

Gendering decryption - decrypting gender

The gender discourse of labour at Bletchley Park 1939-1945



Photograph taken from Smith 2011.

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Abstract

Ever since the British efforts to break Axis codes and ciphers during the Second World War were declassified in the 1970s, the subject of Government Code and Cipher School, the organisation responsible, Bletchley Park, its wartime headquarters, and the impact of the intelligence on the war has fascinated both historians and the general public. However, little attention has been paid to Bletchley Park as a war station where three-quarters of the personnel was female. The purpose of this thesis is to explore the gender discourse of labour at Bletchley Park and how it relates to the wider context of wartime Britain. This is done through the theoretical concepts of gendering (the assignation of a gender to a job, task or object), horizontal gender segregation (the custom of assigning men and women different jobs) and vertical gender segregation (the state where men hold more prestigious positions in the hierarchy than women).

The primary sources are interviews, letters and memoirs by female veterans of Bletchley Park, kept in Bletchley Park Trust Archive and the Imperial War Museum's collections, and printed accounts, in total two monographs and five articles. Surviving official documents from Bletchley Park, now kept in the National Archives, are also utilised. Using accounts created by female veterans themselves as the main source material allows for women's perspectives to be acknowledged and examined. This becomes especially important in a field of research where the focus lies almost exclusively on male actors and their achievements.

The women employed at Bletchley Park (commonly referred to as 'girls') were both civilians and servicewomen, generally young and often well-educated, not seldom to university level. Despite this, they were primarily found in supporting positions, such as clerical tasks and machine-minding. Few women can be found higher up in the organisation, or in more prestigious in intelligence work and cryptanalysis. Only a handful of women worked with breaking high-grade ciphers, and seldom without being treated as an honorary man by their coworkers, which allows the team to function as all-male. Factors such as policies on dilution in war industries, patterns in women's education and the structure of British women's services form the context of the situation at Bletchley Park, both explaining and reinforcing structures of gendered division of labour.

Keywords: Bletchley Park, gender, Great Britain 1939-1945, intelligence services, Second World War, war-work, women's work

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I. Theory and background

Introduction

Until 1974, the name Bletchley Park never featured in accounts of the Second World War. If it was ever recognised, it was only as the name of a stately home in Buckinghamshire. Throughout the history of Allied campaigns, there were mentions of intelligence, the source of which was carefully skirted over and not elaborated upon. Not until the publication of W.H. Winterbotham's *The Ultra Secret* (1974) were these gaps filled, and the name Bletchley Park took on another meaning. During the war, it had been the headquarters of the British cryptanalytical organisation, the Government Code and Cipher School (GC&CS). It served as the hub of the Allied attack on the German cipher system Enigma, as well as on Italian and Japanese codes and ciphers. The organisation and the place became so closely associated that GC&CS was often referred to as Bletchley Park (sometimes abbreviated BP).

The impact of Ultra, the intelligence gained from Enigma, on the Second World War was immense. It allowed the Allies to evade German U-boat wolf-packs during the Battle of the Atlantic, which saved Britain from starvation. It made it possible to cut off Italian supply-lines to the German Army in North Africa. It assured the Allies that the misinformation fed to the Germans in preparation for D-Day had been accepted as true, allowing the invasion of Normandy to go ahead.¹ The work done at Bletchley Park also led to great advancements in computer science and cryptology. The world's first programmable computer, Colossus, was constructed and used at Bletchley Park for breaking German telegraph ciphers, and several war-time employees became leading within the new discipline of computer science.

Most accounts of Bletchley Park have concentrated on the military applications or the cryptological theory. The descriptions are strongly actor-based, concentrating on a few brilliant individuals, all men, even though Bletchley Park, with its workforce of around 9000 by the end of the war, was an organisation dependent on the work done by women. Little attention has been paid to Bletchley Park's female personnel, which made up three-quarters of the workforce.² This is a loss both to the study of the intelligence services and to the study of women's war-work. The purpose of this thesis is to remedy this situation by exploring the gendered division of labour at Bletchley Park, and relating it to patterns of women's work in Britain during the Second World War. This will give a

¹ Hinsley 2001, pp. 3-13.

² According to Grey 2012, p. 36. There are no surviving complete lists of personnel. Grey's claim is supported by the suggestion of 66-75 per cent in Lee 2012, p. 159. The suggestion in Lord 2008 (online source) of one man to eight women has no cited source.

more diverse picture of Bletchley Park and provide unique insight into the gender discourse of classified work.

The Bletchley canon: male intellect and female invisibility

Much of the scholarship on Bletchley Park is conducted by veterans and amateur historians. However, this does not mean that it is necessarily unusable, as many accounts are well-researched and theoretically sound.

Before the 1970s, vague mentions had been made of Enigma in American, Polish and British publications. The very first book about the breaking of Enigma, published with official permission, was the military historical account *The Ultra Secret* by F.W. Winterbotham (1974), an intelligence officer for the RAF at Bletchley Park during the war.³ The next major publication was *Most Secret War* by R.V. Jones (1978), who was in Scientific Intelligence during the war. Only parts of Jones' autobiography is dedicated to Bletchley Park, but it gave many new insights into British classified operations during the Second World War. Before publication, it was used as basis for a documentary series on the BBC, *The Secret War* (1977), which dedicated an entire episode, entitled "Still Secret", to events at Bletchley Park. The first detailed cryptological account, which like the previous books had a strong autobiographical element, was *The Hut Six Story* by Gordon Welchman (1982), one of the most prominent wartime cryptanalysts. The following year, Andrew Hodges published a biography over Alan Turing, the mathematician and computer scientist who was instrumental in the breaking of Enigma. Turing had been largely forgotten since his death in 1954, both for his classified wartime work and his academic achievements, but ever since the publication of *Alan Turing: the enigma* (1983), he has been virtually omnipresent in literature on Bletchley Park. Though his mark on the organisation was small, his impact on cryptology was immense. Turing, who is often characterised as the quintessential eccentric genius, is a more appealing poster-boy than more conventional contributors at Bletchley Park.

The 1990s and 2000s saw a veritable explosion of literature relating to Bletchley Park and Enigma. Much was thanks to the foundation of Bletchley Park Trust in 1991, which saved the mansion and surrounding war-time buildings from demolition and founded a museum and archive there. Since 1997, Bletchley Park Trust has published the *Bletchley Park reports* (twenty-one to date), often on cryptological subjects. Attention from the media and the appearance of fiction set at

³ Briggs 2011, p. 1.

Bletchley Park has led to further popular and academic interest.⁴ Many books have been written by BP veterans, for example *Secret Days* by Asa Briggs (2011) and the anthology *Codebreakers*, (1993, eds. F.H. Hinsley and Alan Stripp). Some monographs were retellings of a master narrative of Bletchley Park, such as the remarkably well-researched *Secrets of Station X* by Michael Smith (2011) and the rather more journalistic *The Secret Life of Bletchley Park* by Sinclair McKay (2010). Other books attempted to break out of the mould of cryptology or military history. *Decoding organization* by Christopher Grey (2012) is a work of organisation studies, while *Bletchley Park people* by Marion Hill (2004) attempts to give a more ‘human’ account of the war station.

There are many recurring forms of bias in the extant literature on Bletchley Park. Unsurprisingly, all authors are British or American. The fact that many authors lived through the Second World War gives a further bias in favour of the Allies in the form of lingering wartime patriotism. However, gender remains one of the most prominent of the forms of bias. Of all forty-six monographs published on the subject of Bletchley Park in the UK, only eight are written by women. Of these, five - Young 2000, Luke 2003, Batey 2008, Webb 2011, Watkins 2013 - are memoirs, and two were written by the same person, Sue Jarvis. Thus only two women who were not veterans, Jarvis and Marion Hill, have written about Bletchley Park.

Throughout the literature of Bletchley Park, there is a hope of finding heroes. In the same way that we are more interested in the general than the foot-soldier, we are more interested in the codebreaking boffin (who was most often male) than the support-staff (who was most often female). The focus on individuals forms a canon of great names, such as Turing, Welchman, Dillwyn Knox, Tommy Flowers and Hugh Alexander. All these men (because in such a canon, there are never any women) made important and oft-described contributions to the work at Bletchley Park, and there are often interesting, captivating or even amusing stories about them. By contrast, the Typex girl, the Wren machine operator or the typist is a nameless female, most often uniformed into anonymity, and, if she is a civilian, still not distinct enough to catch the interest of the authors.

Many authors, both researchers and veterans, are aware that there is an interesting gender discourse at Bletchley Park. Smith 2011 makes several references to women’s work and Hill 2008 briefly touches upon the subject, though never with any analytical depth.⁵ The most extensive discussion of gender in the extant published material is found in Grey 2012, but it is only a few pages long.⁶ In 2012, a short essay on the topic of women at Bletchley Park, written by John Lee,

⁴ Novels include *Enigma* by Robert Harris (1995), *Cryptonomicon* by Neal Stephenson (1999) and *The Turing Test* by Paul Leonard (2000). A movie adaptation of *Enigma* appeared in 2001. Between 2007 and 2009, BBC Radio 4 aired *Hut 33*, a sitcom set in Bletchley Park. In 2012, the British channel ITV launched *The Bletchley Circle*, a period crime series with its roots in Bletchley Park.

⁵ Hill 2008, pp. 51-52, 78-79; Smith 2011, pp. 30, 60, 143.

⁶ Grey 2012, pp. 156-159.

was published, but it altogether lacks a theoretical framework and an analytical method, and most of the essay is dedicated to explaining the achievements of male cryptanalysts. In the 1980s, Eric Rhodes started work on a book entitled *The Ladies of the Park*, but the project was dropped in 1996 and never published.⁷

Research questions

In this thesis, I will consider the gender discourse of labour at Bletchley Park by exploring the following questions:

- From what backgrounds were women recruited?
- Which tasks were specifically gendered as female?
- What position did female labour have within the organisation?

Due to the constraints of time and size, I will confine my discussion to female personnel at Bletchley Park and its direct outstations. I will not discuss intercept stations or overseas stations such as those in Colombo or Alexandria. Neither will I discuss American secondments (although to the best of my knowledge, no US servicewomen or civilians were posted to Bletchley Park).

This thesis consists of three sections. The first section deals with theory, methodology and considerations about the source material. It also contains a brief background to the work done at Bletchley Park. The second section consists of analysis of the data, and seeks to answer the questions outlined above. In the third section, I will put the situation at Bletchley Park in its historical context, and draw conclusions on how it relates to women's war-work in Britain during the Second World War.

Giving women a voice: challenges and opportunities in the source material

Primary sources

A study of women's work using only memoranda, internal histories and serial orders would give a flat, indistinct picture of the topic, seen only from above, through the eyes of men. Therefore, my main sources are veteran's accounts. Indeed, such accounts are crucial to our understanding of Bletchley Park, as much of the contemporary documentation was destroyed after the war.⁸

⁷ Rhodes' source material is now kept at the Imperial War Museum (IWM), Misc 190 (2827). As Eric Rhodes is the recipient of all letters in this collection, I will only specify the sender of the letters when citing them.

⁸ Briggs 2013, p. 15.

Interviews, letters and memoir, unlike official documents, give women a voice.⁹ There is a huge number of accounts written by veterans kept in Bletchley Park Trust Archives and in other collections, such as that of the Imperial War Museum. Although they have been quoted in some popular literature about Bletchley Park, especially Hill 2008, this material has not been critically analysed, especially not in an academic context. I will approach my material with a qualitative method, basing my enquiries on the questions outlined in the previous section. Not all women write in detail about their work, but might discuss accommodation, leisure-time activities and interpersonal relationships. This means that not all accounts are equally useful for this particular study. However, I have sought to be inclusive in my use of the the sources.

The material I will use from Bletchley Park Trust Archive are transcriptions of taped interviews (conducted between 2001 and 2003), letters and reminiscences. Some of the accounts which I have used has been reproduced in the internal journal *Other people's stories*.¹⁰ I will also use replies to forms sent out by Mrs Mary Henderson to veterans of the Japanese Section. Due to the size and the disorganised state of Bletchley Park Trust Archive, I have had to be selective, and have therefore only consulted sixty-seven separate accounts. At the archives of the Imperial War Museum, I have consulted all accounts by female veterans, fifty accounts in all. The majority of these accounts are part of two collections. The first, donated by Mrs M.W. Ackroyd, consists of reminiscences written by Wrens from the Y service, from which I will use accounts of Wrens who were at Bletchley Park. The second is the material collected by Eric Rhodes, and consists of correspondence dating between 1982 and 1986 (but for a single letter from 1988). I will also use declassified documents from GC&CS, now housed in the National Archives in Richmond, Kew, as supporting material. This material consists of internal histories, a post-war memorandum on the organisation, summaries of administrative files and serial orders from the Director of Bletchley Park.

Of the published material, I will use two monographs, *My Road to Bletchley Park* by Doreen Luke (née Spencer) (1998) and *Cracking the Luftwaffe Codes* by Gwen Watkins (née Davies) (2013), and five articles.¹¹ Four are from Hinsley and Stripp's anthology *Codebreakers*, by Vivienne Alford (née Jabez-Smith), Carmen Blacker, Joan Murray (née Clarke) and Diana Payne. The fifth is also by Joan

⁹ As these accounts are either published by the veterans themselves or donated to public archives with the veteran's full knowledge (e.g. through giving an interview, writing a letter for the purposes of publication, or donating their memoirs directly to an archive), I will use the women's real names. Where it is known, I will refer to women by the surname which they had when at Bletchley Park.

¹⁰ As each installment of *Other people's stories* is printed in no more than twenty copies and is primarily intended for internal circulation, I will count this as unpublished material. Due to the ongoing reorganisation of Bletchley Park Trust Archive it is high impossible to find the original tapes and letters.

¹¹ Due to the constraints of this thesis, I have been unable to include the following memoirs written by female veterans in my source material: *Enigma Variations* by Irene Young (1990), *From Bletchley with Love* by Mavis Batey (2008) and *Secret Postings: Bletchley Park to the Pentagon* by Charlotte Webb (2011).

Murray, a formerly classified essay written for internal use of GCHQ (the successor of GC&CS), published in Burke 2010.

Potential pitfalls in the source material

The secrecy surrounding the work done at Bletchley Park is one of its strongest defining features. Secrecy is, of course, an important aspect of war, and not one confined to clandestine operations. British society at large was constantly reminded of the dangers of giving away information which might be useful for the enemy. The secrecy at Bletchley Park, however, was unprecedented.¹² Both external and internal security was very strict. All recruits were security-vetted and had to sign the Official Secrets Act upon arrival, and again when they were discharged.¹³

This discourse of secrecy is going to have a very direct impact on the source material. Accounts written early on may consciously leave out details of the work due to uncertainty of whether it was classified or not, or refuse to discuss work altogether.¹⁴ The issue of what might be left out consciously is even more important when it comes to the published material, which is often vetted by government and relevant organisations, a process which sometimes leads to changes in the text. In the case of Hinsley and Stripp's anthology *Codebreakers*, vetting "has meant having to disappoint some contributors by asking them to omit or alter certain details."¹⁵ Secrecy does not only have an impact of what is consciously or unconsciously left out, but also what is remembered. Unwillingness to remember, whether because of personal reasons or orders from above, can prevent a person remembering.¹⁶ For instance, the veteran Pat Holliday admits in her first letter to Eric Rhodes, "I put a blackout on my memory for that period and at this late date am having a hard job to resurrect those early years!"¹⁷

The fact that these accounts are penned between thirty and sixty years after the events they describe need not be problematic. Experiments on the workings of human memory has shown that subjects will discard memories which hold no interest, but have very accurately remember things

¹² Grey 2012, p. 121.

¹³ Ibid, p. 122.

¹⁴ Bletchley Park Trust Archive (BPTA), *Other people's stories book six* (2003) "A View of 'The Park'" by Elizabeth Hunter (née Greaves); IWM Misc 190 (2827), letter from Dorothy Barlow, 21 March 1983; IWM Misc 190 (2827), undated letter from Irene Bowditch (née Goldsmith).

¹⁵ Hinsley and Stripp 2001b, p. vii.

¹⁶ Thompson 2000, p. 134.

¹⁷ IWM Misc 190 (2827), letter from L. Pat Holliday, 21 January 1986.

which are interesting very accurately.¹⁸ A Bletchley Park veteran who is intent on forgetting the details of her wartime work may well be successful in this, but equally, someone who found her work interesting and want to remember it, chances are her memories will be largely correct. Naturally, there will be mistakes, especially in details, either because the person did not know everything there was to know (common in classified work) or simply because memories have been discarded.¹⁹ Human memory is not a carbon-copy of an event, but something which is constantly rewritten and influenced by outer stimuli. We can hope that the silence of the thirty years following the war and many veterans' lingering reluctance to discuss their work has made their memories well-kept, but it is unavoidable that some veterans will have read books, watched documentaries and listened to radio programs about Bletchley Park after the secrecy was lifted.

Published and unpublished sources bring with them different problems. The interviews on which the transcripts are based are conducted by volunteers at the Bletchley Park Trust Archive and while some are done in the homes of the interviewee, most are conducted during open days for veterans at the mansion itself. An affirmative answer to the question 'would you like to be interviewed for the archive?' is much easier than sitting down and writing an account. An interview situation is more spontaneous, which might elicit more honest answers as there is less time to reflect on them, but will often mean that there is less time to remember.

The historian A.J.P. Taylor has claimed that "[w]ritten memoirs are a form of oral history set down to mislead historians".²⁰ This is overly pessimistic, but it is a useful reminder that memoirs are not oral history, even if they are instances of individual 'voices' in history. Writing is different from giving an interview, and writing an account for publishing is different from writing one for an ill-defined posterity or for your family. A veteran writing for the purposes of publishing will often attempt to give an account not only of their own wartime experience but of the war itself, making the account less personal. When the intended recipient is a specified archive, e.g. when a veteran sends an account to the archive at Bletchley Park Trust, the author is bound to concentrate on the things which she think will be of interest to the archive, and will not discuss things which seem irrelevant or obvious. When children and grandchildren or other family members are the intended audience, the author may make other kinds of revisions or omissions. Most accounts will exclude (to a greater or lesser extent) events which may be considered embarrassing, shameful or otherwise

¹⁸ Thompson 2000, p. 132. For example, in 1960, a Welshman of 80 years was asked to name the occupiers of 108 holdings in his parish in 1900. His answers were checked against the electoral list, and it was found that 106 were correct.

¹⁹ Burke 2010, p. 362.

²⁰ Quoted in Thompson 2000, p. 121.

compromising, but there is no real way of identifying what these may be once they have been removed.

