A REBELLIOUS DISTEMPER: A FOUCAULTIAN HISTORY OF BREAST CANCER TO 1900

Thesis submitted for the degree of Doctor of Philosophy by
Alexandra Leigh McCarthy RN, BN, MN.

School of Humanities and Human Services
Queensland University of Technology
March, 2005.
KEYWORDS FOR CATALOGUING PURPOSES
Breast cancer, Foucault, surgical archive, critical modality, enunciative modality, practical modality, analytic modality.
A REBELLIOUS DISTEMPER: A FOUCAULTIAN HISTORY OF BREAST CANCER TO 1900

ABSTRACT ..................................................................................................................9

CHAPTER 1. INTRODUCTION: THE CONTEMPORARY PROBLEM OF BREAST CANCER ..................................................................................................................10

Statement of the problem ............................................................................................................................10

The enhanced visibility of breast cancer ..................................................................................................11
Images of mortality ...................................................................................................................................13
Images of emotional disorder ......................................................................................................................14
Images of moral culpability ........................................................................................................................15
Images of social disorder ..........................................................................................................................15
Images of physical disorder ......................................................................................................................16

The problematisation of breast cancer ......................................................................................................17
Locating the dominant discourse ..............................................................................................................18
Narrowing the breast cancer problem: the dominant breast cancer discourse ..........................................20

Analysing the breast cancer problem: modes of consciousness ................................................................22

Conclusion ....................................................................................................................................................28

CHAPTER 2. METHODOLOGY: THE FOUCAULTIAN HISTORY OF THE PRESENT ..................................................................................................................29

Introduction ...............................................................................................................................................29
The general approach ...................................................................................................................................29
The archaeology ...........................................................................................................................................32
The disciplines ............................................................................................................................................34
Power/knowledge ......................................................................................................................................37
The genealogy .............................................................................................................................................39
The ethics of the self ....................................................................................................................................43
STATEMENT OF ORIGINAL AUTHORSHIP
The work contained in this thesis has not been previously submitted for a degree or diploma at another education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person, except where due reference is made.

Alexandra McCarthy

Signature: ______________________________

Date: ________________________________

ACKNOWLEDGEMENTS
I could not have undertaken or completed this thesis without the wholehearted support of John, who has always enabled me to make a soft landing. Thanks John - it’s your turn now. I also sincerely thank my supervisor, Gavin Kendall, who gave me the space to find my own voice but knew where the boundaries should be.
This dissertation explores some of the conditions of possibility underpinning contemporary breast cancer discourse, which is imbued with harsh moral, social and spiritual nuance. I have therefore explored a set of questions concerned with the past state of things in breast cancer care that laid the foundation for present approaches. I wanted to know how it became possible to speak what we now regard as the only truth about breast cancer. I wanted to understand how this truth was determined; who determined it, and who or what gave them the right to assert that their truth was the only truth. I wanted to acquire insight into the ways that thinking about and managing breast cancer based on this truth came to dominate the post-modern consciousness (rather than other, perhaps equally valid ways). And if it was possible, I wanted to open up a space for thinking differently about breast cancer. Finally, I wanted to test the fit of the ideas of the philosopher-historian, Michel Foucault, to these questions.

Foucault’s notions of discontinuity, discipline, the gaze, normalising judgements and to a lesser extent, some aspects of power/knowledge and the ethics of the self are here tested on the surgical archive of breast cancer, which housed the discourse that best represented Western societal beliefs about the disease, and which had been invested by society with the greatest authority in its conception and management. The analytic framework – modes of consciousness – suggested by Foucault provided a coherent structure with which to explore the archive. I found that there are numerous elements in the archive instrumental in cementing the conditions of possibility for breast cancer discourse in our own time. This dissertation demonstrates that, as is the case in the present day, these were based on unstable truths about breast cancer that were a result of a complex of sociocultural and political norms rather than an objective truth.
CHAPTER 1. INTRODUCTION: THE CONTEMPORARY PROBLEM OF BREAST CANCER

Statement of the problem

This thesis is driven by my professional concern regarding the nature of the breast cancer discourse. Aside from the brutal, combative terminology we employ in the clinical discourse, even the more commonplace language we adopt during interactions with patients is underpinned by harsh moral, social and spiritual nuance that is at odds with the holistic focus of health care we advocate. Moreover, the language we use when dealing with the disease and its treatments seems to have percolated from the clinic into everyday life. In particular, martial conceptions of breast cancer have been taken up by patients and reinforced by the marketing strategies of pharmaceutical companies, breast cancer advocacy groups and the media. Everyday it seems a new report emerges in the popular press about the courage of some famous woman’s ‘battle’ with the disease, her determination to fight it, and the ‘magic bullets’ being developed by heroic scientists to conquer the problem. It is taken for granted in our society that breast cancer is something to be feared, a blight and a danger that must be removed at all costs. Yet breast cancer is no longer inevitably fatal and does not necessarily result in bodily derangement and pain. Even cursory examination of the populist and professional discourse, however, makes it apparent that it is still assumed, despite its contemporary recategorisation as a chronic rather than a fatal disease, that the inevitable outcome of breast cancer is excruciating pain culminating in an ugly death. One purpose of this thesis is to describe how this situation came about.

