, and a voice says 'Det er kjedelig': 'It is boring', a comment which is greeted with nervous laughter by Ingunn and John. But Thomas does not stop. He is busy again. He is clicking on another icon, another speaking face. This time the voice says 'Det er vanskelig': 'It is difficult'. There is more laughter, but Thomas is certainly making his point. He would rather be doing something else.

Articulating Resistance

Rolltalk works to make people with discretionary power and autonomy. It enables them to act, in specific circumstances, as independent subjects and agents. It follows that it may offer its users the possibility of expressing a dissenting voice which is, so to speak, a specific expression of autonomy. How this works for different users varies. It depends on what is programmed into the machine. But here a specific voice of resistance for Thomas has been preconfigured. So this is a voice that has to do with resistance. Active resistance is being performed – and it is being performed via the machine and within its hierarchical series of options and choices. In some sense, then, this is resistance which is socially acceptable. It is preconfigured, it is anticipated, it is accepted. This is a feature of the exercise of autonomous and individual discretion – that centered subjects sometimes seek to resist the demands laid on them. But look at this:

> IGEL: 'people should be able to express their emotions forcibly. When one user got angry with his carers he didn't just want to say 'you stupid bitch'. He wanted to be able to say 'you fucking stupid bitch!'[20]

It is obvious that this is a much stronger way of expressing dissent. Even so, since IGEL has programmed it in there must be some sense, some discursive location, in which the expression 'you fucking stupid bitch' is acceptable. Indeed, in interview with Ingunn, IGEL insisted that 'there should be no taboos' in determining options. If a user wants to swear, he or she should be allowed to do so. So this is not simply a matter of the way in which autonomous subjectivity articulates itself through resistance, important though this may be. It is also, and more subtly, a matter of discretion – perhaps, in part, inter-discursive discretion. Discretion, that is, about when it is appropriate to speak one way – for example in obscenity – rather than another. Our suggestion is that competent subjectivity depends upon the proper discretionary articulation of different discourses – including the discourses of resistance. More or less obscene or violent expressions of resistance such as the one mentioned above have indeed to be used with discretion if the subject is to successfully articulated him/herself as a competent and therefore responsible person. Which is why IGEL insists that there should be no taboos.

[20] The citation appears in Norwegian in Ingunn Moser (1996).

'Do you want me to answer for you?'

Birgit has severe cerebral palsy, but she likes her music. John is asking her about her favourite music. He is speaking in Norwegian, but his Norwegian is primitive. He is looking at Birgit and she is looking at him – but she is not responding. Ingunn puts the question again, this time in proper Norwegian. Birgit looks at Ingunn, and for a moment it seems as if she will respond. But no. Then Birgit's mother, who is sitting in front of her, makes eye contact with her, affectionately taps her on the knee, and repeats the question more simply in yet another way. Finally Birgit responds. She is not very verbal, but it is clear to all of us that the question or at least the thought of music pleases her. She is smiling and the sound she is making is clearly one of pleasure. Her mother smiles back at her. She asks her, 'do you want me to answer for you?' Birgit moves her eyes, the answer is yes. Then her mother turns to John and reels off the names of a series of Norwegian bands. She adds that, though her interest isn't limited to Norwegian music alone, Birgit particularly likes Norwegian groups because then she can follow the lyrics.

Articulating Fluidity

This story might be used to illustrate a number of points. One of these has to do with reciprocity. In one sense, Rolltalk is all about making agents and subjects that are able to interact in ways that are more symmetrical with people who are not disabled. So the story points to a moment where Rolltalk was no longer able to fulfil that function and Birgit's mother spoke for her rather than a programmed voice. But this should not be misread as a way of insisting on a necessary distinction between human and non-human. Our sense of what is important here is quite different. It is that 'modern' subjectivity, in part at least, expresses itself as fluidity[21] and movement. So what does this mean?

Perhaps it is easiest to set this up by contrasting it with the relatively fixed options which we have already encountered in the Rolltalk menus. Thus it is relatively easy to program discrete sentiments or expressions of preferences between bands or kinds of fruit into the machine. But it is much more difficult, perhaps impossible, to articulate the displacements of