Published sources are far more undemocratic than unpublished ones. Marginal voices are unlikely to be heard in the published material. I have already pointed out how underrepresented women are on this topic. In the case of anthologies or books where people are interviewed, the contributor must somehow be known to the author or editor beforehand. It is no coincidence that of the four women to contribute to *Codebreakers*, two were employed at GCHQ (Joan Murray and Vivienne Alford) and another was a well-known academic (Carmen Blacker).

We must acknowledge the problems inherent in different kinds of sources, and in all types of reminiscing source. Naturally human memory is a limiting factor, but is it far less limiting than is often assumed. When a large number of accounts is utilised, individual lapses in memory will be compensated for. As long as we keep the material's problems and challenges in mind, we can make use of its opportunities. It grants us unique insight into corners of history where the light of conventional sources, such as official documentation, does not reach, which makes it ideal for this study.

Gendering and segregation of labour

The topic of this thesis is gender, not sex. Gender, a social construct independent of reproductive biology, is not simply a fact of individual people, but a system according to which the world we perceive is ordered. It “not only shapes how we experience and understand ourselves as men and women, but [...] also interweaves with other discourse and shapes *them* - and therefore shapes other aspects of our world”.²¹ I will refer to this system as gender discourse. Gender discourse is conceived as a binary, onto which polar opposites are mapped. This binary carries with it a value judgement, where the male is considered preferable to the female. Rationality, logic and aggression are considered male traits, and more positive than emotiveness, intuition and passivity, their ‘female’ opposites.²² Gender discourse can be found in our interpersonal relationships, our homes, our workplace, even our speech.²³ A language with gendered pronouns will always make it clear whether one is speaking of a man or a woman. In languages with inflection, the speaker will constantly gender themselves by using inflected adjectives. Languages with grammatical gender will assign gender even to inanimate objects and abstract concepts.

²¹ Cohn 1993, p. 228.

²² Vide Cohn 1993, p. 229.

²³ Vide Butler 1990, p. 26.

However, this is done in on a non-grammatical level in all societies. It therefore makes sense to use 'gender' as a transitive verb to describe the act of assigning arbitrary gender characteristics to something (or indeed someone).²⁴ First and foremost this is done with people, who are expected to stay within the boundaries which they have been assigned. People who traverse gender boundaries or stand altogether outside it, e.g. transgendered and intersexed persons, but also masculine women, effeminate men and homosexuals, threaten this binary, and are required to conform.²⁵ I have already touched upon gendered personality traits. Material objects are also gendered - a drill is gendered as male, a sewing machine as female - and by extension, the use of these tools and the task involving them is gendered.

This leads us to the issue of gender segregation in the workplace. The convention of giving men and women different tasks in society can be found throughout recorded history. Even when they work alongside each other, their tasks are different.²⁶ Gender segregation may, as observed by Catherine Hakim, express itself in different ways. Women and men both do different jobs (horizontal segregation), and have different positions in the occupational hierarchy, with men ranking higher than women (vertical segregation).²⁷

The reasons for gender segregation have been discussed within many disciplines. Some economists have presented explanations based on the concept of human capital, collected by a worker in the form of training, qualifications and experiences, of which women will have less. However, both Paula England and Andrea Beller have shown that this theory is not viable. Even when men and women start with the same qualifications, men advance faster, even in cases where women do not leave to have children, meaning that there is another bias at work.²⁸ Personal preference of careers has also been suggested as a factor, and although this may be a factor in some cases, the fact that gender segregation is maintained even when there is little or no choice, e.g. in wartime, shows that this cannot be the case either. Many feminist sociologists of the 1970s suggested an interplay between patriarchy and capitalism as the reason, but gender segregation predates capitalism and can be observed in twentieth-century non-capitalist systems, such as the Soviet Union.²⁹

²⁴ Cockburn 1988, p. 37.

²⁵ Butler 1990, pp. 18-19; Califia 1994, pp. 177-178; Halberstam 1998, pp. 172-173.

²⁶ Bradley 1989, p. 1.

²⁷ Hakim 1979 (non vidi), Walby 1988a, p. 3, Cockburn 1988, p. 33; Hakim 2004, p. 148.

²⁸ Beller 1982, p. 371; England 1982, p. 358; Bradley 1989, p. 64.

²⁹ Cockburn 1988, p. 32, Bradley 1989, p. 228.

This leaves a simply gendered bias, which can be seen throughout history. Women's work is seen as cheap and adaptable, men's as skilled and technical.³⁰ Segregation in the work-place is part of the gender discourse, where maleness is seen as superior to femaleness. Gendering forms gender segregation, but gender segregation reinforces gendering, making persons of a specific gender more likely to be chosen for a task or to apply for it. Harriet Bradley calls gendering and gender segregation "analytically separable, although in practice they are almost always found in combination".³¹

Just as tasks are gendered, they can also be regendered, which leads to a change in how it is valued. When a task goes from being gendered as female to gendered as male, it is often because of a technical innovation. When a female task is mechanised, it is therefore made (presumably) more complex and requires certain skills, leading to it being regendered as male. Femininity is constructed as non-technical - take for example the common slights against female drivers or the dearth of female mechanics. However, when male-gendered tasks are regendered to become female, it undergoes what has been named 'deskilling'. It goes from being seen as a skilled, complex job to a routine job with low pay.³² Deskilling equals devaluing. Take for example clerical work, which in the nineteenth century was a respectable man's profession. By the early twentieth century, it had become a female-gendered job, badly paid and considered inferior.³³

However, it would be naïve to assume that no woman ever does a job gendered as male or vice versa. Gendering does not make it impossible for someone of another gender to do the job, only socially inconvenient. Often, the gendering of the job is stronger than the gender of the individual, leading to a regendering of the person, not the job. A man doing a woman's job will be considered to be emasculated, as he is doing a task lower down in the hierarchy than his gender warrants. However, a woman who does 'a man's job' (a term implying importance and strength) is far better off, although also her gender will be compromised. This leads to the concept of the honorary man, when a woman who does a male-gendered job starts functioning socially as a man within her work-group. This is a way of eliminating a perceived social threat. An all-male group is held together by camaraderie and male bonding (concepts particularly important in war). A woman entering such a group threatens to unbalance it, bringing with her conventionally romantic possibilities which endangers the exclusiveness of male friendship. When such a thing happens, the status quo can be

³⁰ Bradley 1989, p. 68.

³¹ Ibid, pp. 9-10.

³² Braverman 1974, p. 444; Cockburn 1988, p. 41; Bradley 1989, p. 68.

³³ Walby 1988c, pp. 25-26.

saved by awarding her the equal and unthreatening status of ‘one of the lads’.³⁴ This maintains the unity and, by extension, segregation of the group.

This regendering is socially positive for the woman too - honorary maleness may not be as valuable as actual maleness, but it is more valuable than femaleness. A good illustration is a story about Juliette Dubois Plissonnier, a regional leader of the French underground during the Second World War. “Upon arriving for a meeting which she was to preside, a male activist expressed surprise at finding her present, exclaiming, ‘What?! A woman here?’ This provoked the reply from one of the group members, ‘She’s not a woman, she’s the boss.’”³⁵ Being ‘a woman’ implies to be a blank state of being without an identity or purpose, but by saying she is the holder of a position within the organisation (the boss), not ‘a woman’, the man who springs to Plissonnier’s defence is awarding her a place in a group of choice few.

The Second World War is often described as the start of work equality, as women proved their ability to do proper work, previously done by men, as well as their skills in leadership.³⁶ This positive picture of women’s wartime work. This has entered the British public legend of the Second World War, but as so many such legends, it is romanticised and to some extent even incorrect. Women’s situation does not exist in isolation, but in relation to that of men. Margaret and Patrice Higonnet coined the term ‘gender displacement’, illustrated by the image of a double helix, where both strands exist in relation to one another.³⁷ During war-time women move into male-dominated jobs, but only because men have already moved out of these jobs and become soldiers, which in war becomes the male ideal. Any men who are not in this position, especially civilians but also non-combatant servicemen, are seen as less masculine.³⁸ Thus there is actually no difference in the relation between the genders. The difference simply shifts. Furthermore, it is made clear that women’s new jobs were only for the duration of the war.³⁹ The word used for bringing in women into previously male-dominated industries is dilution, and the women workers are known as dilutees. They, the weaker substitution, dilute the stronger work-force, the men. However, this only occurs in supporting roles. Highly skilled jobs, especially technical ones, or supervisory positions were kept by men. Similarly, it was unthinkable to incorporate women into the armed forces. The women’s

³⁴ Higonnet and Higonnet 1987, p. 37; Summerfield 1998, p. 136.

³⁵ Schwartz 1989, p. 136.

³⁶ e.g. Hakim 2004, p. 1.

³⁷ Higonnet and Higonnet 1987, p. 34.

³⁸ Vide Summerfield 1998, p. 121.

³⁹ Higonnet and Higonnet 1987, p. 31.

services remained auxiliary, upholding a gender segregation. Thus servicewomen did not threaten the male bonding which was seen as essential in the armed forces.⁴⁰

The study of the gender discourse of war is particularly enlightening as it shows the stubbornness of the discourse. Even in a state of national emergency, it is unthinkable for women to cross certain boundaries, everything from taking charge to carrying arms.⁴¹ Dilutees' work was completely dependent on the absence of men, and yet the control over the work, in terms of technical expertise and supervision, was kept by men. This solution, largely directed by male trade unionists, meant that little changed in practice.⁴²

Throughout this thesis, I will use the following terms: *gender discourse* (the pervading system of gender in a society), *gender segregation*, of two types, *vertical* (where women and men do different kinds of work) and *horizontal* (where women do less prestigious work within the occupational hierarchy), *gendering* (the arbitrary assignation of gender to a job, task or object), *regendering* (the act of changing the gendering of something, by reassigning it to another gender) and *honorary man* (a woman whose task is gendered as male, leading to that she is treated as a man within her work-group).

Bletchley Park: a brief background

The Government Code and Cipher School

GC&CS (often but not always written with an ampersand) was the result of the 1919 amalgamation of the Admiralty's cryptanalysis section Room 40 and the Army equivalent MI1b.⁴³ GC&CS was part of the British Secret Intelligence Services (SIS) until the late 1930s, when it was made independent. Its mother ministry was the Foreign Office, making its employees civil servants.

In 1938, the Treasury authorised the employment of fifty-six new recruits, "senior men or women, with the right background and knowledge", plus thirty younger female language graduates.⁴⁴ Despite the mention of "senior men or women", the senior recruits were all men. Recruitment was done through 'old boys' networks', especially through universities and colleges where early GC&CS employees already had contacts. For example, a third of the fellows at King's

⁴⁰ Higonet and Higonet 1987, p. 37.

⁴¹ Summerfield 1998, pp. 89-91. Women were expressly forbidden to carry arms. When on guard-duty, they would carry sticks or truncheons, when men would carry guns or pistols. Servicewomen manning anti-aircraft batteries were allowed to aim and prepare the guns, but not to fire them. (Doerr 2006, p. 242) This is an attempt to uphold gender stability, where men could take life, but women gave life, a peacetime status quo which needed to be preserved. Many women found this prohibition laughable and frustrating.

⁴² Bradley 1989, p. 48.

⁴³ Smith 2011, pp. 5-7.

⁴⁴ Ibid, p. 27.

College, Cambridge (where the First World War cryptanalyst Dillwyn Knox had been a fellow) did their wartime service in GC&CS.⁴⁵ At the outbreak of war, the numbers of GC&CS grew exponentially. In 1939, GC&CS consisted of ninety persons. By 1943, it had swelled to 4486, and in January 1945, the number was as high as 8995.⁴⁶

Before the war, the stately home Bletchley Park was for the use of SIS, but shortly after the outbreak of the war, MI6 moved out and left the estate to GC&CS. The small town of Bletchley was mainly known as a railway junction, being on the Cambridge-Oxford line and having a connection to London. Soon, the organisation outgrew the Victorian mansion and its surrounding buildings, and rudimentary huts were erected. Concrete blocks followed, as did outstations in requisitioned houses in the surrounding area.

Cryptanalysis at Bletchley Park

Having outlined the organisation of Bletchley Park, we can now turn to the work done there. The purpose was, in short, deciphering and interpreting enemy intercepts, which could then be put to military use. Germany had a number of cipher systems, the most widely used being Enigma.⁴⁷ Due to its many starting-positions, Enigma was considered unbreakable by the Germans themselves, and for a long time also by the British.⁴⁸ However, groundbreaking work was done by Polish cryptanalysts before the war.⁴⁹ Building on this research, the British cryptanalysts were able to read some signals, but the process was still slow. This changed in 1940, when Alan Turing (Head of Hut 8) and Gordon Welchman (Head of Hut 6) constructed the bombe, an electromechanical machine which could rapidly run through possible settings for a message. The bombe made it possible to start breaking the cipher on a much larger scale.

All Enigma keys were given codenames, at first colours, and later names of fish (for naval keys, the most famous being the U-boat key Shark), birds (for Luftwaffe, e.g. Vulture), even vegetables (e.g.

⁴⁵ Lyons 2010.

⁴⁶ Hill 2008, pp. 6; 138n.35.

⁴⁷ In modern cryptology, a code is an encryption method where a word or other larger segment is represented by another segment. A cipher is an encryption method where one letter is represented by another letter. Enigma was a cipher (despite the painfully common term “Enigma code”), and Orchestra were codes. However, this distinction was seldom observed at Bletchley Park.

⁴⁸ The Enigma machine’s three rotors alone have 17576 possible starting-positions, which becomes much higher when we take into account that the operator chose three rotors out of five, and could put them in any order. There was also 150,738,274,937,250 possible ways in which to plug together ten pairs of letters on the cipher-machine’s plugboard. A comprehensive overview of the workings of the Enigma machine is to be found in Singh 2002, pp. 143-190. More detailed accounts can be found in Hodges 1992, pp. 165-179 and Welchman 2011, pp. 38-47.

⁴⁹ In modern terms, a cryptanalyst breaks codes and ciphers, and a cryptographer writes them. A cryptologist can do either. At Bletchley Park, however, ‘cryptographer’ was often used to mean ‘cryptanalyst’.

Beetroot).⁵⁰ Enigma was not the only cipher which Bletchley Park worked on. Low-grade Luftwaffe codes codenamed Orchestra (where each individual code being given the name of an instrument or a composer) were broken by hand. Telegraph ciphers, codenamed Fish, were target with newly built machines, first the Heath Robinson machine and later the Colossus, the world's first programmable electronic computer. Bletchley Park also worked on Italian and Japanese ciphers, especially the main Japanese code JN25, as well as liaison ciphers between Axis powers.

The importance of the work done at Bletchley Park has already been touched upon. Though it is definitively wrong to say that Ultra won the war, it most certainly aided the Allied victory.⁵¹ Its greatest uses were in North Africa 1941-1942 and during the Battle of the Atlantic. F.H. Hinsley has estimated that the war was shortened by two years as “the invasion of Normandy was carried out on such tight margins in 1944 that it would have been impracticable - or would have failed - without the precise and reliable intelligence provided by Ultra about German strengths and order of battle”.⁵² This claim is often quoted, but it largely ignores the Soviet Union's role in the late stages of the war. Even if the particulars of Hinsley's contrafactual scenario are questionable, it is a useful illustration of the impact of Ultra.

Sections of Bletchley Park

The majority of all larger sections at Bletchley Park are known by the number of the hut in which they were housed at the beginning of the war, even after they had moved from the hut. For example, the section which worked with German Naval Enigma is always referred to as Hut 8, even when it had moved to Block D. The huts which most often occur are Hut 3 (German Army and Luftwaffe intelligence), Hut 4 (German and Japanese Naval intelligence, sometimes referred to as NS, Naval Section), Hut 6 (German Army and Luftwaffe cryptanalysis), Hut 7 (Japanese and Italian cryptanalysis) and Hut 8 (German Naval cryptanalysis). Other sections include the Newmanry (cryptanalysis of telegraph ciphers using machine), the Testery (cryptanalysis of telegraph ciphers by hand), Intelligence Service Knox (ISK), sometimes known as the Cottage (Abwehr Enigma), Intelligence Signals Oliver Strachey (ISOS) (Abwehr manual codes) and the German Air Section (Luftwaffe manual codes). At Bletchley Park a ‘section’ might be a larger department, e.g. a hut, or a smaller subdivision. As individual rooms in huts were dedicated to specific tasks, some subdivisions are also known as ‘rooms’ (e.g. the Auto Room, the wireless section).

⁵⁰ Welchman 2011, p. 87; Taunt 2001, p. 105.

⁵¹ Smith 2011, p. 284.

⁵² Hinsley 2001, p. 12.

Around 1942, when Bletchley Park had grown considerably, the path of an intercepted message would be as follows. Intercepts were sent to the relevant section by dispatch rider or teleprinter, kept in the Registration Room of every section. The Registration Room would also record call signs and frequencies for traffic analysis. Cryptanalysts would break the daily settings of a key, through various methods. The most fruitful was the use of cribs, guesses at plain-text. For Enigma ciphers, a ‘bombe menu’, a chart of interconnecting letters, would be drawn up with the help of such a crib.⁵³ This would be handed or telephoned to the head of shift of the bombes. The bombes would be plugged according to the menu and run until a possible correct setting was found. This was telephoned to the Machine Room, where the settings would be tried on a captured Enigma machine. When the intercept came out as German, the Machine Room would telephone and give the order to prepare the bombes for the next job. Once the day’s settings had been found, the bulk of the intercepted messages were delivered to the Decoding Room, where typists on Typex machines, British cipher machines rewired to work as Enigma machines, would decrypt the individual intercepts.⁵⁴ The decrypts would be sent on for translation, interpretation, emendation and distribution. The intelligence extracted from the messages would be sent to the Index, which collected anything of interest, from names of officers to mentions of new weapons.⁵⁵ Other codes and ciphers would follow a similar route, with only the actual deciphering and decrypting being different.

II. Analysis

Women’s social and educational background

The personnel at Bletchley Park is often characterised as “dons and debs” - male Oxbridge academics and young aristocratic women.⁵⁶ Hill 2008 even uses a variation of this, “boffins and debs”, when discussing civilian personnel. However appealing the alliteration and the stereotype, this dichotomy is misleading and simplistic. It is true that many (but not all) men employed by the Foreign Office were academics, and plenty were from Oxford or Cambridge. More problematic is the implication of the female personnel as solely consisting of debutantes, young women of the aristocracy due to make their first appearance in society. It bears implications about age, social class,

⁵³ Hodges 1992, pp. 182-183; Taunt 2001, pp. 105-107; Welchman 2011, pp. 78-80.