My second intention is to test the ideas of Michel Foucault in my area of clinical practice: oncology. I have long been interested in his work and the potential of his project in this clinical milieu. To my knowledge, this has not been attempted before. So the breast cancer discourse in this dissertation is examined according to an analytic framework derived from the work of Foucault, whose ideas are described in
Introduction: The Problem of Breast Cancer

detail in the next chapter. Essentially, this project is a history of the present, which considers the historical conditions that contributed to our contemporary notions of breast cancer. The purpose of such a history is not to produce the truth about breast cancer, because truth is a nebulous concept at any time, but to scope the conditions which have prevailed at given times for saying what is true about the disease. So the tertiary focus of this project is, using the ideas of Foucault, to unsettle claims about the naturalness of the way we presently understand and treat breast cancer (Kendall, 2001).

The aim of this introduction is to establish the context for this history of the present; therefore the objectives of this particular chapter are to:

- Consider the apparent increase and enhanced visibility of breast cancer in contemporary Western contexts, and the factors that have contributed to this
- Examine the problematisation of breast cancer
- Locate the dominant disciplinary discourse concerning breast cancer in the archive
- Determine the modes of consciousness that have shaped the problem of breast cancer in the dominant discourse. These modes of consciousness form the analytical framework for this thesis.

The enhanced visibility of breast cancer

Compared to the volume of discourse produced today, breast cancer received little attention prior to the 20th century. Diseases such as tuberculosis occupied far more attention and breast cancer, while always feared and always considered problematic when it appeared, was comparatively uncommon (King & Newsholme, 1893). It was only when the morbidity rate from infectious diseases improved at the end of the 19th century, in addition to various contingent events such as the ageing of the population, shifts in diagnostic techniques, and improved record keeping, that the apparent prevalence of breast cancer began to attract the degree of attention that it now receives (King & Newsholme, 1893). It is currently, however, a highly visible
condition. It is conceptualised as a disease of our time, diagnosis of which resonates far more than other diseases (Sontag, 1977).

The modern visibility of breast cancer is not simply a result of the physiological changes associated with the condition and its treatments – the amputation of breasts, the cachexia\(^1\), the loss of hair, the swollen limbs, the radiation burns. While other cancers and other diseases are undoubtedly as significant in terms of their ultimate outcomes, a contemporary diagnosis of breast cancer is also saturated with murkier concerns about identity, body image, and self worth. It requires a complete and culturally sanctioned change of status for the person not only in terms of health, but in terms of their sexuality, work and family obligations, as well as the reappraisal of mortality that invariably attends all diagnoses of cancer (Lupton, 1994; Thorne & Murray, 2000). Given this significance, it is certainly not unusual for modern individuals to hesitate to say the words ‘breast cancer’ for fear of conjuring its presence (Cantor, 1993; Frank, 1991a).

There are several factors that have enhanced awareness of the disease in contemporary Western contexts, all of which had emerged and coalesced in a relatively short time frame. These include the growth of institutions that focus upon cancer; the sudden explosion of new cancer treatment modalities; increased populist agitation regarding the disease; and amplified awareness of the carcinogenic potential of myriad environmental agents (Cantor, 1993). There has been, for example, a sudden proliferation of specialist institutions, professional societies and literature focusing on cancer research and treatment from the very end of the 19\(^{th}\) century. The rapid expansion in the last century of therapeutic practices such as chemotherapy, immunotherapy, radiotherapy and gene therapy; the uncertain efficacy of these treatments and the potent imagery associated with their sometimes devastating side effects have also helped to maintain the profile of breast cancer in the public awareness (Cantor, 1993). Similarly, political and environmental activism

---

\(^1\) Literally ‘ill condition’ or wasting associated with cancer.
against the industrial and social pollutants believed to contribute to breast cancer, and widespread publicity concerning notable cultural figures who have developed the disease, have maintained its primacy in our contemporary sociocultural context (Titter & Calnan, 2002).