[21] The notion of fluid continuity is developed by Annemarie Mol, John Law and Marianne de Laet (see Mol and Law (1994), Law and Mol (2001) (also available at (2000)) and de Laet and Mol (2000)). The argument is topological, and has to do with conditions for the continuity of objects or subjects within different topological systems. In this writing three dominant topologies have been explored: regional or Euclidean, network, and fluid topologies. Physical geographies (which are also implied or presupposed in much social theory) rest on the Euclidean presupposition that objects subsist unchanged by virtue of their temporal and volumetric continuity in Euclidean space. Semiotics, with its commitment to invariance based on a stable configuration of relations (as, for instance, in the actor-network notion of the immutable mobile), rests upon or presupposes a network topology. A fluid topology assumes that continuity is secured as a result of changes rather than stabilities in relations. Thus the bush pump – and indeed its 'inventor' – described be de Laet and Mol continually changes its form, and the boundaries between it and its environment is similarly mutable. The assumption in all of this work is that the world and its contents are topological heterogeneous. This is an assumption which is mirrored in the present piece. The hierarchy of menus of Rolltalk and the centred subjectivities that it generates rests initially upon a the performance of a network topology. The displacement that we are about to consider are topologically other and fluid in character.

subjectivity as these move not up and down a pre-programmed hierarchy and through its menus, but as they move from one unprepared position to another.

The point is complex for two reasons. First – to emphasise the point we made above – it is not a point about technology per se. As we have noted, advanced Rolltalk users are able to use the machine to work a word-processor. This may be slow and laborious, leading to the problems of pacing discussed above. On the other hand it is most certainly a textual process which may articulate movements in and between novel subject positions. Second, neither is it a point about fluidity per se. It is our assumption that all subjects, abled and disabled alike, are fluid often enough, constantly moving between different subject positions and articulating these moves in many different ways. Words form only a part of this. But a competent subject is one that is able to articulate such movements in words as well. And, or so this story suggests, Rolltalk in its more limited versions, does not work to make such verbal displacements possible. Which means that a crucial moment in competent subjectivity is missing.

'He does not want to sit in the electric wheelchair'

Thomas works in a protected workshop where he sews, knits and makes candles and other craft products. When he gets home in the evening he is tired. Often, after he has eaten, he simply wants to sit in a manual wheelchair and watch television. He certainly doesn't want to sit in an electric wheelchair with its Rolltalk and face all the choices and decisions that follow from this.

There is a bit of a tussle between his carers about this. They know him well, for this is a rural home where there is little staff turnover. Some of them like to go along with Thomas' wishes and simply put him in the manual wheelchair. Others aren't so sure. They think he is being lazy – too passive in his approach to life. They've known him since childhood and they think that this is too simple and undemanding. Some have suggested that the manual wheelchair should be taken away. This would reduce Thomas' options. Force him to accept the challenge of mastering Rolltalk with its need for activity and decision.

Articulating Non-Verbal Resistance

What is happening here? One view is that Thomas is going for the easy option rather than the one that is demanding. It is that at least in these circumstances he is being rendered passive. But what does this mean? Thomas' case is slightly strange. Many Rolltalk users have an option within the 'feelings and emotions' menu to say that they are tired or they do not want to be bothered – that indeed they do not want to do anything active. But in Thomas' case these options are not available. Perhaps no one thought about it. Whatever the reason, he cannot say 'I am tired. Leave me alone.' Not in as many words. Not in his 'own voice' – at least if by this we mean verbal language. But here, if we are right, he is indirectly articulating the fact that he is tired when he indicates that he would prefer to sit in a manual wheelchair

rather than in the electric wheelchair with its Rolltalk. He is, as it were, speaking, without speaking. But he is (if we want to use the term at all) none the less 'speaking' performatively.

'I am not here'

Let's return to Birgit and her music. John has asked her about her favourite band and he has received her answer. But why did John ask?

The answer is that John has been sitting for an hour in an interview with Birgit, Birgit's mother and Ingunn. Almost all of the talking has been done by Ingunn and Birgit's mother, and it has all been in Norwegian. The result is that John has understood very little of what has gone on. But what he has noticed, is that Birgit, equally detached from the proceedings for much of the time, has not only used her Rolltalk to put on her CD player, but has also, so far as he can tell, become completely absorbed in the music. Taken up by it, the result is that she has detached herself from the current of interaction around her, all this talk between Ingunn and her mother. From time to time, her mother has made it plain that she is not altogether happy with this. She has tried to draw Birgit back from her music and into the conversation by asking her questions. For instance by redirecting and rephrasing Ingunn's queries and asking her 'Do you want me to answer this question for you?'

Articulating Withdrawal

Birgit uses the command structure of her Rolltalk to set her CD playing, constituting herself as an autonomous and discretionary subject. But once she has done this she moves away from that discretionary subjectivity. It is not very easy to tell (yes, to 'tell') what is happening for her, but our guess – based on watching her as she listens to the music and on what her mother says about her musical tastes – is that music (music, not the CD player) is a prosthesis that enables her to articulate a fluid form of subjectivity, one that moves and displaces itself, carrying her along in a stream of tonality and words which transports her elsewhere with its desires, frustrations, hopes and feelings[22].