⁵⁴ Murray 2001, p. 116.

⁵⁵ Hill 2008, p. 43.

⁵⁶ *Ibid*, pp. 69-71; Grey 2012, pp. 108-109.

level of education and routes of recruitment. The dichotomy ‘don’-‘deb’ brings other opposites to mind: man-woman, maturity-youth, mind-body, intelligence-stupidity. Whereas the don is at Bletchley Park by his own right, having been recruited by a fellow academic on account of his intellect and previous research, the deb is a young woman whose biggest resource is her looks, and who is posted to Bletchley Park because she has an indulgent father or other concerned relative at the Foreign Office or the Admiralty. Implicit in this dichotomy is the notion that the female personnel are there only by virtue of their social class, not by any actual qualifications.

In this section, I will present a more diversified view of the kind of women who worked at Bletchley Park. I will consider age, social class, education, and finally routes of recruitment.

Patterns in age in the source material

There are no official statistics on the age of personnel at Bletchley Park, and a just over a third of the women in the source material (forty of 117) give their age or date of birth. Forty is too small a number to give us any meaningful statistics which we can apply on the female personnel at large, but it gives us a rough picture. The lowest age given is seventeen, and the highest is twenty-five. The most common age is eighteen. Members of the WRNS (Women’s Royal Naval Service), WAAF (Women’s Auxiliary Air Force) and ATS (Auxiliary Territorial Service) are often younger, as they have been called up or volunteered at the minimum age. Five of the six women who were seventeen and a half, the minimum age required by WRNS, when arriving to Bletchley Park were Wrens.⁵⁷ Women employed through the Foreign Office are generally older than those from the services - of the seventeen women who state they were 20 or older, ten were Foreign Office. This is due to the larger number of university graduates among Foreign Office employees. Of the twelve university graduates who give their age, all are over twenty, apart from Carmen Blacker and Jean Faraday Davies, who were still undergraduates.

We must remember that the older a person was during the war, the less likely it is that they were alive by the time the secrecy was lifted. There are mentions of older women in some of the accounts. Gwen Davies recalls a female academic in her thirties.⁵⁸ Sheila Lancaster, who worked on MI6 agents’ codes, worked alongside some women in their seventies.⁵⁹ However, while the ages given in the material are not necessarily representative for the entire female work-force, it still illustrates the relative youth of the personnel. In a post-war memorandum written for GCHQ,

⁵⁷ The sixth was Foreign Office (BPTA, *Other people’s stories book six* (2003), transcript of interview with Rachel Nugge (née Makower)). Jean Pitt Lewis gives her age as seventeen when she came to Bletchley Park. (BPTA, *Other people’s stories book six* (2003), letter from Jean Pitt Lewis, 17 October 2003.)

⁵⁸ Watkins 2013, pp. 110-111.

⁵⁹ BPTA, *Other people’s stories book one* (2000), transcript of interview with Sheila Lancaster.

Nigel de Grey outlines the advantages of recruiting young people. Youth “was more trainable, more prepared to accept direction, better able to stand strain, more flexible in mind”.⁶⁰ Marion Hill mentioned fifteen-year-old girls working at Bletchley Park, and Michael Smith quotes an interview with Joan Nicholls, an ATS wireless operator at Bletchley Park, who joined up at fifteen, claiming she was two years older than she was.⁶¹ Anecdotal evidence also support the picture of the female personnel being quite young. Joan Tollet worked under Max Newman along with Wrens who, she recalls, were seventeen or eighteen.⁶² One veteran ironically described a WRNS Petty Officer as “ancient - she must have been at least 23.”⁶³ Overall, we are left with the impression that a majority of women were young, many of them under twenty. The men were considerably older. The cryptanalysts who had been active in the First World War were in their sixties. In the first wave of recruitment, just before the war, where academics were recruited, most were in their forties or fifties.⁶⁴ Only a few were under thirty. The second wave of recruitment, during the war itself, was done by searching through the services, which yielded considerably younger recruits.⁶⁵ Although some were taken directly after finishing school, this was uncommon.⁶⁶

Issues of social class

Intelligence work has always been considered “the most gentlemanly war work”, and the early common practice of personal networks lead to homogeneity in terms of class.⁶⁷ The men at Bletchley Park were often well-educated upper-middle class, and many women were from well-to-do families.⁶⁸ The material contain indications of an upper-middle or upper class mind-set: Jean Campbell-Harris describes going to Bletchley Park “rather like being sent to a new boarding

⁶⁰ TNA HW 14/145, *Summary of Sigint Operations 1939-1945* by N. de Grey, p. 7.

⁶¹ Hill 2008, p. 51; Smith 2011, p. 49.

⁶² BPTA, *Other people's stories book four* (2002), transcript of interview with Joan Marr (née Tollet).

⁶³ Hill 2008, p. 77.

⁶⁴ Smith 2011, p. 19.

⁶⁵ The two waves of recruitment are described by Millward 2001, pp. 25-26.

⁶⁶ BPTA, *Other people's stories book three* (2001), transcript of interview with Irene McPearson. Neil de Grey says on the topic of minimum age: “Boys were taken straight from Public School - i.e. at 18. Girls from age of call-up”. (TNA HW 14/145, *Summary of Sigint operations 1939-1945* by N. de Grey, pp. 7-8) The age of call-up for women was twenty, so probably he rather means age for volunteering, which was seventeen.

⁶⁷ Hodges 1992, p. 192.

⁶⁸ Grey 2012, p. 137.

school”.⁶⁹ Pam Dryland, a Wren, recalls “a fair selection of girls who would have been debutantes in peacetime”, describing them as “quite a clique”.⁷⁰ Elizabeth Greaves calls Bletchley Park “necessarily a most exclusive society.”⁷¹ In many war-industries, a high degree of class-segregation was the norm. Generally, the picture of “equality of sacrifice” and “national unity”, where women of all classes work together for the common cause of the war-effort seems to be incorrect.⁷² This seems the case with Bletchley Park too at the start of the war.

However, as the organisation grew and more people, especially women, were posted there, the social composition changed.⁷³ Many veterans describe Bletchley Park as heterogenous.⁷⁴ F.E. Clark, a Foreign Office civilian, lived in the hostel just outside Bletchley Park along with “a debutante, - a titled lady, - & two of us from the East End of London!”⁷⁵ Some women seem not to recognise the picture of all women being debs at all, like Joan Kidman (later Allen), who started work at fourteen, and worked in C Block with Hollerith machines, a common kind of punch card machine.

J[ohn] G[allihawk, interviewer]: *We used to think that C Block was full of young Lady this and the Rt Hon So and so.*

J[Joan] A[llen]: No, it was just full of Hollerith punch card girls. ⁷⁶

While revealing the hierarchical structure between the ‘girls’ and the aristocrats whom Gallihawk assumes would have worked in C Block, Kidman’s response also reveals pride in her working-class identity. The girls she worked with may not have had aristocratic titles, but they did have an occupation.

Education and previous occupations

According to Nigel de Grey, “an unusually high percentage of the supporting staff [i.e. women] were (i) University trained (ii) Higher School Certificate Standard”.⁷⁷ Some younger recruits to

⁶⁹ BPTA, *Other people’s stories book six* (2003), “At the official opening of the Visitor Information Centre on September 8th, 2003, Baroness Trumpington gave this speech”. Beryl Wildey makes the same simile about Woburn Abbey, a stately home requisitioned by the Admiralty and used as accommodation for the Wrens working at Bletchley Park. (BPTA, *Other people’s stories book one* (2000), transcript of interview with Beryl Robertson (née Wildey).

⁷⁰ BPTA, reply to Margaret Henderson’s Hut 7 form from Pam Adams (née Dryland).

⁷¹ BPTA, *Other people’s stories book six* (2003), “A View of ‘The Park’” by Elizabeth Hunter (née Greaves).

⁷² Summerfield 1989, pp. 56-57.

⁷³ Grey 2012, p. 134.

⁷⁴ BPTA, reply to Margaret Henderson’s Hut 7 form, by May L. Critchell; BPTA, *Other people’s stories book four* (2002), transcript of interview with Wendy Munro (née Anderson).

⁷⁵ IWM Misc 190 (2827), letter from F.E. Clark, 23 November 1985.

⁷⁶ BPTA, *Other people’s stories book three*, (2001), transcript of interview with Joan Allen (née Kidman).

⁷⁷ TNA HW 14/145, *Summary of Sigint operations 1939-1945* by N. de Grey, p. 7.

Bletchley Park had just left school, often prestigious girls' school such as Roedean School in East Sussex and St Leonard's School in Fife.⁷⁸ Eighteen of the forty-four women who give their occupation just prior to recruitment had just graduated or were working towards an undergraduate degree.⁷⁹ Oxbridge is particularly well-represented, with four women from Cambridge and three from Oxford.⁸⁰ According to Elizabeth Greaves, only seven of the forty women working in Hut 6 had not been to Oxford.⁸¹ The three oldest Scottish universities, St Andrews, Glasgow and Aberdeen, also had alumnae at Bletchley Park.⁸² Equally, Redbrick universities, founded around the turn of the century, provided personnel.⁸³ Three women were at women's colleges in London, one was at the School of Oriental and African Languages, also in London, one in Reading and one in Manchester.

The overwhelming majority of university-educated women had languages as their subject, eleven of the fifteen who specify their subject. One studied Japanese, and the rest German, French or (most often) a combination of the two. Two read Classics, which in the interwar years was considered the ideal subject for a cryptanalyst.⁸⁴ The new cryptanalyst subject, mathematics, is also represented, but only with two graduates. The majority of women with university degrees were employed by the Foreign Office, but the ATS also had a high number of graduates. Of the seven ATS women in source material, six of them were or had been at university, quite unlike the contemporary stereotype of the ill-educated working-class ATS girl.⁸⁵ According to anecdotal evidence, several Wrens working in the Newmanry had university degrees, often in mathematics.⁸⁶

Five women state that they had been at secretarial college, which would make a woman readily employable. Secretary was a socially mixed occupation, held by women of all social classes.

⁷⁸ BPTA, *Other people's stories book six* (2003), transcript of interview with Rachel Nugge (née Makower); IWM 5/67/1 (13642), memoirs of Ann Harding (née Bruce Low), p. 2.

⁷⁹ This number is only those who explicitly state having been to university. It is probably higher.

⁸⁰ IWM 91/4/1 (660), account by Gabrielle Hale; BPTA, "Hut 6 and the M.R.", account dated 17 November 1994, by Ann Mitchell (née Williamson); BPTA, reply to Hut 7 veteran form by Mary Tyler (née Southcombe); Murray 2001, p. 113; BPTA, *Other people's stories book six* (2003), transcript of interview with Margaret Chester (née Uzborne Muzz); BPTA, *Other people's stories book six* (2003), transcript of interview Mary Barbara Wallis; BPTA, *Other people's stories book six* (2003), "A View of 'The Park'" by Elizabeth Hunter (née Greaves).

⁸¹ BPTA, *Other people's stories book six* (2003), "A View of 'The Park'" by Elizabeth Hunter (née Greaves).

⁸² IWM 91/4/1 (660), account by Dorothy Smith (née Robertson); BPTA, *Other people's stories book three* (2001), transcript of interview with Irene McPearson; BPTA, *Other people's stories book four* (2002), transcript of interview with Wendy Munro (née Anderson).

⁸³ BPTA, "Bletchley Park: The Fusion Room 1942-45", by J.F. Wallwork, I.J. Thirsk, J.W. Thirsk and J. Rushworth; IWM 91/4/1 (660), account by Imogen Ryan (née Garrett); Blacker 2001, p. 300.

⁸⁴ Wilkinson 2001, p. 63.

⁸⁵ Summerfield 1998, p. 164.

⁸⁶ Hill 2008, p. 79.

Secretarial college had the advantage of being shorter than a university degree, but still a qualification. Sheila Lancaster was not able to go to university because of the start of the war, and instead went to Johnson Secretarial College.⁸⁷

It is safe to assume that some of the women who mention doing secretarial work when recruited had qualifications from a secretarial college. Some of the employed recruits, however, seem to have gone directly from school to work. Joan Kidman started work at 14, and came to Bletchley Park at 21.⁸⁸ E. Wilson was an apprentice in a department store before joining up, something that displeased her parents. “My father didn’t like the idea of his only daughter breaking an apprenticeship.”⁸⁹ Nigel de Grey comments that teleprinter operators and cipher clerks were “generally not up to school certificate standard.”⁹⁰

Recruitment of women to Bletchley Park

Family connections were used for much of the early recruitment of female personnel, being the safest and most dignified way to recruit, but not only through fathers and other older relatives.⁹¹ For instance, Ann Bruce Low learned about the opportunity for German-speakers to work for the Foreign Office through her sister.⁹² Using personal connections worked as a form of security vetting in itself, relying on the judgement of the recruiter, who would already be known and trusted, but an interview and security vetting was always part of the recruitment process. Having ‘the right background’ was not enough. Qualifications were necessary too. Gordon Welchman, Head of Hut 6, recalls that “early recruitment [of women] was largely on a personal-acquaintance basis, but with the whole of Bletchley Park looking for qualified women, we got a great many recruits of high caliber.”⁹³

Another common form of personal recruitment was that through teachers and supervisors, whether at school or university. Sometimes this occurred while the recruit was still a student, as with Joan Clarke, or after they had left, as with Jean Faraday Davies.⁹⁴ Davies left Manchester University after having studied modern languages for a year, and joined the Forestry Corps. “I happened to

⁸⁷ BPTA, *Other people’s stories book one* (2000), transcript of interview with Sheila Lancaster.

⁸⁸ BPTA, reply to Margaret Henderson’s Hut 7 form by Pam Allen (née Dryland).

⁸⁹ IWM Misc 190 (2827), letter from E. Butcher, 14 September 1985.

⁹⁰ TNA HW 14/145, *Summary of Sigint operations 1939-1945* by N. de Grey, p. 7.

⁹¹ Smith 2011, p. 30.

⁹² IWM 05/67/1 (13542), p. 4.

⁹³ Welchman 2011, p. 86.

⁹⁴ Murray 2001, p. 113.

meet my old headmistress in the town and told her what I had done, she was horrified.” A few days later, she received a letter from the War Office, and was subsequently drafted into the ATS and sent to Bletchley Park, presumably on her headmistress’ recommendation.⁹⁵ Others were recruited through their educational institutions themselves, which had been approached by GC&CS about potential recruits.⁹⁶ Other women were recruited through their employers, especially through banks and department-stores.⁹⁷

Some women were sent to Bletchley Park by the Ministry of Labour as directed labour, some due to specific skills, or for that matter having a university degree, as the Ministry of Labour had been instructed to send anyone with high intelligence to Bletchley.⁹⁸ Most of the directed labour was of a low-grade type, primarily used for decryption. Bletchley Park was desperate for this kind of workers. In 1942, they relayed to the Ministry of Labour that there was an “urgent need for girls under 35, those opting for factory work or having no preference to be sent to Bletchley”.⁹⁹ However, the use of directed labour was seen as a failure by high-ranking administrators, due to the bad morale.¹⁰⁰

Most members of the women’s services had Bletchley Park as their primary posting, especially WRNS, which provided Bletchley Park with labour for certain tasks. After training, volunteers of WRNS were divided into three categories: steward, cook or P5, short for HMS Pembroke V, a codename for Bletchley Park. According to Bess Cooper, this category was nothing one could choose oneself, but had to be selected for, but many Wrens describe it as a choice, where P5 held an attraction because of the secrecy surrounding it: “being foolish and 17 1/2 [I] thought, that sounds exciting, lets [sic] go to P5.”¹⁰¹ Many who joined WRNS because of a love for the sea were disappointed to be posted in the middle of Buckinghamshire.¹⁰² This longing for the sea is a

⁹⁵ BPTA, “Bletchley Park: The Fusion Room 1942-45”, by J.F. Wallwork, I.J.Thirsk, J.W. Thirsk and J. Rushworth.

⁹⁶ BPTA, *Other people’s stories book six* (2003), transcript of interview with Margaret Chester (née Uzborne Muzz); BPTA, *Other people’s stories book four* (2002), transcript of interview with Pauline Lee (née Burrow). The principal of Newnham College, Cambridge, who was the sister of Stuart Milner-Barry of Hut 6, helped with recruitment of promising female graduates. (Smith 2011, p. 53.) Several secretarial colleges had been approached too. (Hill 2008, p. 16.)

⁹⁷ BPTA, *Other people’s stories book four* (2002), transcript of interview with Marjory Campbell; BPTA, *Other people’s stories book four* (2002), transcript of interview with Margaret Martin (née Whiting).

⁹⁸ BPTA, *Other people’s stories book three* (2001), transcript of interview with Joan Allen (née Kidman); IWM Misc 190 (2827), letter from E.E. Clark, 4 November 1985; BPTA, *Other people’s stories book four* (2002), transcript of interview with Wendy Munro (née Anderson).

⁹⁹ TNA HW 14/155, notice dated 22 April 1942.

¹⁰⁰ TNA HW 14/145, *Summary of Sigint operations 1939-1945* by N. de Grey, pp. 4, 29.

¹⁰¹ BPTA, *Other people’s stories book three* (2001), transcript of interview with Bess Farrow (née Cooper); BPTA, *Other people’s stories book three* (2001), transcript of interview with Collette Cook.

¹⁰² Payne 2001, p. 132.

recurring theme in accounts by Wrens. Marion Hill quotes a rhyme written by one veteran: “I joined the Navy to see the sea and what did I see? I saw BP.”¹⁰³

Other women’s services also provided personnel to Bletchley Park, but never to the same extent as WRNS. Some were spotted before volunteering, and later recruited to the service, like Mary Barbara Wallis. She had met an officer of the ATS who told Wallis that she hoped she would “be able to recruit with conscription a better type of ATS girl”. At the end of her first year at Cambridge, Wallis received a letter along with several of her friends: “It was from the War Office and it said that some Tosh like you is [sic] just the type of girl we want, to recruit for a certain job”, that being log reading at Bletchley Park.¹⁰⁴ Also WAAF (Women’s Auxiliary Air Force) sent women to Bletchley Park for their first posting, but much less frequently than other services.¹⁰⁵ The women’s services could also serve as a way of getting at people who were impossible to employ through the Foreign Office. Pamela Kanis was about to be employed by the Foreign Office when it transpired that her father was Belgian by birth, making her ineligible for employment at the Foreign Office. She was therefore sent to the War Office, where she was interviewed by all three services and finally chosen for the ATS.¹⁰⁶

Fewer women had Bletchley Park as a later posting, but these women were presumably more carefully picked. As they were not just out of training, they had time to prove themselves. Of the Wrens, the only to have Bletchley Park as a later posting are those assigned to the Y Service, an intercept service consisting of Wrens who knew German.¹⁰⁷ Those sent to Bletchley Park worked in interpretation and indexing of captured documents, which required a very high standard of German, high enough that an Honours degree in modern languages was not considered a sufficient qualification.¹⁰⁸ This implies that the Y Service sent particularly gifted Wrens to Bletchley Park. As for other services, women were sent to Bletchley Park for the use of particular skills. Mavis Marr, who worked as a lettering artist at a printing firm before joining the ATS, was posted to Bletchley Park to letter labels for Army maps after some time in other postings. Elizabeth Greaves, a Classics graduate from Oxford, gave the ATS similar problems with finding an appropriate posting. After

¹⁰³ Hill 2008, p. 77.