What fuelled this sudden concern? What was the impetus for this astonishing proliferation of disciplines, institutions, discourses and agendas with regard to breast cancer? Developments in the sciences of statistics and cancer diagnostics that enhanced the identification and quantification of the problem have undoubtedly played a part, as have 20th century legislative requirements regarding the mandatory reporting of cases to cancer registries. Increased life expectancy and changes in the environment are also implicated in the apparent increase in breast cancer. These factors play a part in the genetic degeneration that is believed to be both a natural result of the ageing process and of the increase in environmental carcinogens. Yet, regardless of this apparently increased incidence, breast cancer is also becoming more treatable, and women are definitely living longer from the time of diagnosis. So what is the reason for the horror that is still attached to a diagnosis of breast cancer? The position taken here is that the imagery and language associated with breast cancer within modern contexts speaks for itself. As the next section will demonstrate, our lexicon is unfailingly pessimistic and brutal, resonant with death or destruction in some form: emotional, physical, moral, and social.

Images of mortality

Despite improvements in the ability of medicine to treat both breast cancer and the inevitable side effects of modern treatments, a diagnosis of cancer remains a potent source of fear: fear that it will inevitably result in death, and fear that it is inevitably painful (Kleinman, 1988). A scan of any contemporary professional cancer journal reinforces this impression – nursing research papers, for example, are invariably introduced with a statement concerning the scope of the cancer problem within a given context as represented by its mortality rate. So even for health professionals who know better, a diagnosis of breast cancer still forces a confrontation with death,
regardless of recent insistence that survival rates and treatment outcomes have improved. This concern is all the more cogent because modern medicine does not offer the comfort of a teleological perspective of death by cancer, nor does it offer spiritual survival strategies that arm the individual for the confrontation (Shilling, 1993; Turner, 1996). Where once death from cancer was an intensely spiritual public event situated within a meaningfully structured social system (Turner, 1987a), it is now the object of a differentiated and professionalised system that occurs in private, and often alone (Mellor & Shilling, 1997). Hence, a modern breast cancer diagnosis can imply a death that is an alienating experience devoid of spiritual consolation.

**Images of emotional disorder**

The pre-modern Christian view of diseases such as cancer often conceived them as punishments appropriate to the character of the individual (Turner, 1996). This has been reversed in modern times: now the character causes the disease, particularly when that character cannot be expressed appropriately through the normal channels (Sontag, 1977). The cancer ‘personality’ in fact has been seriously considered in the medical discourse (Porter, 1997). So there are numerous contemporary images of breast cancer framing it as a disease of inadequate passion, striking at those who are in some way sexually repressed, inhibited, unspontaneous, or incapable of expressing anger (Shin, 1999; Sontag, 1977). For example, Sontag described Norman Mailer’s belief that if he had not rid himself of a murderous nest of feeling by stabbing his wife, he would without question have developed cancer and died himself (Sontag, 1977). Similarly, Freud’s biographer, writing of his subject’s cancer, characterised it as a disease of the will as well as a disease of the body – a physical symbol of emotional resignation and the failure of hope (Sontag, 1977).

Modern oncology research reinforces this conception, positing the pre-morbid cancer personality as repressed, hostile, depressed and unable to connect with others (Levin, 1999; Sontag, 1977). So breast cancer is not only confronting in terms of mortality, it is a public expression of emotional deficiency.
**Images of moral culpability**

Health is strongly associated with morality in our culture, since improper lifestyles are frequently credited as the root of illness (Turner, 1996). Members of contemporary Western societies have the choice to live a healthy lifestyle or not: they are free to choose whether or not they will smoke tobacco, eat judiciously, drink alcohol in moderation, exercise regularly, or participate in cancer screening. Moreover, breast cancer is not a disease that is morally neutral: it can also be associated in the Western mind with promiscuous sexual contact or filthy habits (Frank, 1991a; Turner, 1996). These moral conceptions of breast cancer place the blame for developing it squarely on the individual who has it, and imply it is also their responsibility to restore their health (Gastaldo & Holmes, 1999; Press, Fishman, & Koenig, 2000; Shin, 1999). As a result, those who have actually lived the recommended healthy lifestyle are confused when they develop cancer, and are placed in a position where they, along with those who have not chosen to comply with social norms of health behaviour, have to justify their moral condition (Lupton, 1994). This is particularly so if they have developed tumours on parts of the body that are most stigmatising, such as the sexual organs and the breasts (Sontag, 1977). When a body saturated with moral imagery in these ways refuses to behave according to the designs of its owner, it makes the prospect of pain, disfigurement and death even more cogent and terrifying (Shilling, 1993).