If this is right, then we guess further that it works for her without any reference to the 'deficit' of disability. Birgit – or so we suggest – is not 'disabled' when she listens to music. Disability is no longer a relevant category. Instead the process of listening to her music allows, indeed demands, her full participation in the romantic tropes of humanism. Which means that she is as 'successful' or as 'unsuccessful' as any other listening subject in a romantic world made of longing, losing, desire and communion. A romanticism which is in many ways a form of resistance to the words and rational choices of decision making – but is to be sure, in its own way just as contemporary as the hierarchical menus of Rolltalk.

[22] The idea that practical technologies and their centred subjectivities allow escape into other forms of subjectivity, and that activities such as listening to music – or writing – might be imagined as prostheses is discussed in Ingunn Moser and John Law (1999). It is also explored in Ingunn Moser (2000).

We're suggesting, then, that Birgit has gone away. Has constituted herself – and been constituted as – a romantic and fluid subject. In her music she is a subject who flows between places that cannot be fully put into words. She has become Other to the rationalism of the Rolltalk, but also to the centred though more fluid displacements of conversational interaction. No doubt there is much going on here. It teaches us, for instance, that fluidity, romanticism, and indeed desire, are not only Other to rationalism and its fixed points, but are also entangled with it[23]. It reminds us that this is not only a fact of nineteenth century European history, but is also performed on a daily basis at the end of the twentieth century – and not, to be sure, simply by those who are normatively disabled. But the particular lesson we want to take away from this example is that it appears – and this is what one would expect of romanticism in a world which tells of itself as a form of rationalism – to be another form of resistance. For by now we have seen an implicit resistance acted through the desire to be 'lazy', to watch television. And we have seen resistance in an active form, built into Rolltalk in the form of words which say 'I am bored'. But this fluid immersion in music counts, or so we take it, as a third form of resistance. Resistance by absenting oneself.

Conclusion

In this paper we have explored some of the ways in which a technology for multiply disabled people works to articulate subjectivities. Rolltalk works in the lives of scores of disabled people to offer them a degree of control over aspects of their environments that would otherwise not be available to them. Accordingly, it tends to undo some of the asymmetries between the disabled and those amongst whom they live, and upon whom they depend. In exploring the character of Rolltalk and the ways in which it is used we have highlighted five points

1. Rolltalk tends to perform subjectivities in specific ways. This is in part because of the technical features of the system – for instance its structure of menus – but also because certain (centred, autonomous and discretionary) subjectivities are considered to be particularly important for disabled people, or for people tout court.
2. Rolltalk sets limits. For instance in some of its simpler versions it cannot directly articulate certain kinds of subject-positions and or movements between subject positions – for instance relatively fluid displacements between unprepared but verbally articulated subject positions.
3. However, the relations between fixed subject-positions or articulations and those that are fluid are also more complex than this suggests. This means that fixed and discrete subject positions do not necessarily exclude those that are more fluid, and that the requirement of active agency built into the system does not necessarily preclude – indeed it may help to create – contrasting and passive forms of agency and subjectivity.
4. The process of designing and adapting Rolltalk may be imagined as a double experiment. Each individual system is tested and adapted for particular users. But more generally

[23] This is a point that we have explored elsewhere (see Ingunn Moser and John Law (1998)), and is developed in a somewhat different idiom by Émilie Gomart and Antoine Hennion (1999) and Michel Callon and Vololona Rabeharisoa (1999).

over time, IGEL can also be seen as building a more general model of the disabled user together with assumptions about the nature of competent agency and subjectivity.

5. Finally, we have considered the issue of 'giving voice'. Rolltalk enables severely disabled people to speak or act for themselves in ways that would otherwise be impossible. But the term 'giving voice' is not quite right. First, it implies that a person has a voice that is simply waiting to be expressed – which is not always right. 'Voices' or, as we would prefer to say, 'articulations' are created in an emergent and cyborg-like logic. Second, to talk of 'giving voice' also implies a troubling commitment to logocentrism. Talk is a mode of articulation, but only one. Our data suggests that there are many other ways of acting, signifying, articulating or resisting.

The new information and communication technology of Rolltalk is a double experiment: an attempt to enable disabled people; and an exploration of the character of competence, personhood and subjectivity. To enable disabled people is a good. But the complexities of competence, personhood and subjectivity revealed by the Rolltalk technology suggests that there are various simple stories that are best avoided. For instance, there is an excessively optimistic story which over-emphasises the power of Rolltalk to generate discretionary autonomy and all the rest. And there is an overly pessimistic story which points to the inability of Rolltalk to meet the fluid demands of conversation or verbal expression. But, as we hope we have shown, the truth, if there is a single truth, lies somewhere in between. Or, better, the truth is that competent subjects are both centred, autonomous and discretionary, and decentred, dependent and determined, while competent agents are, at different times, active and passive.