¹⁰⁴ BPTA, *Other people’s stories book six* (2003), transcript of interview Mary Barbara Wallis.

¹⁰⁵ BPTA, *Other people’s stories book one* (2000), Douglas; IWM Misc 19 (2827), letter from Daphne Owens, 7 November, no year given; IWM Misc 19 (2827) letter from Audrey Webster (née Wilkinson), 10 January 1983.

¹⁰⁶ BPTA, *Other people’s book six* (2003), letter from Pamela Hobbs (née Kanis).

¹⁰⁷ Alford 2001, p. 68; IWM 91/4/1 (660), accounts by Vivienne Alford (née Jabez-Smith), Gabrielle Hale and Rosemary Morton (née Geddes).

¹⁰⁸ TNA HW 14/145, *Summary of Sigint operations 1939-1945* by N. de Grey, p. 6.

various postings, she was sent to Bletchley Park.¹⁰⁹ WAAF telegraphists were seldom posted directly to Bletchley Park, but were first posted to Leighton Buzzard, a nearby town, which Doreen Spencer describes as “just a stepping stone, an initiation, a preparation and trial period”.¹¹⁰

The ‘dons and debs’ stereotype revisited

The source material gives a different picture of women’s backgrounds than the simplistic ‘deb’ stereotype. Female personnel came from a variety of backgrounds. Women of higher social class were favoured early in the war, as most of the recruitment was conducted by personal or professional networks, but their qualifications were always carefully considered. Supervisors, teachers or employers would recruit promising students and employees to take with them to Bletchley Park. Women already in the services were posted to Bletchley Park if they were particularly talented. Recruits who could not be employed by the Foreign Office were placed into the women’s services in order to get them to Bletchley Park. Many women had a Higher Certificate from school, and university degrees were not uncommon. The Ministry of Labour also sent women with other particular skills to Bletchley Park, even if most of the directed labour was ‘unskilled’. The women were generally young, most certainly under 25, thus younger than the men.

Gendering of tasks

People seldom explain what is obvious to them, leaving posterity in the dark when it comes to their thinking. We must therefore use means other than direct statements in order to understand the concepts we are researching. As female-gendered tasks will be given predominantly to women, we will be able to tell which tasks are considered specifically female by studying how many women do a specific job.

To aid this, I have divided the work done at Bletchley Park into five categories: cryptanalysis, machine minding, intelligence work, clerical tasks and communications. Cryptanalysis is all breaking of enemy codes and ciphers. Machine minding includes bombes, Colossi, Robinson and Hollerith machines. Among clerical tasks, I have counted all forms of secretarial work and preparatory work which will lead onto cryptanalysis, as well as decryption on Typex and JADE machines. It is obvious that women who worked with decryption were considered clerical workers, considering that the

¹⁰⁹ BPTA, *Other people’s stories book six* (2003), “A View of ‘The Park’” by Elizabeth Hunter (née Greaves).

¹¹⁰ Luke 1998, p. 21.

term used is “cipher clerk.”¹¹¹ Communications is anything related to wireless, morse slip reading and high-speed telegraphy.

The table gives the breakdown of tasks in the source material. Already these figures present a clear pattern, where over half of the women work with machine minding and

	<i>FO</i>	<i>WRNS</i>	<i>ATS</i>	<i>WAAF</i>	<i>Total</i>
<i>Clerical tasks</i>	15	8	3	1	27
<i>Communications</i>	0	1	0	10	14
<i>Cryptanalysis</i>	4	0	0	2	6
<i>Intelligence work</i>	4	5	4	1	13
<i>Machine minding</i>	2	25	0	0	27
<i>Total</i>	27	39	7	14	87

Table 1. Jobs done by women at Bletchley Park divided by employing ministry and services. (Based on source material from IWM and BPTA, Luke 1998, Watkins 2013 and articles from Hinsley and Stripp 2001a, cited throughout.)

clerical tasks, and only a handful in cryptanalysis. Below, I will discuss the various tasks in greater detail, starting with the most common.

Machine minding

Of the twenty-seven women who were machine operators, twenty-five were members of the WRNS. Seventeen of these were bombe operators, one operated Hollerith machines, one operated Robinson machines, three only Colossus and two both Robinsons and Colossi. The two Foreign Office civilians were both Hollerith operators, and had worked punch-card machines before.¹¹² As punch-card machines were used for filing, they are intimately connected to clerical work, which was considered a female task. The only Wren who operate a Hollerith machine, M. Perry, also did clerical work after being transferred from Outstation Eastcote to Hut 7.¹¹³

The bombes were built by the British Tabulating Machine Company (BTM) in Letchworth, and in the beginning they were set up and run by soldiers from all three services who had previously worked at BTM.¹¹⁴ Thus this task started out as male-gendered. In a short online documentary produced by Google, Jean Valentine, a former Wren bombe operator, states that “when the bombe first appeared, it was *manned*, if you’ll excuse the expression, by men, and they didn’t think women

¹¹¹ Decryption was often done by women. Until at least 1943, a section of women employed by the MI6 worked on British agents’ codes at Bletchley Park. (BPTA, *Other people’s stories book one* (2000), transcript of interview with Sheila Lancaster.) SOE (Special Operations Executive) used members of FANY (the First Aid Nursing Yeomanry) to decipher agents’ ciphers. (Marks 2000, pp. 18-20.)

¹¹² BPTA, *Other people’s stories book three* (2001), transcript of interview of Joan Allen (née Kidman); BPTA *Other people’s stories book four* (2002), transcript of interview with Margaret Martin (née Whiting).

¹¹³ IWM Misc 190 (2827), letter from M. Perry, 27 December 1982.

¹¹⁴ Smith 2011, p. 112.

could do it.”¹¹⁵ However, male personnel was required elsewhere, and as the bombes were crucial to rapid breaking of Enigma keys, machines kept being added, requiring more operators. The solution was to take in women, first civilians and later, from March 1941, Wrens.¹¹⁶ Soon Wrens made up the majority of bombe operators; by the end of the war, 1676 of the 2000 bombe operators were Wrens.¹¹⁷

Bombe machines were not simple machines to operate, and the work was heavy, requiring the operators to be “of good height and eyesight”.¹¹⁸ The men who operated them in the early stages of the war were all electrically and technically skilled. The highly technical nature of the work is probably the reason why it was thought that women ‘couldn’t do it’. The first women to take over the bombes must have been given some instruction, but by the time the Wrens were employed, this was no longer the case. Many state that they were simply sent in to do the work.¹¹⁹ In place of formal training, they would help each other, instructing new-comers and then, as Margaret Stabler recalls, “it was in at the deep end, with a little continual supervision.”¹²⁰ Later in the war, new recruits were first sent to Outstation Eastcote for training before being put to work.¹²¹ The operation of the bombes are often described as a routine job, not a highly skilled one. Nigel de Grey sounds surprised that women were able to do it so well: “It was astonishing what young women could be trained to do [---] although [they were] quite untrained to use their hands or apply their minds to such work.”¹²²

Although women operated the bombes and can often describe their function accurately many years later, they were not trusted to maintain the machines. This was instead done by RAF technicians.¹²³ Thus the really technical work remained male-gendered. When writing to Eric Rhodes, Margaret Stabler asks that the RAF technicians be mentioned in his book, as they were “absolutely brilliant”. “How they had mastered the intricacies of the bombes (I) [sic] never

¹¹⁵“Operating the Bombe: Jean Valentine’s Story” (online source).

¹¹⁶ Murray 2001, p. 113; Smith 2011, p. 112.

¹¹⁷ Smith 2011, p. 113.

¹¹⁸ Payne 2001, p. 134; IWM 97/34/1 (7194), “Bombe surprise!” by Cynthia Waterhouse.

¹¹⁹ BPTA, *Other people’s stories book four* (2002), transcript of interview with Pamela O’Donahue.

¹²⁰ IWM Misc 190 (2827), letter from Margaret Stabler, 16 October 1982.

¹²¹ IWM Misc 190 (2827), letter from June Loye (née Scamell), received 17 October 1982; IWM Misc 190 (2827), letter from Sheila Parker, 15 January 1985; IWM Misc 190 (2827), letter from Evelyn Smith (née Francis), 17 November 1982; BPTA, “Life at Crawley Grange” by Isobel White.

¹²² TNA HW 14/145, *Summary of Sigint operations 1939-1945* by N. de Grey, p. 7.

¹²³ Ibid, p. 9; IWM Misc 190 (2827), letter from Margaret Stabler, 16 October 1982; Payne 2001, p. 135; BPTA, *Other people’s stories book six* (2003), transcript of interview with Barbara Henderson (née Gordon); Welchman 2011, p. 147.

know”.¹²⁴ Gendering is not simply imposed, but is internalised - although Stabler has an excellent understanding of the bombe, she is convinced of her own inability to understand its technical workings.

Neither Robinsons nor Colossi, both of which were used to break Fish, seem ever to have been regularly operated by men. When the Robinson was introduced in 1942, all bombe operators were women. The gendering of the operation of the bombes was simply calqued onto the new machines. Operators of the Robinson were given “absolutely no instructions whatsoever”.¹²⁵ The Colossus operators (all in all 300 Wrens), however, did a two-week course, to learn the basics of the machine and the teleprinter alphabet.¹²⁶ These Wrens seem to have serviced the machines to a greater extent than the bombe operators did - Deidre Dring remembers changing the valves on the Colossus - but both Robinsons and Colossi were regularly serviced by civilians from the General Post Office, which had been central to the construction of the Colossus.¹²⁷

The only machine which does not fall into the pattern of female-gendered machine-minding in The Baby, a small machine, purpose-built for Hut 8. The Baby encrypted the common German word *eins* in all possible starting-positions of the Naval Enigma machine, creating a Hollerith catalogue of tetragrams, which was used to find possible instances of this word. Despite the machine’s name, and the recurring (if flippant) term “minding the Baby”, which casts the operator in the role of caregiver, it was manned by both men and women, specifically the cryptanalysts in Hut 8.¹²⁸ Ann Bruce Low, who did clerical work in Hut 8, remembers being shown the Baby, but never operated it.¹²⁹ Operating the Baby was considered a high-grade job - Bruce Low had little to do with it, and Joan Clarke, who had just been moved onto cryptanalytical duties, recalls feeling “quite important” when she was set on operating it along with Peter Twinn.¹³⁰ Its use was completely different from other machines, enciphering rather than deciphering, and requiring cryptanalytical skill, which women were not considered to have (as I will discuss later on), all factors which stopped it from being gendered in the same ways as other machines.

¹²⁴ IWM Misc 190 (2827), letter from Margaret Stabler, 16 October 1982.

¹²⁵ BTPA, *Other people’s stories book one* (2000), transcript of interview with Beryl Robertson (née Wildey).

¹²⁶ IWM Misc 190 (2827), letter from Jean Harvey (née Thompson), 14 October 1982; Smith 2011, p. 273.

¹²⁷ TNA HW 14/145, *Summary of Sigint operations 1939-1945* by N. de Grey, p. 9; BPTA, *Other people’s stories book four* (2002), transcript of interview with Deidre Capron (née Dring).

¹²⁸ Murray 2001, p. 114.

¹²⁹ IWM 05/67/1 (13542), memoirs of Ann Harding (née Bruce Low), p. 11.

¹³⁰ Murray 2001, p. 114. ‘The Baby’ was a common name for prototypes of computers. The most famous is probably the Manchester Baby, precursor to the Mark I, constructed, like the Bletchley Baby, by Alan Turing. (Copeland 2012, pp. 155-158.)

Clerical work

Clerical work was the typical female task of the 1940s, and much of the rest of the twentieth century. An organisation of this date as large as Bletchley Park, which by 1942 processed and read four thousand German high-grade signals a day and a similar number of Italian and Japanese signals, required a large number of clerical workers, all of whom were women, both civilians and servicewomen.¹³¹

Much of the clerical tasks were quite traditional, such as filing and sorting, paper-work and secretarial duties.¹³² Some of the duties were more specific: lettering tags for maps, rechecking typed translations of intercepts or reading through decrypted messages and sorting them according to different types.¹³³ Women also manned the Registration Room, where incoming messages were received and registered, and worked with blisting, i.e. listing messages with information of origin of signal and interception.¹³⁴ This information was later used for traffic analysis.

Some duties were more closely connected to cryptanalysis. Women worked on preparing materials used in cryptanalytical methods, such as Banbury sheets and Foss sheets.¹³⁵ The Foss sheets, onto which the clerks typed groups of five numbers, are not-so-fondly recalled by many of the clerks of Hut 7.¹³⁶ The work is invariably described as “monotonous” or “dull”, and only Beryl Leigh recalls the name of the sheets. Other jobs done by women leading up to cryptanalysis were frequency counts and various forms of typing.¹³⁷ Eileen Berner, a Wren, mentions “typing what I recall appeared as endless two letter sequences making no sense at all to me but [which were] invaluable apparently to the civilian codebreakers”.¹³⁸

¹³¹ Hinsley and Stripp 2001b, p. v; Murray 2001, pp. 114-115.

¹³² IWM Misc 190 (2827), letter from F.E. Clark, 4 November 1985; BPTA, reply to Margaret Henderson’s Hut 7 form by Joan Stevens (née Balch); BPTA, *Other people’s stories book six* (2003), “A View of “The Park”” by Elizabeth Hunter (née Greaves); BPTA, *Other people’s stories book four* 82002), transcript of interview with Pauline Lee (née Burrow).

¹³³ BPTA, *Other people’s stories book one* (2000), transcript of interview with Mavis Fanch (née Marr); BPTA, *Other people’s stories book four* (2002), transcript of interview with Diana Neil (née Spence); BPTA, *Other people’s stories book six* (2003), transcript of interview with Mary Barbara Wallis.

¹³⁴ BPTA, *Other people’s stories book six* (2003), transcript of interview with Margaret Chester (née Uzborne Muzz); BPTA, reply to Hut 7 veteran form by May Critchell; BPTA *Other people’s stories book four* (2002), transcript of interview with Marjory Campbell (née Moore); IWM Misc 190 (2827), letter from Pat L. Holliday, 21 January 1986.

¹³⁵ TNA HW 25/1, *Cryptographic history of Hut 8* by C.H. O’D Alexander, p. 29.

¹³⁶ BPTA, reply to Hut 7 veteran form by Mary Clarke (née Johnson); BPTA, reply to Hut 7 veteran form by Beryl Middleton (née Leigh); BPTA, reply to Hut 7 veteran form by Ruth Perry (née Roberts); BPTA, reply to Hut 7 veteran form by Belle Watson (née Branfoot).

¹³⁷ BPTA, reply to Hut 7 veteran form by Betty Everest (née Ives).

¹³⁸ IWM Misc 190 (2827), letter from Eileen Dodd (née Berner), 7 December 1982.

Women also manned the Typex and JADE machines, used for decrypting.¹³⁹ Typex operators were often directed labour from the Ministry of Labour, and were often quite unhappy about their posting.¹⁴⁰ JADE operators seem generally to have been happier, but unlike the women working on Typex machines, they had all been moved from clerical duties which they found particularly dull, onto JADE, which was more enjoyable. Joan Balch “together with Merrie England worked at top speed to see how many decrypts we could produce per shift. A good-natured rivalry with Peggy Baynham of the other shifts [sic] spurred us on!”¹⁴¹ The Typex operators, who were given no context of what they were doing and worked long shifts, often in permanently blacked-out rooms, had a worse time. There were several attempts to heighten morale (among them “music while you work”), but with Bletchley Park’s policy of internal secrecy, there was little to be done.¹⁴² Overall, clerks were ill-informed and badly paid.

Communications

Communications entailed operating teleprinters and wireless sets, and morse-slip reading, where morse symbols were transmitted by machine rather than by hand. Civilians often worked in the Registration Rooms, as mentioned above, but most of the women who worked within communications were WAAFs. Like with machine operation, this is a task dominated by one particular service. It is also similar to machine operation as WAAFs were brought in as dilutees. When war broke out, all operators at Y Service intercept stations were male. As men were needed in other capacities, women were employed instead. A similar shift seems to have happened at Bletchley Park itself - as there were too few men, women took over the tasks not on the frontline.¹⁴³ However, this makes the gendering less static, as these women have been taken in as temporary replacement. As with bombes and other machines, the technicians were male.¹⁴⁴

While some enjoyed their work greatly (e.g. Dorothy Presley: “the girls used to call me a morse fanatic”)¹⁴⁵ or felt that the work was important (e.g. Doreen Spencer, “we were a lifeline to the

¹³⁹ BPTA, *Other people’s stories book four* (2002), transcript of interview with Wendy Munro (née Anderson); BPTA, *Other people’s stories book three* (2001), transcript of interview with Phyllis Warner; IWM Misc 190 (2827), letter from Sylvia Lidle (née Rouse), 25 November 1985; BPTA, reply to Hut 7 veteran form by Joan Stevens (née Balch); BPTA, reply to Hut 7 veteran form by Merrie Acton (née England); BPTA, reply to Hut 7 veteran form by Marion Walker.

¹⁴⁰ BPTA, *Other people’s stories book four* (2002), transcript of interview with Wendy Munro (née Anderson).

¹⁴¹ BPTA, reply to Hut 7 veteran form by Joan Stevens (née Balch).

¹⁴² TNA HW 14/145, *Summary of Sigint operations 1939-1945* by N. de Grey, p. 29.

¹⁴³ *Ibid*, p. 9.

¹⁴⁴ IWM Misc 190 (2827), letter from Daphne Owens, 16 January 1985.