**Images of social disorder**

The language associated with breast cancer in our time evokes social and economic catastrophe. It is rich in metaphors that signify uncontrolled, unco-operative and incoherent growth (Sontag, 1977). Sontag emphasised the analogies of purposeless, chaotic and uninhibited cancer cells that destroy normal, functional cells and decimate the body’s architecture that appear in much of the cancer discourse. She argued that such imagery reflects the negative aspects of capitalism, a social system that depends upon the indulgence of desires that, like a cancerous tumour, constantly threatens to run rampant.
Retaliation is necessary to restore order and function in this anarchic cancerous body, and the military metaphor of counterattack is perhaps the most entrenched in the breast cancer discourse. Even ‘objective’ medical discourse is saturated with it, oblivious to the ferocity of the language. Hence breast cancer has become a battlefield which is attacked with weapons in the therapeutic arsenal; lives are salvaged with cytotoxics; tumours are judged according to their aggressiveness and their topographical spread over the landscape of the body; scans are conducted for the danger signals; frontal assaults are mounted against cancer; and chemotherapy is deployed upon sighting the danger signals of the disease (Baum, 1986; Cantor, 1993; Corner, 1997; Forbes, 1986; Haagensen, 1933; MacDonald, 1951; McGrew & McGrew, 1985; Porter, 1997; Sontag, 1977).

In fact, martial metaphors captured the modern imagination so powerfully that it is enshrined in legislation. In the United States, for example, the National Cancer Act of 1971 mandated a Crusade Against Cancer, based on the premise that the natural response to a feared enemy is attack (McGrew & McGrew, 1985). From 1913 onwards, consumers have also been bombarded with messages about the dangers of breast cancer, and in response have established organisations such as the Women’s Field Army for the War Against Cancer in the US, and Women Against Cancer (McGrew & McGrew, 1985). In Australia, the motto of the most influential cancer charity in Queensland is ‘Combat Cancer’. Similarly, individuals with breast cancer are posited as victims, whose heroic attempts to beat the odds frequently provide fodder for the populist media (Titter & Calnan, 2002).

**Images of physical disorder**

Consumer culture encourages active self-preservation and the countering of physical decay, hence the modern body is routinely subjected to maintenance routines that ensure an acceptable appearance and ensure maximum efficiency (Shilling, 1993). Breast cancer, however, can result in marked physical degeneration and a tarnished body image. So while the tumour itself is conceptualised as ferociously energetic, its effects on the body are framed in images of corruption, crippled vitality, pollution,
lack of energy and desexualization (Levin, 1999; Sontag, 1977; Titter & Calnan, 2002). The deterioration produced by breast cancer and its treatments also distinguishes cancerous individuals as dangerous to others or somehow unclean (Frank, 1991a). Their spoiled bodies are marginalised in hospitals and clinics and aggressively rehabilitated until able to resume normal social identity and function. For example, when mastectomy and chemotherapy are options, women are consistently guided towards cosmetic restoration of their bodies even before treatment is commenced. Breast cancer volunteers and health professionals who discuss breast prostheses, wigs and makeup with the patient prior to surgical and chemotherapeutic intervention attempt to make the amputation and hair loss invisible long before the physical scars have begun to heal (Thorne & Murray, 2000).

**The problematisation of breast cancer**

Foucaultian histories of the present examine modern, culturally visible issues such as breast cancer, and the images, assumptions and conditions that have contributed to their present day visibility (Rabinow, 1994). A Foucaultian history of breast cancer does not, however, examine these problems by producing its linear history in terms of cause and effect (Flynn, 1994; Kendall & Wickham, 1999). Instead, it excavates the breast cancer archive in order to understand how the disease became the authorized object of scientific and moral solicitude. This construction of phenomena such as breast cancer as objects of disciplinary concern is called ‘problematisation’. It is the tendency to posit breast cancer as a specific problem that can be effectively governed only with recourse to the solutions offered by the disciplines (Rose, 1999a).

Many factions have claimed ownership of breast cancer, however, and the breast cancer archive, particularly that accumulated over the last century, is enormous.

---

2 The mass of objects, languages, statements and practices that belong to a single discursive formation (Foucault, 1972).

3 For an explanation of the double meaning of ‘discipline’ in this context, see p.34.
Moreover, its composition is variable, as archival discourse in the Foucaultian sense comprises anything that is used as a tool of communication. Hence it can encompass the Rembrandt paintings of nudes with obvious breast tumours, the architecture used in the construction of cancer clinics, the letters of famous women like Fanny Burney who underwent mastectomy, the practices of physicians and the professional journals of oncology nurses. So the first task of this project is to determine where to start and exactly what to analyse in the discourse.

To narrow the analysis to a more manageable field, Rose suggests it is useful to ask two questions on the first approach to the archive (Rose, 1996, 1999a). First, exactly who has defined breast cancer as a problem, and how and where is it problematic? Second, what are the moral, political, economic, social or cultural concerns that breast cancer makes problematic? The remainder of this chapter will explore these questions, thereby narrowing the discursive field to the dominant disciplinary discourse – in this case, surgery. It will then examine the modes of consciousness this discipline has employed in the problematisation of breast cancer.