It is possible to talk about this in general terms. For instance, in an earlier version of this chapter we argued that Rolltalk performs a 'modern subject'. No doubt this is partly right. Disabled users of technologies such as Rolltalk often find that they have to be more 'modern', more centred, and more discretionary than those who inhabit enabled bodies. But there is something else. First there is the desire of those who are abled to 'normalise' those who are not. And then second, there is a loop: the desire by many of those who are disabled to be counted as competent or 'normal' by embracing normatively approved features of modern subjectivities. And the latter – the desire for competence – is one of the reasons why the rather humble voices and subject positions offered by Rolltalk are so important. Why passivity is not an option[24]. All of which suggests that stories about 'modern subjectivities' are important but also far too simple. As we have seen, the modern autonomous discretionary subject is certainly a great deal more than a fable, but it is always performed alongside its dependent and fluid Others.

But what of those Others? Here there is an alternative grand narrative about the 'romantic subject'. But this is a trap because it romanticises that Other by telling stories which celebrate Otherness, difference and passivity by telling of the desirability of silence, nature, immanence and the feminine. The body and the emotions are lauded as against the cognitive, the rational, and the verbal – which, in the context we are considering, comes to

[24] In Norway there is a suggestion that twelve year old disabled young people should pursue their own cases in the court that deals with social security claims. The oddity is that no other twelve year old would do this, and no one – parent or anyone else – would argue that this counted as evidence for excessive dependence. Which is not, however, apparently the case for those who are disabled.

romanticise disability. So though the romantic trope catches something important, this is also a trap to be avoided. In large measure it is a nostalgic repetition of modernism with its own risks. The risks have to do with passivity which, in the forms associated in Euro-American societies with disability – but also with childhood and femininity – are often closely related to and produced within extreme asymmetries in power which may turn into forms of abuse. This is yet another reason why a new ICT such as Rolltalk may be so important if it operates, however modestly, to re-form the relations of power. To reduce asymmetries.

These dualist but related categories, modernism and romanticism, point to another grand narrative which also presses itself upon us: that of gendering. The attributes of the 'modern subject' and its other, the 'romantic subject' map onto those of gender discourse in ways that are all too obvious. It is tempting, therefore, to say that Rolltalk with its structure of centred control and command is a gendered technology – and no doubt there are many ways in which this is right. But once again it is more complex. The technology itself is used successfully by both men and women. In which case, if we stick with the notion that it is gendered, then we are pressed to the position that to the extent to which they pick it up and make use of it women are performed, or being made to perform, more in terms of certain norms of masculinity. Perhaps this is right. It is certainly a possibility that deserves consideration. But then again, it is also a standard trope in STS that technologies do not rigidly determine their uses. And so it is here. If fluidity or verbal fluidities are female-gendered attributes (and this is self-evidently already far too simple) then we need to remember that fluidity is included within and enabled by the rigidities of Rolltalk. Our conclusion is that a large story about gendering works no better than large stories about the modern subject and its romantic Other. Which should not, however, be misunderstood as a way of saying that this technology is gender-indifferent or gender neutral. There is no doubt that it interferes in and performs gendering – but it does so in ways that are complex and specific. Which suggests the need for careful inquiry into the modes by which female and male subjectivities and agencies are performed – or not performed – through specificities, including the specificities of assistive and other new technologies[25].

New media and new technologies – these not only require critical analysis but may be treated as occasions for exploring and testing assumptions embedded in social science and everyday understandings of the world. In this chapter, in attending to a new assistive technology, we have sought to explore the character of the person – of subjectivity – that is built into both the efforts of the IGEL engineers and more generally in Norwegian society. This, as we noted at the beginning of the chapter, depends on interdisciplinary tools – we have drawn on sociology, feminist theory, and in particular, science, technology and society (STS). It is our suggestion that these tools, and in particular those drawn from the semiotic and post-structuralist claim that people – that is subjectivities – may be understood as specific relational effects, are important in the analysis of the challenges posed by new media and their technologies. It is also our suggestion that the tools developed in STS with its particular interest in the practices and materialities of the world, are particularly important in resisting the logocentrism of the notion of 'giving voice' which we earlier noted. Articulation, we have tried to show, is not simply about speaking or language – it is also about performances and expression in other media. Our conclusion, then, is that the new technologies may – as we have suggested above – be seen as large-scale experiments in the

[25] See, for instance, Hirschauer and Mol (1995).

character of personhood, the character of the subject and the character of articulation. But, at the same time, they offer rich opportunities for understanding the construction and the reconstruction of the person. So there is a double challenge. To understand and to remake those technologies and the subjectivities that they carry. And to create the interdisciplinary tools that are needed if we want to understand these more or less ubiquitous processes.

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