¹⁴⁵ IWM Misc 190 (2827), letter from Dorothy Cassidy (née Presley), 21 February 1986.

outside world”),¹⁴⁶ this opinion was not shared by everyone. Joan Perkins felt that during the last year of the war, “all our teleprinting seemed to be , [sic] very arduous”,¹⁴⁷ and both Olive Dobson and Audrey Wilkinson found the work “nerve racking”.¹⁴⁸ As with many of the women doing clerical work, both teleprinter and wireless operators were not offered any explanation to their work. Daphne Owens and her friends did not even know that Bletchley Park dealt in codebreaking. “We had a vague idea that we were part of ‘Combined Operations’.”, i.e. British special forces.¹⁴⁹ These women were considered incredibly low-grade work. Nigel de Grey, one of the senior cryptanalysts at Bletchley Park who authored a review of GC&CS’s wartime operations in 1949, describes the WAAF’s on the teleprinters and the civilian Typex staff as “the lowest form of life generally not up to school certificate standard”, a surprisingly degrading statement.¹⁵⁰ It is not simply a comment on their level of education, but on their human value.

Intelligence work

However important the cryptanalysis was at Bletchley Park, it was only a means to an end. The most central part of the organisation’s work was the translation, interpretation and distribution of intelligence. The messages were often of a highly technical nature, so it was essential that those working on it were well-versed in whatever language they were working on. Graduates with degrees in modern languages or students thereof (e.g. Carmen Blacker, Irene Watkins, Jean Davies and Joyce Robinson) or Y Station Wrens, for whom German was a requirement, attained through university or time spent in Germany (e.g. Vivienne Jabez-Smith and Gabrielle Hale), were employed.

However, women played little part in watch-keeping, i.e. translation and emendation. William Millward, a watch-keeper in Hut 3, “cannot remember any women involved in this part of the operation, presumably because it was still thought to be wrong for a woman to work on the night shift or because it was thought to be a man’s job.”¹⁵¹ The Z Watch in Hut 4, the equivalent to the Hut 3 Watch, had two female members, Ann Toulmin and Thelma Ziman, both Wrens.¹⁵² Ziman later went on to become deputy head of NS II, the section in charge of Japanese decoding.¹⁵³ The

¹⁴⁶ Luke 1998, p. 25.

¹⁴⁷ IWM Misc 190 (2827), letter from Joan Perkins, 24 February 1986.

¹⁴⁸ IWM Misc 190 (2827), letter from Audrey Webster (née Wilkinson), 10 January 1983; IWM Misc 190 (2827), letter from Olive McGrivvy (née Dobson), 2 January 1983.

¹⁴⁹ IWM Misc 190 (2827), letter from Daphne Owens, 16 January 1985.

¹⁵⁰ TNA 14/145, *Summary of Sigint operations 1939-1945* by N. de Grey, p. 7.

¹⁵¹ Millward 2001, p. 20.

¹⁵² Dakin 2001, p. 51.

¹⁵³ *Roll of Honour* (online source).

reluctance to let women be on the Watch was presumably due to the fact that decisions made by the Watch influenced information sent to the fronts directly. Leaving military decisions to the judgement of a woman was unthinkable, not least because women were not given insight in military strategies, or even thought to understand them. In the flow of information, it was close to direct combat, a place thought unsuitable for women. The Watch was the closest to real military action Bletchley Park ever got.

There were rather more women in research teams than in the Watch. Carmen Blacker mentions one woman in the Japanese Research team, Pam Griffiths, and Vivienne Jabez-Smith names three women in German Research, a team of six.¹⁵⁴ However, women in such positions were still few in number. The vast majority of the women in intelligence work worked with the Index, which was staffed almost entirely by female personnel.¹⁵⁵ This work required language skills, but was still by extension an advanced form of filing. The Index was useful, even admired, but not high-grade work within the intelligence huts, as is obvious from Vivienne Jabez-Smith speaking of intercepts being “systematically combed by lowly mortals, including myself”, while Research consisted of “a small group of superior beings”.¹⁵⁶ These descriptions are tongue-in-cheek, but they still illustrate the hierarchy between Index and Research.

Three ATS officers, all of them students of German and French, were part of the Fusion Room, which combined traffic analysis, interpretation of decrypts and information from the Y Services and direction-finding, ‘fusing’ the information together. This was a combination of communications and interpretation, requiring both language skills and knowledge of wireless technology, making language students with Army training ideal for the job. It is not known how many were in this section, only that it was small, but the ATS officers had at least two male coworkers.¹⁵⁷

Work within interpretation and indexing was not individually gendered, but subject to vertical segregation, where women were more often given tasks considered less important. However, it was far easier for a woman to advance within this part of Bletchley Park than within cryptanalysis.

Cryptanalysis

The small number of female cryptanalysts in the source material (six) allows us to make assumptions about cryptanalysis. The ‘great names of BP’ - Knox, Denniston, Tiltman, Turing, Welchman, Alexander, Milner-Barry, Cooper, Newman, and so on - were all in the cryptanalytical sections.

¹⁵⁴ Blacker 2001, p. 303; Alford 2001, p. 69.

¹⁵⁵ Bennet 2001, p. 35; Dakin 2001, p. 49.

¹⁵⁶ Alford 2001, p. 68.

¹⁵⁷ BPTA, “Bletchley Park: The Fusion Room 1942-45”, by J.F. Wallwork, I.J.Thirsk, J.W. Thirsk and J. Rushworth.

These well-known cryptanalysts have in common that they are male and have university degrees, and in most cases doctorates and fellowships. Although intelligence work was the culmination of the process, cryptanalysis was by far the most prestigious stage of it. The war-time directors of GC&CS (Alastair Denniston, John Tiltman and Edward Travis) were not in intelligence but in cryptanalysis.

Orchestra

Orchestra was the Bletchley Park codename for a number of low-grade codes used by German long-range aircrafts. Different codes were named after different instruments. During the first years of the war, most of the cracking of these codes were done at the RAF base in Cheadle.¹⁵⁸ In 1940, Josh Cooper put together a team at Bletchley Park, consisting of civilian and RAF personnel.¹⁵⁹ There is some debate on the importance of these codes. Peter Gray Lucas states that “it is unlikely that they yielded any usable intelligence.”¹⁶⁰ Watkins disagrees, making an emotional rather than a fact-based argument - “if it were true, then we should have been wasting our time”.¹⁶¹ However, Orchestra sometimes provided cryptanalysts with cribs for Enigma, giving them a way into keys, which made the breaking worthwhile.¹⁶²

Wendy Chamier worked with the code Mandolin. She later moved to a section working on plotting radio telephony intercepts, but as she was “‘hooked’ on decoding”, she applied to continue working with Orchestra. She was aware of the breaking of Enigma, the use of Ultra, and the possible part her work played in making the decipherment possible.¹⁶³

Gwen Davies, on the other hand, was not aware of Ultra, claiming that most people at Bletchley Park did not know about the existence of machine ciphers, and “had never envisaged the possibility that, if such things existed, they could be broken.”¹⁶⁴ She was in charge of Cymbal, which was used for “very unimportant traffic”. Throughout her memoir, Davies points out that she was “one of the humblest” or “lowliest of code-breakers, working with furrowed brow on fairly simple codes”, leading to a portrayal of herself as loyal and subservient.¹⁶⁵

¹⁵⁸ Gray Lucas 2011, p. 247.

¹⁵⁹ Watkins 2013, p. 77.

¹⁶⁰ Gray Lucas 2011, p. 249.

¹⁶¹ Watkins 2013, p. 22.

¹⁶² BPTA, account dated 23 November 1994, by Wendy J. Jay (née Chamier); Watkins 2013, p. 78.

¹⁶³ BPTA, account dated 23 November 1994, by Wendy J. Jay (née Chamier).

¹⁶⁴ Watkins 2013, p. 157.

¹⁶⁵ *Ibid*, pp. 11, 143.

Whether Davies' humbleness is part of a kind of reminiscence known as 'maintenance of self-esteem', which seeks to maintain a sense of selfhood when reviewing one's life, or a genuine reflection of her feelings at the time, the people working on Orchestra were not high-ranking cryptanalysts.¹⁶⁶ As Orchestra were all manual codes and the possibilities of plain-text was confined by the code-book, they were relatively easy to crack.¹⁶⁷ At RAF Cheadle the persons working on the codes were known as computers, "a term previously in use for those who did arithmetical donkey-work such as compiling mathematical tables".¹⁶⁸ Chamier uses this term too, joined with that of "clerk", both of which carried the rank of Sergeant, which lead to her promotion.¹⁶⁹ The fact that these ciphers were considered simple and could be done by a 'clerk/computer' rather than a cryptanalyst made it easier to employ women. RAF Cheadle had both male and female graduates working on the codes and the German Air Section employed both female civilians and WAAFs.¹⁷⁰ The use of RAF and WAAF personnel for the Luftwaffe codes explains why they are the only servicewomen in the material who conducted any form of cryptanalysis. Presumably the brightest WAAF recruits were sent to the German Air Section (although unlike many other female cryptanalysts, neither Chamier nor Davies had a university degree). Most other WAAFs worked with morse-slip reading and telegraphy, which were considered low-status jobs.

Italian and Japanese codes and ciphers

The only mention of Italian ciphers (a fairly minor part of the work at Bletchley Park) in the material comes from Mary Southcombe, a Foreign Office civilian. Most of the time, Southcombe worked in the Japanese section, where she did clerical work which she found "boring and frustrating". "The only time I remember a sense of achievement was when I was lent to the Italian naval section to help find the daily setting to a mediterranean shipping code!"¹⁷¹ This was evidently only a temporary arrangement, which is surprising as Southcombe, a Cambridge graduate, had been sent on a three-month course on codes and ciphers in Bedford, which was compulsory for men but uncommon for women to attend.¹⁷²

¹⁶⁶ Summerfield 1998, p. 18.

¹⁶⁷ Gray Lucas 2001, p. 248.

¹⁶⁸ Watkins 2013, p. 77.

¹⁶⁹ BPTA, account by Wendy J. Jay (née Chamier), 23 November 1994.

¹⁷⁰ Gray Lucas 2001, p. 248; Watkins 2013, p. 77.

¹⁷¹ BPTA, reply to Hut 7 veteran form by Mary Tyler (née Southcombe).

¹⁷² *Ibid.*

Irene Want and Rachel Makower were, like Southcombe, in the Japanese Naval Section, but on other duties. Want primarily did index work, looking through Japanese newspapers to find names of ships and areas which may give information for future codes, but helped with the main Japanese code JN25. She was recruited because she was “good at figures”,¹⁷³ a trait associated with cryptanalysts. However, just like Southcombe, this was not her primary task.

Rachel Makower, who arrived in 1944 at the age of seventeen and a half, worked at JN25 as well as being in charge of “a smaller code [---] used by fishermen, to report sightings of enemy planes and ships” - “if you could break the fishermen’s code, it was a wonderful crib for JN25.”¹⁷⁴ Being the only one working on a cipher is no small responsibility, but it should be noted that while Makower did much work on the JN25, which was a high-grade code, the code she herself was in charge of was not dissimilar to Orchestra. Her grade within the Foreign Office reflects the expectations of her position. She started off as a Grade III Clerk, “and no one comes lower than that”.¹⁷⁵ She was later promoted to Grade II.

The Enigma cipher

Two of the women who worked with Enigma worked on drawing up menus for the bombes. Joyce Thompson worked in the Cottage, Intelligence Service Knox (named after its first head, Dillwyn Knox), which worked on various Enigma ciphers, particularly Abwehr Enigma. Thompson calls herself “just one of the backroom girls in the Cottage”, claiming that “in the front room was all the special people”.¹⁷⁶ Ann Williamson, who had a degree in mathematics from Oxford, worked in the Machine Room (MR) in Hut 6. According to her, menus would sometimes be done by members of the Hut 6 Watch, the high-ranking cryptanalysts, but were “done continuously by those of us in the MR”, most of whom had “degrees in maths, economics or law”.¹⁷⁷ When the Machine Room staff drew up the menus, they did so with cribs provided by the Watch of Hut 6 (the cryptanalysts, not to be confused with the Watch in Hut 3, which dealt in intelligence). The head of the Machine Room watch would be in charge of the telephone contact with bombe operators. The people working in the Machine Room would check possible settings suggested by the bombe on captured Enigma machines. If the message came out as plain German, a member of the Watch was called on, and

¹⁷³ BPTA, *Other people’s stories book four* (2002), transcript of interview with Irene Whiston (née Want).

¹⁷⁴ BPTA, *Other people’s stories book six* (2003), transcript with interview with Rachel Nugge (née Makower).

¹⁷⁵ *Ibid.*

¹⁷⁶ BPTA, *Other people’s stories book six* (2003), account by Joyce Thompson.

¹⁷⁷ BPTA, “Hut 6 and the M.R.”, account dated 17 November 1994, by Ann Mitchell (née Williamson). In the *Roll of Honour* (online source), Mary Moncrieff Wilson, a Foreign Office civilian who was Head of the Machine Room in Hut 6, is described as a “cryptanalyst”. However, it is difficult to tell what this means.

they would pronounce the day's key broken, something Machine Room personnel evidently did not have the authority to do.¹⁷⁸

Determining what is a likely crib and finding a possible place for it in a message is often time-consuming and complicated, whereas menus can be drawn simply through observation of cipher and crib. Thompson's description of herself as a 'backroom girl' and Williamson saying that this was a task sometimes done by the Watch but sometimes left to the Machine Room staff implies that, at least by 1942, it was considered a routine task. The Machine Room was largely staffed by women, and had at least one female head, Mary Moncrieff Wilson from 1943.¹⁷⁹ Its association to a strongly female-gendered task (bombe operation) would have made it more acceptable to hand it over to a woman.

However, there were a handful of women who worked with primary cryptanalysis. Ralph Erskine, Jack Good and Eric Weiss knew of only three women who worked with breaking Enigma at Bletchley Park, but the number was probably slightly higher.¹⁸⁰ This number cannot include the women in the Machine Room, and presumably not the "crib room girls" in Hut 8. Williamson refers to members of the Watch as "he or she", implying that there was at least one female cryptanalyst in Hut 6.¹⁸¹ Dillwyn Knox was known to be fond of having female coworkers, and specifically recruited some female cryptanalysts, Margaret Rock and Mavis Lever, both mentioned by Thompson among "the special people" in the front room.¹⁸² When the first Abwehr Enigma message was deciphered, Alastair Denniston, then Director of GC&CS, wrote in a rather perplexed letter that Knox "attributes the success to two young girl members of his staff, Miss Rock and Miss Lever, and he gives them all the credit."¹⁸³ Knox is the only high-ranking cryptanalyst who seems to have actively valued women's abilities and achievements.

The most well-known and most successful female cryptanalyst was Joan Clarke, who worked in Hut 8. Clarke came to Bletchley Park in 1940 after finishing Part III of the Mathematical Tripos in Cambridge, an extra undergraduate year for particularly gifted students, having been recruited by her supervisor Gordon Welchman. She was first put to work on the first bombe in "the Big Room", where various forms of clerical and machine work was done. Within the first week, however, she was

¹⁷⁸ BPTA, "Hut 6 and the M.R." by Ann Mitchell (née Williamson), 17 November 1994.

¹⁷⁹ *Roll of Honour* (online source). A rare photograph reproduced in Smith 2011 (and on the title-page of this thesis) shows several women at work with an Enigma machine on the table, just like Ann Williamson describes in the Machine Room. According to Smith, the photograph is from Hut 6, meaning that one of the women may be Williamson.

¹⁸⁰ Erskine, Good and Weiss 2001, p. 71.

¹⁸¹ BPTA, "Hut 6 and the M.R." by Ann Mitchell (née Williamson), 17 November 1994.

¹⁸² McKay 2010, p. 14; BPTA, *Other people's stories book six* (2003), account by Joyce Thompson. Thompson gives Rock's surname as Roth, but it is evident who she is referring to.

¹⁸³ Smith 2011, p. 160.

made part of the cryptanalysts' team, which until then had been all-male. When she came to the cryptanalysts' room for the first time, one of the cryptanalysts (possibly Kendrick, the eldest) greeted her: "Welcome to the sahibs' room."¹⁸⁴ The room was not commonly known thus - this was the only occasion Clarke heard the term used. It was probably an improvised witticism, but one which illustrates the high rank of this team. The word *sahib*, which is strongly associated to the British as colonial masters, brings with it both assumptions of gender and parallels to imperialism.

It also underlines the transition Clarke undergoes. In being moved onto cryptanalytical tasks, she becomes an honorary man. At Bletchley Park, women were almost always referred to as "girls", an infantilising term so common that it even occurs in official memoranda.¹⁸⁵ However, Clarke is never described thus. Indeed, she even uses the word herself in reference to women doing clerical work.¹⁸⁶ Alan Turing, head of Hut 8 and for about half a year Clarke's fiancé, said it was possible to talk to Clarke "as to a man".¹⁸⁷ By virtue of her tasks and her status, she takes on the social role of a man among her coworkers. When Clarke speaks of spending one week later in the war when there was no cryptanalytic work to do operating a bombe, it gives the impression of a form of organisational slumming.¹⁸⁸ Still she was the only cryptanalyst in Hut 8 who would have been able to do such a temporary switch. Even if it may have been strange with the female cryptanalyst coming to learn about the Wrens' work, it would have been inconceivable that one of the male cryptanalysts would have done so.

The most common means of attack on Naval Enigma at the beginning of the war was Banburismus, a statistical attack which reduced the use of bombes. Banburismus is often described as a game, according to Hut 8 cryptanalyst Jack Good "enjoyable, not easy enough to be trivial, but not difficult enough to cause a nervous breakdown".¹⁸⁹ Clarke described the process being "so enthralling that the analyst due to go home at the end of the shift would be unwilling to hand over the workings", and admits that she was often guilty of this herself.¹⁹⁰ The second Naval key ever to be broken through Banburismus was broken by Clarke.¹⁹¹ She spent much of her time working on Banburismus until the method was dropped in 1943, made obsolete by changes in German ciphers

¹⁸⁴ Murray 2001, p. 114.

¹⁸⁵ TNA HW 25/1, *Cryptographic history of Hut 8* by C.H. O'D Alexander, pp. 83, 91, 106-107, 115.

¹⁸⁶ Murray 2001, pp. 113-118.

¹⁸⁷ Hodges 1992, p. 206.

¹⁸⁸ Murray 2001, p. 116; Murray 2010, p. 367.

¹⁸⁹ Good 2011, p. 157.

¹⁹⁰ Murray 2001, p. 117.