**Locating the dominant discourse**

From a Foucaultian viewpoint, breast cancer is a text with multiple interpretations, all of which are equally plausible. It is an object that inhabits different but intersecting worlds. It is notable not only for its adaptability to the needs of those competing agents who claim it as their object, but also for its robustness in retaining a common identity as breast cancer among those agents that permits them to interact with each other with regard to the problem.

This means that while a tumour is a basic physiological fact across different worlds, its problematisation is largely mediated by the social or disciplinary context of the agents who claim it (Turner, 1991b). It is clear that while humans are generally confronted with many of the same problems with regard to breast cancer, different individuals and groups have developed markedly different responses to it (Donnelly, 1995). From an individual viewpoint, for example, for each woman who develops
Introduction: The Problem of Breast Cancer

breast cancer, it has a cause, a sensation and an effect – and it is recognisable to them as breast cancer. But for each person it also has a different organic basis; it feels, looks and smells differently; it has a different pain syndrome; and a different psychological outcome (Donnelly, 1995). Furthermore, it is embedded in different socio-political norms and may therefore assume myriad meanings and outcomes, depending on the context it inhabits. Labelling a body with a breast cancer diagnosis renders it a potent reminder to various social and disciplinary groups of their core values. The practices they develop for dealing with it reaffirm those values and assist in the maintenance of social solidarity.

Breast cancer is notable for its malleability with regard to the needs of different groups. Certain groups can traverse the others’ boundaries and appropriate for their own purposes the ways in which they have problematised it. For example, the centuries-old surgical construction of the breast cancer problem in terms of a military campaign has been successfully redeployed in modern scientific contexts, particularly after cytotoxic therapies were developed from the nitrogen mustard used as a weapon during the World Wars. The value of the heroic connotations of this approach to breast cancer was soon realised by others and subsequently, consumer and pharmaceutical groups have appropriated this martial construction of the disease and used it to convince many Western authorities to fund projects in the ‘battle’ against breast cancer (Kendall & Wickham, 1999). Indeed, recent consumer group emphasis on the war on breast cancer has been roundly criticised as disproportionate to either the incidence or mortality of the disease, and the success of consumer advocacy groups in organising fashionable, effective, agenda-setting charity campaigns against breast cancer is attacked for inflating the public perception of risk and of reinforcing the stigma of the disease (Press et al., 2000; Tritter & Calnan, 2002). So the interests of many groups may shape the problematisation of breast cancer during specific periods. This makes it a dynamic and context-dependent process, rife with power struggles, and framed according to the disciplinary or cultural discourse that is dominant at the time. So, with all these discourses to
choose from, which discourse about breast cancer and which elements of that discourse should be analysed?

**Narrowing the breast cancer problem: the dominant breast cancer discourse**

The health professions have long had a social mandate to regulate, restrain and represent the corporeal body in Western contexts (Turner, 1987b). What we now call the medical profession has been fundamental to the problematisation of breast cancer, and there is no doubt that there is general acceptance today of the set of explanations and practices medicine has evolved to assist in the government of the cancer problem (Flynn, 1994). Moreover, while it has never been the only discourse regarding breast cancer, the medical archive is certainly the oldest, and the most abundant, available for analysis. The affiliation of medicine from ancient times with the literate classes has ensured their contribution to the archive has been relatively plentiful. The archive of cancer nursing, for example, is extremely recent in comparison, and along with the other potential sources of breast cancer discourse (alternative medicine and lay healing) has traditionally produced knowledges that have been marginalised by medicine and by Western society in general.

Within the medical archive there are three sub-disciplines – internal medicine, surgery, and pharmacotherapy – whose discrete discourses have combined, ruptured and reassimilated over time. However, it is the surgical discourse that dominated all of these where breast cancer is concerned; and which continued to occupy a premier position for the first fifty years of the twentieth century before it was taken up into the myriad other sub-disciplines that appeared, such as medical oncology, radiation oncology and immunotherapy (Baum, 1992; Forbes, 1986; Haagensen, 1933). The archive reveals that it was the surgical men of action, those willing and able to get their hands dirty in order to rout the enemy, who were, according to the norms of the time, in the best position to frame the problem of breast cancer and to deal with it most successfully (Forbes, 1986). It is for this reason that the focus of this dissertation is the surgical problematisation of breast cancer, acknowledging where appropriate the contributions of the other sub-disciplines to the surgical archive.
Having focused upon the surgical archive of breast cancer, the next step is a further refinement of the process. The depth and breadth of the surgical archive poses a problem of its own: given the wealth of material available, exactly what material within it should be analysed? Foucault himself noted that if we try to trace the developments of a disciplinary discourse beyond certain obvious chronological breaks, we soon lose our way, particularly where there is a large volume of material (Foucault, 1972). He did not, for example, trace the development of psychopathology beyond the nineteenth century, as the problems with which psychopathology has dealt since this time are numerous and still too new. They are also precarious, subject to flux, and in some cases, to rapid disappearance (Foucault, 1972). The multiplicity of new and confusing diagnostic criteria developed in the last century of psychiatric discourse is a case in point, for examination of these as disciplinary objects at such close quarters would not reveal the rules underpinning them (Foucault, 1972). The situation is similar for surgical breast cancer discourse – since 1900 there have emerged a bewildering variety of diagnoses, explanations and treatments. At this stage it is not possible to adequately analyse them, as they are still in the precarious process of formation.