¹⁹¹ *Ibid*, p. 115. The first break was achieved by Hugh Foss.

and the greater availability of bombes. According to Hugh Alexander, head of Hut 8 1943-1944, Clarke was “one of the best Banburists in the section”.¹⁹²

Clarke also worked on *Offizier* ciphers, double-enciphered messages only to be read by U-boat officers, using Yoxallismus, a statistical method for establishing Enigma plugboard wirings. The first procedure of Yoxallismus was invented by Leslie Yoxall, and Clarke contributed the second procedure, which “greatly speeded up the routine solutions, but my name was not attached to it: I was told, to my surprise, that I had used ‘pure Dillyismus’.”¹⁹³ “Dillyismus” was presumably a method invented by Dillwyn Knox, but the similarities between this and Clarke’s second stage of the Yoxallismus procedure are unknown. By the indignation over this fact in Clarke’s obituary written by three of her wartime colleagues, it seems like this was in fact not the case. Even if it were, Clarke was the one to observe that Dillyismus could be used to improve Yoxallismus. The reasons behind not naming the improvement after Clarke are most certainly sexist ones. Clarke had been accepted into the team, but evidently her name (even her gender-neutral surname) attached to a method of cryptanalysis was one step too far.

Later in the war, Clarke was part of the team who handled the Shark blackout of 1942, when the U-boats changed to a new, improved Enigma machine, which led to the British being unable to read the Shark key for ten months.¹⁹⁴ From 1944, she was one of only four cryptanalysts in Hut 8 (the other three were all men).¹⁹⁵ The same year she was made deputy head of Hut 8, making her the only woman to hold such a position at Bletchley Park.¹⁹⁶ After the war, she was appointed a Member of the British Empire (MBE) for her wartime work. She stayed on at GCHQ, where she was known as “one of the really good cryptanalysts.”¹⁹⁷

Though Clarke’s exceptional career is naturally her own achievement, a number of circumstantial factors made it possible. Her recruitment through one of the highest cryptanalysts at Bletchley Park is relevant, as are colleagues who accepted her as a part of the team. Furthermore, Hut 8 had a policy of not employing female graduates for clerical work, although it is unclear how strongly this was imposed, and when it was adopted.¹⁹⁸ Clarke arrived early enough that she may have been the reason for the policy, but no other women were put to work on primary cryptanalysis.

¹⁹² TNA HW 25/1, *Cryptographic history of Hut 8* by C.H. O’D Alexander, p. 73.

¹⁹³ Murray 2001, p. 117.

¹⁹⁴ Vide Smith 2011, pp. 172-181.

¹⁹⁵ TNA HW 14/145, *Summary of Sigint operations 1939-1945* by N. de Grey, p. 73.

¹⁹⁶ *Roll of Honour* (online source); Lord 2008 (online source).

¹⁹⁷ Good, Hinsley and Weiss 2001, p. 71.

¹⁹⁸ TNA HW 25/1, *Cryptographic history of Hut 8* by C.H. O’D Alexander, p. 91.

Probably they were in the crib room, where, according to Hugh Alexander, “all the seniors were men and the assistants girls”.¹⁹⁹ This policy should not be misinterpreted as an attempt at creating equality, as Christopher Grey does.²⁰⁰ Alexander states plainly that overqualified staff were often more dissatisfied, which makes their work suffer. Hut 6 did not agree with Hut 8 on this, but used women with degrees for clerical work, as they saw “a different in efficiency between a University girl [---] and the average Grade III [clerk].”²⁰¹

Gender discourse of labour in practice

Horizontal and spatial gender segregation

Horizontal segregation, where men and women do different tasks, was almost universal at Bletchley Park. The Wrens working the bombes worked in all-female watches. Barbara Gordon “never worked with men”, and barely even saw the RAF technicians.²⁰² The WAAFs who worked on wireless sets and with morse-slip reading did not work with men either - “the wireless-room was entirely staffed by girls”.²⁰³ Women who performed clerical tasks which were connected to cryptanalysis also had no male colleagues. Pam Dryland, who worked in Hut 7, claims that “Social life as almost nil, hardly a man in sight.”²⁰⁴ Teleprinters and the Registration Rooms were staffed only by women.²⁰⁵ C. Sheargold describes the Registration Room staff as “60% Wrens, 30% Foreign Officer, 10% ATS”.²⁰⁶

Along with this segregation of tasks there is also a spatial segregation. There are naturally many practical reasons for separating different tasks. At Bletchley Park, the need for secrecy often made spatial division a necessity. Noisy or large machinery, such as Typex and bombe machines, are difficult to keep in the vicinity of other kinds of work. However, segregation bears another, gendered meaning, where low-grade labour, such as bombe operation, is decentralised and marginalised,

¹⁹⁹ TNA HW 25/1, *Cryptographic history of Hut 8* by C.H. O’D Alexander, p. 115.

²⁰⁰ Grey 2012, p. 159.

²⁰¹ TNA HW 25/1, *Cryptographic history of Hut 8* by C.H. O’D Alexander, p. 91.

²⁰² BPTA, *Other people’s stories book six* (2003), transcript of interview with Barbara Henderson (née Gordon).

²⁰³ IWM Misc 190 (2827), letter from Daphne Owens, 16 January 1985.

²⁰⁴ IWM Misc 19 (2827), letter from Pam Adams (née Dryland), 11 December 1982.

²⁰⁵ BPTA, letter from Joan Wooky to Mrs Sale, undated; BPTA, *Other people’s stories book six* (2003), transcript of interview with Margaret Chester (née Uzborne Muzz); BPTA, reply to Margaret Henderson’s Hut 7 form, by May L. Critchell. An oft-reproduced photograph of the Hut 6 Registration Room show a room staffed entirely by women. The photograph also shows one man, standing up rather than sitting at a table, like the women. He may be the duty officer, or for that matter someone from another part of the hut. (Reproduced in Smith 2011, McKay 2010)

²⁰⁶ IWM Misc 190 (2827), letter from C. Sheargold, 21 October 1982.

whereas high-grade labour, such as cryptanalysis and interpretation, was kept on-site.²⁰⁷ The further away from the centre - the mansion itself - the more mechanised and alienated was the work. This is a tendency that becomes more pronounced with time. At the early stages of the war, cryptanalysts, bombes and decryption units would be kept in the same hut, whereas later on, it grew more divided and decentralised. When the staff of a section was small enough to work in one room, it was not divided. In 1940, before the German Naval Section moved into Hut 8 which gave the section its name, Ann Bruce Low and three other women, all of whom did clerical work, worked in the same room as the two male cryptanalysts. It was not until June of that year, when another six women joined the section, that it moved into Hut 8, where clerical work was separated from cryptanalysis.²⁰⁸

The separated rooms came to define women. Whereas many sections bore the names of the men who were in charge of them, e.g. the Newmanry (after Max Newman) and the Testery (after Ralph Tester), women were known by what room they worked in. Joyce Thompson describes herself as “a backroom girl”.²⁰⁹ In Hut 8, women who did clerical work were known as “Big Room girls”, and women working with cribs as “crib room girls” terms used even in internal histories.²¹⁰ Moving Clarke from among the ‘Big Room girls’, into the ‘sahib’s room’ where the cryptanalysts work, underlines her transition from women’s work to men’s work, and by extension from femaleness to honorary manhood.

Vertical gender segregation

It was common that all-female teams such as bombe operators, the Auto Room, JADE and Typex typists, were supervised by a woman.²¹¹ Civilians often had civilian superiors, and servicewomen had officers, but it was not uncommon that the two mixed. For example, the forty Wrens in Hut 7 were supervised by Mrs Audrey Burns.²¹² Women who showed particular promise were promoted

²⁰⁷ The exception are overseas stations such as those in Alexandria and Colombo, but these overseas stations only dealt with specific codes and ciphers.

²⁰⁸ IWM 05/67/1 (13542), memoirs of Ann Harding (née Harding), p. 9. Similar examples of women recruited in 1940 and set to work in mixed, but vertically segregated sections can be found in IWM 02/26/1 (12132), “The purpose of 3L. The Liaison Section in Hut 3” by Jean Howard (née Alington), and BPTA, *Other people’s stories book one*, transcript of interview with June Douglas (née Egington).

²⁰⁹ BPTA, *Other people’s stories book six* (2003), account by Joyce Thompson.

²¹⁰ TNA HW 25/1, *Cryptographic history of Hut 8* by C.H. O’D Alexander, p. 107.

²¹¹ IWM Misc 190 (2827), letter from Margaret Stabler, 6 October 1982; Luke 1998, p. 28; Payne 2001, p. 135; BPTA, *Other people’s stories book three* (2001), transcript of interview with Phyllis Warner; BPTA, *Other people’s stories book four* (2002), transcript of interview with Pamela O’Donahue.

²¹² BPTA, reply to Hut 7 veteran form by May Critchell; BPTA, reply to Hut 7 veteran form by Margaret Picken; BPTA, reply to Hut 7 veteran form by Betty Everest (née Ives); BPTA, reply to Hut 7 veteran form by Beryl Middleton (née Leigh); BPTA, reply to Hut 7 form by Doris Watson (née Hunt).

and put in charge, sometimes very fast. When Joan Kidman started working at Bletchley Park with Hollerith machines, the other girls complained that she was too fast:

So the team-leader went to see Mr Freeman, who called me into his office and said, 'Look, I want you to take charge of that team, and if you do it well, then you can take charge of the whole thing.' He then came out and wiped the floor with the girls, mind you, I had only been there about 3 weeks.²¹³

Sections or rooms where female-gendered work was done would sometimes have a female deputy or even head of section. In Hut 6, the Registration Room had at least two female heads, Kitty Kelley in 1943 and Ishbel More from 1944. The head of the Decoding Room was Annie McLaren, and head of the Machine Room from 1943 Mary Moncrieff Wilson. The situation probably looked similar in Hut 8.²¹⁴ In the intelligence huts, we see similar trends. Sections which we know had female heads are the Army Index (Constance Campbell), the German Book Room (Sylvia Lane Luxmore), the Naval Section central office (Elizabeth MacWilliam), the Japanese Naval Processing Party (E.M. Parsons) and the naval technical library (Valerie Travis), as well as several record sections (Susan Gibson, April Diana Walsh).²¹⁵ In these cases, the deputy head seems always to have been a woman.

There is only one case where we know of a female head and a male deputy head, NS X, a section in charge of Luftwaffe maritime activity, where Miss D. Layland was head and Lieutenant D.E. Bilington was deputy head. However, we do not know whether they held these positions at the same time, and no other personnel from this section is listed in the *Roll of Honour*, so it must have been a small section. Also, these heads are all heads of sections, not huts. We know only of two female deputy heads of huts or similar - Joan Clarke (Hut 8) and Catherine Pope (ISOS, which dealt with manual Abwehr codes). Unfortunately little is known of Pope.²¹⁶

Although it was common for women to be in charge of other women, female superiors invariably had a man in charge of them. For example the aforementioned Mrs Burns had Captain Leon Taylor as her superior.²¹⁷ Joan Kidman's account of how she was put in charge of her team illustrates the hierarchy above the 'girls', where the team-leader (a woman) takes the complaint to her male superior. Often, women whose direct superior was female would have little contact with

²¹³ BPTA, *Other people's stories book three* (2001), transcript of interview with Joan Allen (née Kidman).

²¹⁴ *Roll of Honour* (online source). This catalogue of personnel is not complete, and we do not have any names for heads of corresponding rooms in Hut 8.

²¹⁵ *Ibid.*

²¹⁶ *Ibid.*

²¹⁷ BPTA, reply to Hut 7 veteran form from Winifred Jean Pitt (née Sanderson), BPTA, reply to Hut 7 veteran form by Doris Watson (née Hunt).

anyone higher up in the organisation. There is no mention in the source material of a bombe operator meeting a male superior. However, the presence of the male technicians is also a form of vertical segregation, as women are not given access to these more technical aspects of the job. The actual control over the machine is out of their hands.

Some accounts imply that there was some flexibility in who was in charge. Elizabeth Greaves recalls that in her section, which consisted of six persons (of whom at least three were women), the section head “might be a female sergeant, a male Captain, a staff sergeant or a civilian of either sex”.²¹⁸ Many women had no intermediate female supervisor at all, but reported directly to a male superior. Men were in charge of both male and female personnel, but with the exception of Clarke, Pope and possibly Layland, women were never in charge of men.

Women’s wages and promotions

Women’s pay in the 1930s and 1940s was generally low, adhering to the age-old idea of the family wage, which allowed employers to keep women’s wages low as someone else was expected to support them. Furthermore, women were considered an unreliable workforce. They were considered physically weaker and frailer, at the mercy of their menstrual cycle and their ability to become pregnant. Along with this came an assumption of emotional fickleness - the promise love and marriage could supposedly turn a woman’s head and make her impossible in the workplace.²¹⁹ Wages of war-industries and the services were state-regulated during the war. In industry, three women were employed to substitute two men, signalling clearly that women’s labour was not worth as much as men’s. Dilutees in war industry earned on average just over half of men’s salary. In the services, women were given two-thirds of a non-combatant serviceman’s pay.²²⁰ A bombe operator at Bletchley Park earned 30 shillings a week. A Petty Officer, who would be head of watch on the bombs, earned £4.10s.²²¹ Wrens were by far the best-paid of the servicewomen. ATS women earned 13s.6d a week.²²²

Foreign Office civilians were paid according to age, education and grade. In 1940, an 18-year old with no university degree received 31s.6d a week, whereas female graduates earned £2.²²³ By

²¹⁸ BPTA, *Other people’s stories book six* (2003), “A View of ‘The Park’” by Elizabeth Hunter (née Greaves).

²¹⁹ Bradley 1989, pp. 30, 44.

²²⁰ Summerfield 1998, pp. 126-127.

²²¹ Payne 2001, p. 135. British currency was not decimalised until 1971. There were twenty shillings to a pound, and twelve pence to a shilling. The abbreviations are derived from Latin - “l” (*libra*) for pounds, “s” (*solidus*) for shillings and “d” (*denarius*) for pennies.

²²² BPTA, “Bletchley Park: The Fusion Room 1942-45”, by J.F. Wallwork, I.J. Thirsk, J.W. Thirsk and J. Rushworth.

²²³ IWM 05/67/1 (13642), memoirs of Ann Harding (née Bruce Low), p. 5; Murray 2001, p. 113.

December 1941, the salaries for female Linguists (a grade, not a profession) and Technical Assistants were changed so that women under twenty-one were given £150 a year. Women between twenty-one and twenty-four with university qualifications received £200, those without qualifications £160. Women of twenty-five or above were paid between £200 and £320 “dependent on qualifications and ability”.²²⁴ The wages of a Foreign Office civilian was simply that of a civil servant. By contrast, the few women at Bletchley Park in the employ of MI6 were far better paid. Sheila Lancaster, who worked with British agents’ codes, was paid between £25 and £30 a month, i.e. an annual salary of £300-360, more any woman of that grade employed by the Foreign Office earned. “They told us we were getting this much to keep our mouths quiet, they actually told us that.”²²⁵

Women were paid weekly, which was how low-grade jobs were customarily paid. Men were paid monthly, by check. High-ranking women seem to have been paid monthly - Clarke mentions her linguist grade being “still weekly paid”, implying that this was not the case later on.²²⁶ Senior Men recruited before the war were paid £600 a year.²²⁷ Younger male recruits were paid less - Peter Twinn, recruited at twenty-four, was paid £275.²²⁸ Money was deducted for various services. Carmen Blacker, who earned £2, had £1 deducted for her billet, 3s. for transport and 2s.6d for lunches a week, leaving her with 14s.6d for everything else. By contrast, David Wendt, also a civilian and an undergraduate, had 24s.9d left after all deductions.²²⁹ Blacker found her salary distressingly low: “Certainly, had my parents not been able to give me an allowance, I should not have been able to make ends meet. Today I marvel at the trust the Foreign Office placed in people’s uncomplaining sense of patriotism in daring to risk such low pay for such highly secret work.”²³⁰

For both civilians and servicewomen, a promotion may make no difference in responsibility, just as more responsibility did not always lead to a higher salary. Though Joan Kidman was put in charge of a shift, she was not promoted, and her wages were the same as before.²³¹ For Jean Faraday Davies, who was ATS, it made little difference in tasks: “you were working as a private then you were told you were a lance-corporal, so you just sewed on a stripe and continued as before.”²³²

²²⁴ TNA HW 14/139, *D.D.(S) Serial Order No. 132*.

²²⁵ BPTA, *Other people’s stories book one* (2000), transcript of interview with Sheila Lancaster.

²²⁶ Murray 2001, p. 114.

²²⁷ Smith 2011, p. 28.

²²⁸ “Obituaries: Peter Twinn” (online source).

²²⁹ Watkins 2013, p. 132.

²³⁰ Blacker 2001, p. 302.

²³¹ BPTA, *Other people’s stories book three* (2001), transcript of interview with Joan Allen (née Kidman).

²³² BPTA, “Bletchley Park: The Fusion Room 1942-45”, by J.F. Wallwork, I.J.Thirsk, J.W. Thirsk and J. Rushworth.

When receiving her commission, however, she was moved to the Fusion Room. Bombe operators were told at the very start that they had “very little hope of promotion”, if not in order to become head of watch.²³³ The highest rank of a WAAF in the material is Leading Aircraft Woman, the third lowest.²³⁴ In some sections, civilian clerical staff were automatically promoted from the lower grades after a certain amount of time. In Hut 8, clerks were engaged as Grade III clerks and “unlessa [sic] girl was a complete failure she was promoted to Grade II in about six weeks and most girls got a further promotion in six to eighteen months.”²³⁵ Other promotions were dependent on the individual’s skill, and could be difficult to get. Clarke’s second promotion was “apparently harder to negotiate, possibly because of my sex.”²³⁶

The superiors of civilian women seem to have been more concerned about their pay than their service counterparts.²³⁷ When trying to get Clarke’s second promotion, the pay was considered so bad that Commander Travis “stopped me in the corridor, to say that they might have to put me in the WRNS, to be adequately paid”, presumably as an officer, although this never happened.²³⁸ In August 1940, Dillwyn Knox wrote to urge his superiors to raise the wages of his two female cryptanalysts, Mavis Lever, whom he called “the most capable and the most useful”, and Margaret Rock, who “is entirely in the wrong grade. She is actually 4th or 5th best of the whole Enigma staff and quite as useful as some of the ‘professors’”. I recommend that she should be put on to the highest possible salary for anyone of her seniority.”²³⁹ Equally, when Commander Travis called for suggestions for which Foreign Office clerks should be promoted he was startled at the number of suggestions he received, which reflects the acknowledged fact that many of the women at Bletchley Park were overqualified for their work.²⁴⁰

However, when Edward Travis decided in 10th March 1942 to institute a Women’s Committee at Bletchley Park, he wanted it “to be clearly understood that this Committee exists for the promotion

²³³ Payne 2001, p. 133.