As a beginning, Foucault recommended that the historian of the present examine the chosen discourse in places where chronological breaks are easy enough to accept in a first approach to a subject (Foucault, 1972). These breaks are useful indicators of a change in the surgical worldview; of a different order of things that organises what is deemed valid knowledge at a particular time and what is not (Danaher, Schirato, & Webb, 2000). Signs that indicate such breaks include the establishment of new modes of exclusion and confinement within institutions, and the ability to trace certain present-day notions back to certain individuals and other primary concepts. Foucault used the example of the establishment of psychiatric hospitals to confine the madman (Foucault, 1965); in relation to cancer the establishment of dedicated cancer hospitals in the late eighteenth century might be a significant turning point. He also traced the concept of character neuroses back, via Pinel, to non-delirious
madness (Foucault, 1965). Similarly, there are three discrete approaches to breast cancer within the surgical archive that, on a first approach, appear to have established the conditions for present day conceptions of the disease. Consistent with Foucault’s proposal, they are not only traceable to certain key individuals; they also form three apparently neat chronological breaks within the surgical archive that represent three apparently different epistemes. These three approaches can be broadly categorised as:

- **Humoral doctrine**: which dominated surgical discourse from ancient times to the Renaissance, elements of which persisted into the nineteenth century and which are reclaiming ground today.
- **Theories derived from the study of gross anatomy**: which gained prominence from the Renaissance and had largely superseded or subsumed humoral doctrine by the early nineteenth century. The dominance of this approach reached its apogee by the 1840s, when it was subsumed into the third approach.
- **Theories derived from the study of cellular anatomy**: which erupted into surgical consciousness in the mid-nineteenth century, and which dominated oncological thinking until quite recently.

**Analysing the breast cancer problem: modes of consciousness**

To summarise my intentions so far, this thesis is concerned with the problematisation of breast cancer by surgeons in three general periods up to the year 1900. By this time, all of the conditions of possibility that made our modern conception of breast cancer such a natural proposition appear to be in place, and surgeons played a key role in the formation of these conditions. But one further refinement remains: many different social groups over a very long period have contributed to the surgical problematization of breast cancer. So it is necessary to locate a precise surgical framing of the problem. This is undertaken in the knowledge that within the discrete discipline of surgery in the time frame under investigation, ‘breast cancer’ did not necessarily retain the same meaning over time.
The concept was fluid and largely dependent upon what was considered rational surgical knowledge during a given period.

One analytic approach proposes that the precise surgical framing of the problem can in fact be found in the questions the discipline itself asks of breast cancer. In effect, if surgeons claim to have the answers to the breast cancer problem, it is chiefly because they have posed a set of socially pertinent questions that are the justification for those answers (Dean, 1999; Rose, 1999a). Hence, the exact nature of the breast cancer problem can be located in a given discourse by examining the way that surgeons have questioned that problem over time. So a historian of the present looks at the questions surgeons have asked of breast cancer, such as, how do we establish that this problem of breast cancer exists? How do we define this problem? How do we explain this problem? How do we manage this problem?

Following Foucault, Rabinow suggests that regardless of shifts in problematisation over time and the contributions of different social groups, subjects such as breast cancer are always the object of a disciplinary consciousness that frames these questions in very concrete ways, in accordance with a rationality determined by a given historical period and socio-cultural context (Rabinow, 1994). There are four types of disciplinary consciousness necessary in order to question breast cancer and render it problematic in any given time. Following Rabinow (1994), these modalities of surgical consciousness are classified here as:

- Critical modalities, which determine that in some form, breast cancer actually exists. Critical modalities can be discerned in discourse that defines breast cancer, describes how it manifests in individuals and explains how it arises. If it has a presence and an explanation, then it follows that breast cancer is a real entity. Critical modalities are interpreted here as essentially explanatory systems that recognise that the problem of breast cancer exists and which attempt to explain what it is.
One of the reasons the Western period from Egyptian times to 1900 has been chosen for analysis in this dissertation is that the critical modalities of breast cancer changed little over this time. Toward the end of the 18th century for example, surgeons had noted that observations on the aetiology of the disease had acquired no important addition since the days of Celsus and Galen (de Moulin, 1983; Pearson, 1793). The notable exception at the very end of this period is the emergence of tissue and cellular theories, which ruptured medical consciousness and helped structure the conditions of possibility for our current conception of the disease. However, this rupture was not always understood or appreciated at the time. For example, in 1896 the eminent pathologist Virchow spoke at the German Congress. Despite the advances in the understanding of the cellular nature of breast cancer to which he had made a significant contribution in the preceding decades, he was moved to comment that while a great deal of industrious work was being done and the microscope was extensively used in his time, “someone should have another bright idea” (de Moulin, 1983, p.106).

Critical modalities are discussed in Chapters 3, 4 and 5.

- Enunciative modalities, which reveal that for each time and place, there are certain ways of assessing whether breast cancer exists, certain laws that inform what may be said about it, and certain statements that articulate the reality of breast cancer within that context (Foucault, 1972). Moreover, there are certain persons with the mandate to make those statements; principally because they have been trained to make assessments about cancerous bodies by way of comparison with a dominant explanatory system. These authorised judgements about breast cancer confirm the person has cancer and not some other condition. For example, within the contemporary discipline of medical oncology, it is only registered medical practitioners who have undertaken postgraduate speciality training such as surgery, radiation oncology or pathology, and perhaps scientists and pharmacists who specialise in the field, who have been trained to conceive...
of breast cancer in ways that are privileged by our society, and who are licensed to assess its presence, discuss it with authority and manage it.

The position taken here is that there are three distinct lenses through which practitioners were socialised to view cancer to 1900. They are characterised by different classificatory systems, each of which emphasised different spatial dimensions that directed the attention of the surgical gaze. In the period exemplified as a whole in the doctrines of Galenic humoralism, the lens was directed towards the imposition of botanical taxonomies on the person with breast cancer, based on the two dimensions of height and width (Foucault, 1973). Botanical taxonomies did not differentiate the person, who remained a homogenous whole upon whom disease was imposed, yet the disease was conceptualised as entirely separate from the person who had it (Foucault, 1999).

This lens was abruptly shifted in the mid 19th century by the contingent events of the refinement of the microscope and acquisition of anatomical knowledge from the dissection of corpses. It added the dimension of depth to the gaze, and resulted in a taxonomy of anatomic resemblances (Foucault, 1973). The individual with breast cancer was seen through this lens as a homogenous, yet differentiated space comprising individual cells, which in turn constructed numerous tissue types, which subsequently constituted individual organs that related with other tissues and organs to comprise organ systems; and which culminated in the individual body. This lens did not consider the body separate from the disease (Foucault, 1973; Osborne, 1991).

The final dimension of the gaze that cemented the conditions of possibility for our contemporary gaze had emerged by the very late 19th century. It explored those spaces beyond the individual cancerous body that, paradoxically, allowed it to be known ever more intimately. The cancerous body can be totally abstracted in contemporary health care, made possible by techniques of reduction and generalisation. For example, the modern gaze allows the body to
be examined without the person actually being present. The microscope allowed the body to be reduced to increasingly minute and isolated parts, and thence projected onto something else for interpretation – pathology tests, tumour markers, or tumour staging systems – that was not corporeal. The advent of radiography and modern experimental method in the 1890s accelerated this process. But it was also enhanced by numerical techniques that allowed the cancerous body to be seen and known before it even developed. The epidemiological gaze, which intensified immediately prior to the 20th century, now means cancer can be abstracted into numbers; thence projected onto the social body; and abstracted out of the social body on to the individual ‘at risk’.

Enunciative modalities, in particular the surgical gaze and the institutions that supported them, are discussed in Chapter 6.

- Practical modalities, or the technic used by surgical practitioners over time. Surgical therapies demonstrate in tangible terms that, however it is conceptualised in a given society, breast cancer is somehow a deviation from the norm. Breast cancer is a robust object for analysis because few cultures, and few groups (if any) consider it natural (Kleinman, 1988). Similarly, the questions around which the Western discipline of oncology is formed have one thing in common. They are questions that consider breast cancer pathological in some way and consequently, able to cause harm. Oncology claims legitimacy because of its professed ability to deal with the problems caused by this dysfunction (Rose, 1985). Practical modalities – basically forms of coercion and correction with regard to the disease - are material indicators of the ways in which surgeons have considered breast cancer abnormal.