²³⁴ Luke 1998, p. 10; IWM Misc 190 (2827) letter from Olive McGrivy (née Dobson), 2 December 1982; IWM Misc 190 (2827) letter from Audrey Webster (née Wilkinson), 6 December 1982; IWM Misc 190 (2827) letter from Dorothy Cassidy (née Presley) 1 February 1986. The *Roll of Honour* (online source) lists a few WAAF officers with higher ranks, the highest being squadron officer.

²³⁵ TNA HW 25/1, *Cryptographic history of Hut 8* by C.H. O’D Alexander, p. 90-91.

²³⁶ Murray 2001, p. 114.

²³⁷ Nigel de Grey expresses concerns for the inequalities in pay between civilians and servicemen. “Parliament always agitates for the service to be properly paid indeed highly paid. No-one agitates for civilians.” His concern is evidently only for men, as he then describes “monstrous cases where men were doing the same (not similar) work and some getting nearly double the others.” (TNA HW 14/145, *Summary of Sigint operations 1939-1945* by N. de Grey, p. 10)

²³⁸ Murray 2001, p. 114.

²³⁹ McKay 2010, p. 86-87.

²⁴⁰ TNA HW 14/139, *D.D.(S). Serial Order No. 26*.

of the well being of all the women working at the War Station and will not deal with any questions concerning work or pay.”²⁴¹ Words to this effect is repeated in the other surviving serial orders from 1942 concerning the Women’s Committee. With these two questions removed from the agenda, the Women’s Committee, which consisted of both civilians and officers from the women’s services, was barred from discussing much of the institutionalised sexism at Bletchley Park. Unfortunately, no minutes survive from the committee’s meetings, so we do not know for sure what they discussed. A further serial order from 22 December 1942 states that “any Civilian woman who is in difficulty of any kind should ask to see Miss Wickham, Hut 9 [---] who will be glad to help in any way possible”, implying that the committee was concerned with questions such as sexual harassment and unplanned pregnancies.²⁴² The decision to institute the committee seems to have come from above, which means that it is a response either to an expressed need for support of women in a mixed-gender work-place, or to a perceived problem with having such a large female work-force.²⁴³

Women’s own perception of their work

The British historian Penny Summerfield makes a distinction between ‘heroic’ and ‘stoic’ narratives about women’s war-work. In heroic narratives, women would present their war-work as overcoming challenges and “doing your bit”, often by doing work which was “unfeminine.”²⁴⁴ The ‘stoics’, however, describe call-up, not as an opportunity for adventure, but a disruption of routine, and did not see that they were ‘doing their bit’, but that one “just got on with it” and suffered through.²⁴⁵ We can apply these two categories, which Summerfield admits are not watertight, roughly to how women present their work at Bletchley Park.

Many women express their pride at having been at Bletchley Park: “I, for one will be proud to my dying day”.²⁴⁶ Some are frustrated at not getting any proper recognition for their work, showing that they valued their contributions.²⁴⁷ Several describe their work as enjoyable and rewarding. Once she had grown used to it, Elizabeth Greaves found her job “both demanding and interesting” and was

²⁴¹ TNA HW 14/139, *D.D.(S) Serial Order No. 2*.

²⁴² TNA HW 13/139, *D.D.(S) Serial Order No. 73*.

²⁴³ In his post-war memorandum, Nigel de Grey lists both “Women’s Welfare (?Committee)” and “Women’s rest rooms” under required “Welfare Services”. (TNA HW 14/145, *Summary of Sigint operations 1939-1945* by N. de Grey, p. 36)

²⁴⁴ Summerfield 1998, pp. 78-83.

²⁴⁵ *Ibid*, p. 95.

²⁴⁶ BPTA, undated letter from Joan Wooky to Mrs Sale.

²⁴⁷ BPTA, *Other people’s stories book four* (2002), transcript of interview with Pauline Lee (née Burrow).

“contented, busy, efficient and convinced that the work I did was really useful.”²⁴⁸ Some claim they refused to take days off because they were so fascinated.²⁴⁹ Ann Williamson found that the pressure made the experience better: “We knew that it was always urgent, and that challenge made it more enjoyable.”²⁵⁰ Others found their work tedious but with occasional excitement, which made it worthwhile.²⁵¹ Other women found their work boring, but accepted this because of their patriotism, combining the heroic “doing one’s bit” and the stoic frustration at the job one is made to do. Imogen Garrett found that “although it [Bletchley Park] had drawbacks in the boring nature of the work I was involved with at first [it] was on the whole very rewarding”.²⁵² Belle Branfoot, a Wren in Hut 7, “realised that such jobs had to be carried out in the interest of the war efforts.”²⁵³

However, some women were unable to rationalise their boredom in this way. Mary Southcombe’s usual work, when not lent to the Italian Naval Section, was “incredibly boring and frustrating”, giving her no sense of achievement.²⁵⁴ Some women felt simply misplaced - Carmen Blacker acknowledged that important work was done at Bletchley Park and “many people had spent their finest hours” there, but believed that she herself did nothing for shortening the war.²⁵⁵ Some women felt alienated by their work, especially those who only saw enciphered text. “We had no idea what we were handling”, complains Daphne Owens, a WAAF wireless operator.²⁵⁶

This alienation sometimes takes on an edge of anti-intellectualism, and results in a feeling of being exploited. Pam Dryland complained that she did “boring, rather repetitive work on book codes”, “cheap, reliable discrete labour to the brains & I earnt £1.4s a week!”²⁵⁷ In a letter to Eric Rhodes, Dryland implies that she felt the work was not fitting for her social class: “a lot of the girls were very upper class but we were cheap labour to feed the brains at Bletchley Park.”²⁵⁸ She

²⁴⁸ BPTA, *Other people’s stories book six* (2003), “A View of ‘The Park’” by Elizabeth Hunter (née Greaves); IWM Misc 190 (2827), letter from Sybil Macdonald, 14 October 1981; IWM Misc 190 (2827), undated letter from D. Church (née Allen).

²⁴⁹ IWM 05/67/1 (13642) memoirs by Ann Harding (née Bruce Low), p. 8; Murray 2001, p. 117.

²⁵⁰ BPTA, “Hut 6 and the M.R.” by Ann Mitchell (née Williamson), 17 November 1994.

²⁵¹ BPTA, reply to Hut 7 veteran form by Beryl Middleton (née Leigh)

²⁵² IWM 91/41/1 (660), account by Imogen Ryan (née Garrett).

²⁵³ BPTA, reply to Hut 7 veteran form by Belle Watson (née Branfoot).

²⁵⁴ BPTA, reply to Hut 7 veteran form by Mary Tyler (née Southcombe).

²⁵⁵ Blacker 2001, p. 305.

²⁵⁶ IWM Misc 190 (2827), letter from Daphne Owens, 16 January 1985.

²⁵⁷ BPTA, reply to Hut 7 veteran form from Pam Adams (née Dryland).

²⁵⁸ IWM Misc 190 (2827), letter from Pam Adams (née Dryland), 11 December 1982.

describes the cryptanalysts as “incredible characters, [---] some ‘queers’, some very ‘red’.”²⁵⁹ Doubtlessly there were clashes between the academic values of the ‘boffins’ (given a variety of names in the accounts, among them “headaches” and “pundits”) and the more mainstream opinions of many of the women.²⁶⁰ Homosexuality, which was illegal at the time but often accepted in some intellectual circles, is often mentioned in this context.²⁶¹ Margaret Uzborne Muzz recalls that many of the men “had boyfriends”, and Dorothy Robinson had her “first conscious encounter with a ‘queer’” in Angus Wilson from the Italian Naval Section - “I found him simply repulsive.”²⁶²

However, many women express their admiration for the Bletchley intellectuals, often by playing down their own understanding of what was being done. “That this [the work] was all miles beyond my grasp I was fully aware, but [I] did very much enjoy meeting, even briefly, these legendary figures.”²⁶³ This is often also paired with the women pointing out their own unimportance in the system.²⁶⁴ A recurring image is that of Bletchley Park as a machine and individuals as its components. Margaret Warner describes herself as “only a small cog in the wheel”.²⁶⁵ Wendy Anderson uses almost the same words: “I was a very unimportant cog!”²⁶⁶ Although this is a fairly obvious metaphor, it begs the question whether it was in use at Bletchley Park during the war.

III. Conclusions

Women’s work at Bletchley Park in context

As an organisation, Bletchley Park was incredibly isolated. It recruited people through specific routes, and preferred to keep them ‘for the duration’. Gwen Davies was told not to bother applying

²⁵⁹ IWM Misc 190 (2827), letter from Pam Adams (née Dryland), 11 December 1982.

²⁶⁰ BPTA, *Other people’s stories book six* (2003), transcript of interview Mary Barbara Wallis; Watkins 2013, p. 62. *Pundit* also occurs in an internal history by Mahon (TNA HW 25/2, *Internal history of Hut 8* by A.P. Mahon, p. 18).

²⁶¹ Vide Hodges 1992, p. 74.

²⁶² BPTA, *Other people’s stories book six* (2003), transcript of interview with Margaret Chester (née Uzborne Muzz); IWM 91/4/1 (660), account by Dorothy Smith (née Robertson). Not all were so judgmental. Many women who worked with Alan Turing mention the trail against him in 1952 on a charge of gross indecency. Ann Bruce Low, writing in 1975, points out laconically that “Nowadays, it would not have mattered.” (IWM 05/67/1 (13542), memoirs of Ann Harding (née Bruce Low).)

²⁶³ IWM 91/4/1 (660) Ryan.

²⁶⁴ E.g. IWM 190 (2827), letter from Joan Dudley-Smith, 28 September 1983, Watkins 2013, IWM 01/4/1 (660), account by Gabrielle Hale; IWM Misc 190 (2827), letter from F.E. Clark, 23 November 1985.

²⁶⁵ BPTA, *Other people’s stories book four* (2002), transcript of interview with Margaret Stidham (née Warner).

²⁶⁶ BPTA, *Other people’s stories book four* (2002), transcript of interview with Wendy Munro (née Anderson).

for a transfer if she did not like the job, “because you won’t get one”.²⁶⁷ Jean Faraday Davies, recalling how log-readers were sent overseas before the remaining ones were told of Ultra, “had the feeling that once you had been to Bletchley and knew Enigma was being broken you didn’t go.”²⁶⁸ Despite this, Bletchley Park was strongly influenced by a variety of external factors, from society-wide gender discourse to wartime policies on war-work.

Gendering and dilution

Dilution is often seen as a process with no bearing on gender, but in order to make dilution necessary, men have to leave their peacetime work and be conscripted into the armed forces, which relates to one of the strongest gendering of all, violence as male. Gender displacement occurred not only in industry, but in other organisations too, even in the services. At the start of the war, wireless operation was an uncommon job for a woman, but as it was a non-combatant position, it was convenient to fill this with servicewomen. The shift was also justified by women’s newly discovered talent for wireless operation. A naval officer who agreed to teach a number of Wrens Morse “told the captain that he’d found that the women were far better, quicker at picking things up than men.”²⁶⁹ This describes it in terms of natural ability, playing on the idea of women being more attentive to detail. In all women’s services, particularly WAAF, telegraphy became a common task.

At Bletchley Park, the operation of bombes follow the pattern of dilution. Skilled male operators are replaced by unskilled female operators, while the maintenance of the machines is still in male hands. Regendering bombe operation was possible as it would not threaten men’s peacetime employment - these machines had no peacetime application. Women are seen as unable to grasp the technical intricacies of the machines, and indeed the finer points of operating them. Recall Hugh Alexander’s words, “It was astonishing what young women could be trained to do”, speaking of the operators as performing monkeys to be trained rather than people with abilities and talents which can be utilised, and Margaret Stabler’s conviction that she would be incapable of understanding the bombes.²⁷⁰ As with machine minding in factories, the operation of bombes becomes deskilled. Wrens recruited for operating bombes were only required to be vaguely technical. One common question in the interviews was whether the Wren was able to put the chain back on her bike if it jumped off.²⁷¹ Others were simply required to be clever with their fingers - one bombe operator

²⁶⁷ Watkins 2013, p. 100.

²⁶⁸ BPTA, “Bletchley Park: The Fusion Room 1942-45”, by J.F. Wallwork, I.J. Thirsk, J.W. Thirsk and J. Rushworth.

²⁶⁹ Summerfield 1998, p. 152.n.32.

²⁷⁰ TNA HW 14/145, *Summary of Sigint operations 1939-1945* by N. de Grey, p. 7; IWM Misc 190 (2827), letter from Margaret Stabler, 16 October 1982.

²⁷¹ Grey 2012, p. 135.

recalls being asked if she did embroidery.²⁷² Presumably the line of thought was that if a woman was dextrous enough to perform a simple (female) task such as embroidery, she could be trained to stroke wires the right way in a bombe drum.

Gendering and intellectual work

Unlike clerical work, communications and machine operating, language work and cryptanalysis required not dexterity but intellect. In gender discourse of the early twentieth century, intellect, rationality and mind was considered male, and emotion, irrationality and body was considered female. Women were described as naturally more stupid, or, when this was proved wrong, that women were simply not interested in such things (and if they were, it would pass once they married and started having children). Gordon Preston, who worked at the Newmanry, felt that it was a waste to put mathematically qualified Wrens on work without giving them any insight into the mathematics behind it, but Max Newman, the head of the Newmanry, disagreed, because “women wouldn’t like to do any intellectual work”.²⁷³ Women were seen as more capable of performing dull, repetitive tasks, and giving them intellectual stimulation was a waste of time.²⁷⁴

In 1939, twenty-three per cent of all university students in the United Kingdom were women, but this was not evenly distributed over geographical areas and different universities.²⁷⁵ Scottish and Welsh universities had more female students in proportion to the size of the student bodies than their English counterparts, but at many Redbrick universities, women made up a third of the student body.²⁷⁶ Oxbridge was much more restrictive, where women were confined to two colleges at each university. In 1922, a Royal Commission sanctioned Cambridge’s wish to remain predominantly male, and recommended that the number of female students should not be allowed to rise over 500, a tenth of the student body.²⁷⁷ Oxford was more liberal, with women being given degrees since 1921 (it took another twenty-six years before Cambridge did the same.)²⁷⁸ Some dons

²⁷² BPTA, *Other people’s stories book three* (2001), “Avis Ambler and other bombe operators at Bletchley Park 2001 - by Jean Valentine”.

²⁷³ Hill 2008, p. 79. Preston advertised the lecture he had been planning after all. Every Wren in the section attended.

²⁷⁴ Bradley 1987, p. 9.

²⁷⁵ Dyhouse 1995, p. 7. In 1930, it was twenty-seven per cent. Why the proportion of women to men at the universities dropped during the 1930s has not yet been given a satisfactory explanation. (Dyhouse 1995, p. 17)

²⁷⁶ *Ibid*, pp. 17, 249.

²⁷⁷ *Ibid* 1995, p. 239.

²⁷⁸ Blacker 1996, p. xi. From 1922, women at Cambridge were given “titles of degrees”, but not the actual degrees. (Blacker 1996, p. xiv.)

saw this as a ‘feminisation’ of the university, and worried that it would lead to young men going to the rival Cambridge instead.²⁷⁹

The career-routes for educated women were unsurprisingly more limited than those for men. The vast majority (between half and three-quarters) of all female graduates in the 1930s became teachers.²⁸⁰ Continuing with academia was difficult, due to lack of funding, positions and the constant segregation and discrimination of women in the universities. Women often resigned when getting married, and the universities showed exceptional skill at making life difficult for those who did not. There are instances of women not being granted leave to give birth, on account of the fact that a man would never ask for leave for such a thing.²⁸¹

In a society where gender-hierarchies are sketched onto everything, it is no surprise that even university subjects were gendered. Many early female students came to university to study the natural sciences and medicine. These subjects, unlike arts and humanities, are difficult, even impossible, to study at home, but required specific equipment and specialised teachers. As a result, there was a strong reaction against female students in the sciences.²⁸² Frequently, women were not allowed to use the laboratories, probably in order to make the courses impossible for women. At University College, London, one female student was barred from the chemistry course as women would be “scarred for life and have their clothes burnt off them as the men threw chemicals around”, a statement combining fears of impropriety with stereotypes of male boisterousness and female proneness to hysterics.²⁸³ At Cambridge, a similar prohibition was solved by Newnham College building their own laboratory, which was open to all female students.²⁸⁴ Not only practical reasons were given to exclude women from these subjects. In the case of mathematics, it was a widely-held opinion that women were incapable of the abstract thought required.²⁸⁵

This reluctance was still present in the 1930s, and few women studied sciences. Ann Williamson studied mathematics at Oxford, despite the fact that “my headmistress had told my parents that mathematics was not a ladylike subject.”²⁸⁶ Joan Clarke was one of only two women studying Part III of the Mathematical Tripos, in a year of eighteen. Fourteen percent of all students studying

²⁷⁹ Dyhouse 1995, pp. 239-240.

²⁸⁰ *Ibid*, p. 18.

²⁸¹ *Ibid*, pp. 163-165.

²⁸² *Vide* Dyhouse 1995, p. 13.

²⁸³ *Ibid*, p. 33.

²⁸⁴ Fowler 1996, pp. 14-15.

²⁸⁵ McWilliams-Tullberg 1975, p. 102.

²⁸⁶ BPTA, “Hut 6 and the M.R.”, account dated 17 November 1994, by Ann Mitchell (née Williamson).

mathematics at Cambridge in 1939/1940 (24 of 168) were women.²⁸⁷ With mathematics being considered both difficult for women and unladylike, it is not surprising that so few women studied it at university. Humanities were more acceptable for young ladies. Modern languages had long been among the ‘accomplishments’ a young lady should master, and women’s entry into arts subjects were considerably less controversial.²⁸⁸ This gendering of university subjects neatly explains why there are so many women in translation, interpretation and indexing, and so few in cryptanalysis. The kind of intelligence and training associated to one was strongly gendered as male, whereas the skills required for the other was relatively gender-neutral.

Gender segregation

The war station at Bletchley Park matured over the course of the war. In the first two years, there remained a relaxed atmosphere, “a mixture of Oxbridge high table and Foreign Office gentility”.²⁸⁹ Everyone was on first-name terms, and among uniformed personnel, there was no saluting.²⁹⁰ Rank is often described as unimportant. One bombe operator, an Ordinary Wren, recalls that in the mess, “you could find yourself sitting next to an American Colonel or whatever; there was no rank difference.”²⁹¹ Although there was naturally a considerable segregation of labour at this point, it was not spatial. This made it easier for people to move between different tasks and even advance, as they were in contact with superiors which had the authority to move them.

However, the growing demands on personnel lead to the organisation of Bletchley Park expanding. The military element became stronger, and the establishing of military camps, such as RAF Church Green, where proper procedures, which had been largely abandoned in Bletchley Park, were imposed again. In both the RAF camp and the Army camp, men and women were kept separate, with only a few buildings where they could meet.²⁹² Servicewomen were spatially segregated both in camps and jobs on all war stations. The difference between them and servicemen was even shown in the ranks. For instance, the lowest commissioned rank in the WRNS was third

²⁸⁷ Statistics based on class-lists in *Cambridge University Reporter*, 15 June 1940, pp. 978-979. In Part II, the final year for those who did not go on to read an extra year, ten percent (7 of 60) were women. In Modern and Medieval Languages, fifteen percent of all students (59 of 373), and twenty-six percent of the finalists (17 of 65) were women. In Classics, it was nineteen percent (24 of 121), and as much as thirty-seven percent (10 of 17) among the finalists. There were considerably fewer women reading mathematics, both relatively and absolutely. (*Cambridge University Reporter*, 15 June 1940, pp. 979-980, 994-998.)

²⁸⁸ Dyhouse 1995, p. 17.

²⁸⁹ Smith 2011, p. 37.

²⁹⁰ BPTA, account by Wendy J. Jay (née Chamier), 23 November 1994; Murray 2001, p. 114; BPTA, *Other people’s stories book four* (2002), transcript of interview with Margaret Stidham (née Warner); Watkins 2013, p. 101.

²⁹¹ BPTA, *Other people’s stories book four* (2002), transcript of interview with ‘Wren Greenforce’.

²⁹² Watkins 2013, p. 151.

officer, in the ATS second subaltern, and in WAAF assistant section officer. The male equivalents were sub-lieutenant (Royal Navy), second lieutenant (Army) and pilot officer (RAF). The gender-specific ranks made it possible to gender servicepersons, as became the case in some all-military teams at Bletchley Park, e.g. the WAAF-manned Auto Room, where first names were not used.²⁹³

Expansion led to the organisation becoming more segmented and segregated. The work became increasingly factory-like. Internal security made an overview of the organisation nigh impossible even in its early days, but the larger the organisation grew, the more isolated every separate section or even room became. Even if an air of casualness was maintained, Bletchley Park went from being an uncommon quasi-academic environment to becoming a more conventional war station. A part of this process is the spatial segregation of women's work and the assignment of women to more conventionally female tasks.

The vertical segregation at Bletchley Park is indisputable and unsurprising. This, if nothing else, is truly conventional even in the early days of the war, when the proportion of women to men was lower, according to Lee 2012 46 percent (compare with 75 percent later in the war).²⁹⁴ If we imagine Bletchley Park as a "displaced senior common room" of an Oxbridge college, we should also remember the institutional misogyny of the all-male academic culture.²⁹⁵ The exclusion of women from men's colleges was so complete that they were not allowed into common rooms or dinner-halls, and for some male pre-war recruits, who had spent their entire lives in gender-segregated education and academia, Bletchley Park was their first professional encounter with women.²⁹⁶

The vertical segregation is also illustrated in the rank system of the women's services, as the highest male ranks with no female equivalent. This means that there would always be men outranking the women. The highest rank in the ATS was chief controller, equivalent to major general, leaving three higher ranks without ATS equivalent. In WAAF the highest was air commandant (equivalent to air commodore) until March 1943, when Jane Trefusis Forbes, the Director of WAAF, was given the rank of air chief commandant (RAF air vice-marshal). Still three ranks occurred only in the RAF. In WRNS, chief commandant, equivalent of rear-admiral, was only given as an honorary title to a member of the Royal Family. Commandant, the rank held only by

²⁹³ Luke 1998, p. 5.

²⁹⁴ Lee 2012, p. 159.

²⁹⁵ Hodges 1992, p. 160; Dyhouse 1995, p. 151.

²⁹⁶ Vide Hodges 1992, p. 195.

the director of the WRNS, was equal to rear-admiral until 1946, when it was reduced to commodore.²⁹⁷

Hill 2008 refers to a “glass ceiling” at Bletchley Park.²⁹⁸ This is a misnomer. A glass ceiling is defined by its transparency. If you look through it, it is not there. It is only evident when you reach it and bang your head, unable to advance further. At Bletchley Park, Wrens were told upon arrival that they would most likely not be promoted, and civilian women employed as clerks might be promoted from Grade III to Grade I, but usually no more. Women were seldom let into the positions where it was possible to advance high up in the organisation, such as cryptanalysis or advanced intelligence work. The vertical segregation was structural and explicit, and not undeclared as the term ‘glass ceiling’ implies.

How, then, do we explain Joan Clarke’s appointment as deputy head of Hut 8? Although there were undoubtedly other factors in play, it is interesting that the female cryptanalyst who has been regendered and graced with the role of an honorary man (which neither Lever nor Rock seems to have been) is the one who is promoted to such a high position, not Rock or Lever, who worked in a section with many women doing similarly high-grade work. Neither is it irrelevant that Clarke was recruited by Gordon Welchman, the Head of Hut 6, who in turn recruited his own successor, Stuart Milner-Barry (the recruiter of Hugh Alexander, the head of Hut 8), and several other influential cryptanalysts, such as John Jeffreys (Welchman’s predecessor as head), Dennis Babbage and John Herivel, all of whom were Cambridge men.²⁹⁹ Clarke was the product of a cryptanalytical Cambridge dynasty, and this metaphorical heritage must have helped in her career.

There are naturally other examples of women in high-ranking positions in wartime Britain. For instance, Vera Atkins, a member of F Section, the French section of SOE, became an intelligence officer soon after joining in 1941 and “developed into the hub round which it revolved”.³⁰⁰ Her main task was to befriend and brief the F Section’s female agents. After the war, she attempted to trace the 118 missing agents of F Section, and was able to establish the fate (invariably death) of all but one of the agents. Atkins had spent her time in the SOE as a civilian, as she was ineligible for membership in the women’s services, as she was not a British subject, but Romanian. However, in 1944 she became a British citizen, and for her work with finding missing agents she was granted the rank of squadron officer, equivalent of squadron leader (i.e. the same as an army major).³⁰¹

²⁹⁷ Brayley 2001, pp. 8-12.

²⁹⁸ Hill 2008, p. 78.

²⁹⁹ Murray 2001, p. 113; Welchman 2011, pp. 84-85.

³⁰⁰ Foot 2008 (online source).

³⁰¹ *Ibid.*

At the Allied Central Interpretation Unit at RAF Medmenham, which dealt in photographic interpretation, we find Flight Officer Mollie Thompson, always addressed Tommy, head of the camouflage section, and Diana Ashcroft, who was second in command in the plotting section.³⁰² Christine Halsall, author of *Women of Intelligence*, claims that RAF Medmenham was an equal workplace in terms of gender.³⁰³ However, it shows clear traits of the gender discourse of the time, where clerks, typists and other supporting staff were women while most heads of section were male, and it was within an RAF officer's right to ask that no women be posted to his section, as "they would disrupt the work."³⁰⁴ The veteran who claims that there was no glass ceiling or vertical segregation is Thompson, the highest-ranking woman at the war-station, who may well have experienced it that way, but it seems like she had taken on a male role within the organisation. Medmenham's relatively low internal security probably made it easier for women to advance than in Bletchley Park, where, for example, it would be impossible for a bombe operator to become an intelligence officer or a cryptanalyst.

These examples have in common that the women are all doing classified work. As intelligence seldom involves direct combat, women were not automatically excluded, and it is possible that there was a more liberal approach in these circles, leading to a willingness of using anyone who could contribute. However, we must keep in mind that this is still just a few individuals, and at least two seem to have been treated as honorary men, which isolates these women from the rest of the female workforce. It is a personal triumph, not a discursive one. For every woman who did the seemingly impossible, there were countless others who are stuck without promotions or better salaries, even in the same organisation, as we have seen was the case at Bletchley Park.

The public legend of war

In this final section, I will consider not war-work itself, but the reminiscence of war-work. When veterans tell stories of their war-work, it is a way of establishing one's own role in the public legend of the war.³⁰⁵ This becomes an affirmation of one's self-worth, as well as a display of one's public service. It is the answer to the question on Savile Lumley's famous poster from 1915: "Daddy, what did *you* do in the Great War?"

In a postwar world where everyone is telling the story of their own war, those whose war officially does not exist are going to be left out of this collective act of remembering. Among Diana Payne's

³⁰² Halsall 2012, pp. 88-89, 101.

³⁰³ *Ibid*, p. 54.

³⁰⁴ *Ibid*, p. 145.

³⁰⁵ Summerfield 1998, p. 18.

family, “my wartime activities were considered unimportant and something of a failure”.³⁰⁶ Cover-stories often made the work sound as ordinary, even dull, as possible, to make sure people did not ask questions. Bombe operators were told simply to tell people they were writers.³⁰⁷ Another common explanation of their work was “ordinary clerical work”, believable as it was a common task for a woman.³⁰⁸ However, it also led to that women doing skilled, advanced work never receiving credit for their work from their families and friends.

This exclusion from the public legend of the Second World War is probably the greatest single reason why many veterans were so eager to tell of their time at Bletchley Park once their work was declassified. Naturally, not all were comfortable to talk about it. Some women express a strong sense of shame, and find it difficult to talk about their work.³⁰⁹ Others felt betrayed by the government for allowing the publication of books such as *The Ultra Secret*.³¹⁰ Nevertheless, many cherish the opportunity to write letters, give interviews or pen their memoirs. Many common components from the public legend can be found throughout the accounts. Since the 1970s, the work done at Bletchley Park has been incorporated into the public legend of the Second World War, and has contributed its own recurring tropes, e.g. the eccentric boffin and the aloof deb, the dextrous Wren bombe operator and the clever clerk, which nowadays often turn up both in popular history and fiction. By interconnecting these with more common tropes, such as ‘doing one’s bit’ or expressions of the ‘Blitz spirit’, Bletchley Park is tied into a master narrative into which veterans can place themselves.

Concluding remarks

At the very beginning of the war, Bletchley Park was a small war-station with fairly balanced numbers of men and women. Early female recruits were customarily from the upper-middle and upper classes, but as the war station expanded, its personnel grew more heterogenous. Generally, the female workforce in Bletchley Park was young and well-educated. It is not known at what date women came to outnumber the men, but due to the constant need for more personnel and the difficulties involved in employing men, especially those of military age, a majority of those recruited

³⁰⁶ Payne 2001, p. 135.

³⁰⁷ *Ibid*, p.135.

³⁰⁸ Watkins 2013, p. 98.

³⁰⁹ e.g. BPTA, *Other people’s stories book one* (2000), transcript of interview with Betty Johnson (née Dewar).

³¹⁰ IWM 02/26/1 (12132), “Timewatch January 15th 1978”.

during the war itself were female. They were recruited from educational institutions such as schools, universities and secretarial colleges and from work-places, e.g. department stores and banks.

In almost all cases, women perform tasks which support men's work. Many of the tasks were dull and repetitive, and it was not uncommon that women were overqualified for their jobs. In cases of dilution, where tasks were taken over from men, it was done to free men for tasks considered more important. Technical control over machines was kept by men in the form of maintenance. Women were almost completely excluded from cryptanalysis and operational decisions in intelligence work. The few women who held such positions seem to have been regarded by their work-group and treated as honorary men.

Horizontal segregation is common, due to the strong gendering of some tasks (e.g. clerical work) and the effects of dilution on others (e.g. bombe operating, communications). At the beginning of the war, this segregation was only in terms of tasks, but as the organisation grew and the requirements of internal security were emphasised, it leads to a spatial segregation between high-grade, predominantly male labour and low-grade, female labour. Many all-female groups had supervisors, team leaders or even deputy heads or heads of section who were female, but invariably, all women have male superiors. The strong internal and external security would make some women feel alienated, as they had no insight into the final goal of their work. Isolated sections make it difficult for women to move between them or advance. However, what truly prevented women's advancement was the discursive conviction of women's inferiority, evident in the way female personnel is referred to as 'girls', not 'women'. High-ranking men, in particular Dillwyn Knox, occasionally complained about conventions such as women's low pay, but to little effect. The status quo remained unquestioned, by male superiors, female personnel and the Women's Committee, which had been forbidden to discuss questions of pay and work.

The gender discourse which shaped women's work at Bletchley Park was not specific to it, but connected to well-established ideas which spanned British society in the 1930s and 1940s. These include women as suitable workers for routine clerical tasks and other supporting positions, women's intellectual capacities being inferior to men's and less worthy of education and instruction, and women as an adaptable, cheap but unreliable workforce. The secrecy surrounding Bletchley Park seems not to have made any significant difference in gendering of tasks or horizontal segregation. Comparisons with other classified British organisations, such as SOE and the Allied Central Interpretation Unit, indicates that it may have been easier for skilled women to advance within classified work than in conventional civilian jobs or the services. Women's work in intelligence is still an ill-researched area.

When reviewing the history of women's work, it is easy to fall into the trap of assuming that just because the system is built on degrading jobs given to women, these jobs really are worth less. It is

fascinating that there were a few women who worked in male-dominated jobs, but we must not imagine that only their achievements doing high-grade, male work are worth remembering. Women who 'just' did traditional women's work should not be dismissed as irrelevant. Bletchley Park may have been the beginning of the computer age, but it was still a precomputerised organisation, where human labour was necessary for a large number of tasks. Typing, filling in Foss sheets, teleprinting, blisting, decrypting intercepts, and operating bombes and Colossi were all jobs which had to be done, without which the machinery of the organisation would break down, and the information, which played such a vital part of many Allied operations, would never have been processed. Though badly paid, segregated and alienated, the women at Bletchley Park were crucial to the success of Allied cryptanalysis during the Second World War.

Appendix I

Common terms and abbreviations

ATS	Auxiliary Territorial Service, the Army's women's service.
Bombe	Electro-mechanical machine used in deciphering Enigma
BTM	British Tabulating Machine Company. Built Hollerith machines and bombes.
Colossus	The world's first programmable computer, used for deciphering Fish.
Cottage	Section at Bletchley Park, specialising in research on Enigma ciphers.
Dillyismus	Cryptanalytical method of unknown kind, invented by Dillwyn Knox.
Enigma	Cipher system used by the German armed forces.
Fish	British codename for a collection of German telegraph ciphers.
GC&CS	Government Code and Cipher School.
GCHQ	Successor to GC&CS (renamed 1946).
Hollerith machine	Common punch-card machine.
Hut 3	Section dealing in German Army and Luftwaffe intelligence.
Hut 4	Section dealing in German Naval intelligence
Hut 6	Section dealing in Army and Luftwaffe Enigma signals.
Hut 7	Section dealing in Japanese codes and ciphers.
Hut 8	Section dealing in Naval Enigma signals.
JADE	Japanese cipher machine.
JN25	Main Japanese code.
Menu	Chart of interconnecting letters with which a bombe was programmed.
MR	Machine Room
Orchestra	British codename for a collection of low-grade Luftwaffe codes and ciphers.
Robinson	Machine used for deciphering Fish, precursor to Colossus.
Shark	U-boat Enigma key, using a special Enigma machine with an additional rotor.
SOE	Special Operative Executive. British military organisation founded in 1940, specialising in clandestine operations.
Typex	British cipher machine based on Enigma, rewired versions of which were used for deciphering intercepts.
Ultra	The intelligence extracted from deciphered Enigma messages

WAAF	Women's Auxiliary Air Force. Prior to 1941 known as WRAF, Women's Royal Air Force.
WRNS	Women's Royal Naval Service. Members of WRNS are customarily called 'Wrens'.
Yoxallismus	Statistical method used to establish plugboard wirings for <i>Offizier</i> Enigma ciphers. Invented by Leslie Yoxall and Joan Clarke.
Y Service	British intercept service.

Appendix II

Influential persons at Bletchley Park

This list excludes women in the source material. The information is taken from *Oxford Dictionary of National Biography* and the *Roll of Honour* (online sources).

Alexander, Hugh O'Donel	1909-1974. Mathematician and chess master. Deputy head of Hut 8 1941-1942, head of Hut 8 1942-44.
Babbage, Dennis	1909-1991. Mathematician. The Cottage and Hut 6. Chief cryptanalyst of Hut 6 from 1943.
Cooper, Josh	1901-1981. Linguist and cryptanalyst. Head of German Air Section 1942-1945.
de Grey, Nigel	1886-1951. Naval cryptanalyst during the First World War. Assistant Director of BP from 1942, Deputy Director of BP from 1944.
Denniston, Alastair	1891-1961. Naval cryptanalyst during First World War. Head of GC&CS from 1942.
Flowers, Thomas (Tommy)	1905-1998. Engineer. Designed Colossus, the world's first programmable electronic computer.
Foss, Hugh	1902-1971. Cryptanalyst at GC&CS from 1924. Hut 8 1939-1941. Head of Japanese cryptography 1942-1945.
Hinsley, Francis Harry	1918-1998. Historian. Head of German and Italian Intelligence subsection. Private secretary to the Director of GCCS from May 1945.
Knox, Dillwyn (Dilly)	1884-1943. Classicist and Naval cryptanalyst during the First World War. In charge of the Cottage. Worked on several Enigma keys, especially Abwehr Enigma.

Milner-Barry, Stuart	1906-1995. Stockbroker and chess master. Head of Hut 6 1944-1945.
Newman, Max	1887-1984. Mathematician. Constructed the Heath Robinson machines, and was involved in the construction of the Colossus. Head of the Newmanry.
Tiltman, John	1894-1982. Army officer (brigadier). Chief Cryptographer from 1941. Deputy Director of GC&CS from 1944.
Turing, Alan	1912-1954. Mathematician and computer scientist. Head of Hut 8 1939-1942. Inventor of the Welchman-Turing bombe, Banburismus, Turingismus and a number of other cryptanalytical methods.
Twinn, Peter	1916-2004. Mathematician and entomologist. Cryptanalyst at Bletchley Park in the Cottage, Hut 8 and a number of other sections 1939-1945.
Welchman, Gordon	1906-1985. Mathematician. Head of Hut 6 1940-1943. Made significant additions to the Welchman-Turing bombe.
Winterbotham, Frederick William	1897-1990. RAF officer. Intelligence officer in Hut 3. Published the first monograph on Bletchley Park, <i>The Ultra Secret</i> (1974).
Yoxall, Leslie	1914-2005. Hut 8 1941-1943. Hut 7 1943-1945. Invented the first procedure of Yoxallismus.

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