While the distinct sub-disciplines of medicine that have historically dealt with cancer care have contested ownership of a distinct area of the technic, a

---

4 The body of activities, techniques and practices used by a discipline.
Foucaultian reading of cancer care over time reveals consistent encroachment of the boundaries by these separate disciplines. With the exception of bleeding, cutting and cautery, which have generally been the preserve of surgeons over time, breast cancer techniques have been interchangeable between adherents of each of the disciplines involved in oncology despite their perennial boundary disputes. While the explanatory system and the rationale for these practices changed according to the theoretical gloss of the practitioner and the ethos of the time, many aspects of the technic remained remarkably stable to the present day. For example, the surgical technic of breast cancer has always included some form of purging, cutting and cautery; but it has also comprised interventions developed by other groups. These include regimen (including diet and lifestyle); pharmacotherapeutics (both internal and topical); and experimental method (see Chapter 7).

The practical modalities or surgical technic developed to deal with the problems posed by breast cancer up to 1900 are discussed in Chapter 7.

- Analytic modalities, which are the modes of appearance or imagery that arise in the discourse when the problem of breast cancer is addressed. The imagery associated with breast cancer within the surgical archive casts more light than any other modality on the reality of breast cancer for surgeons and the problems it subsequently poses. Analytic modalities also illuminate the actions a discipline may take with regard to the problem and the disciplinary boundaries wherein the phenomena will be governed. In essence, analytic modalities ultimately provide surgeons with the justification for their management of breast cancer. So this dimension of consciousness is concerned with the production of images related to breast cancer and their use by surgeons to validate their actions. The analytic modalities or imagery of breast cancer and the disciplinary action problems it has therefore posed in the surgical archive to 1900 are discussed in Chapter 8.
Conclusion

To summarise, this history of the present is an account of the historical conditions that have contributed to contemporary explanations, imagery and practices concerning breast cancer. A focus of this dissertation is to unsettle the taken-for-grantedness of these contemporary ideas and activities, by exposing other ways of thinking about them and the sociocultural determinants of their development. Surgical discourse to 1900 has had the greatest influence on current conceptions of breast cancer, and will therefore be analysed in this dissertation. Surgical consciousness of breast cancer has been structured by way of four distinct modalities. These Foucaultian modalities – critical, enunciative, practical and analytic – also serve as the analytic framework of my thesis. They will be used to structure the dissertation in terms of: the theoretical problems posed by breast cancer that surgeons must solve; the rules that informed what could be said about breast cancer; the lens through which it was seen; the techniques that restored the cancerous woman to normality; and the images that reinforced the horror of the disease. While each modality will be discussed in more detail in the relevant chapters, the discussion of individual modalities draws upon many diverse concepts developed by Foucault. An overview of these concepts is given in the next chapter.
CHAPTER 2. METHODOLOGY: THE FOUCAULTIAN HISTORY OF THE PRESENT

Introduction
Foucault’s ideas and methods are increasingly used in health care fields such as medical sociology (Lupton, 1997; Osborne, 1991; Turner, 1992b), psychology (Rose, 1999a), dentistry (Nettleton, 1992) and nursing (Cheek & Porter, 1997; Gastaldo & Holmes, 1999). While these disciplines are relatively marginalised in the context of cancer care, Foucault’s approach has also been employed to powerful effect by practitioners in medicine (Armstrong, 1983; Little, Jordens, Paul, & Montgomery, 1999). However, his ideas have not been specifically tested with regard to surgical oncology, which has always been a dominant discipline within the field of breast cancer, or in relation to breast cancer itself. The aim of this chapter is to describe the significant ideas and approaches developed by Foucault, and to establish the relevance of his approach when applied to the surgical archive of breast cancer. The description of the methodology (the Foucaultian toolbox) is followed by an outline of the method of data analysis used to manage the vast amount of material in the surgical archive.

The general approach
The most important - and for many, disquieting - aspect of Foucault’s approach is its flexibility. Unlike scientific method for example, which is based in notions of replicability and reliability, he did not necessarily use his own methods in a consistent or even reproducible manner. Similarly, Foucaultian scholars tend to adapt his work freely to suit their own needs, tailoring the approach to the object at hand rather than privileging the methodological and theoretical rigidity of the natural sciences. This means that the exact method employed in one Foucaultian project rarely resembles that of another, making comparison between projects, and subsequent evaluation of the approach, difficult at times.
Osborne made the neat analogy that it rather is like taking a toolbox to the evidence instead of a machine. The analyst uses only those tools that fit their particular task, rather than forcing the evidence through a prefabricating machine or theory that programs the evidence in advance (Osborne, 1991). Foucault developed his toolbox because unlike natural scientists, he recognised that the real world is not necessarily explicable in terms of theory. It is a complex and fragmented place that requires a variety of schemata for exploring and explaining the phenomena within it. With this in mind, he produced a flexible array of tools that could be tailored to the problem at hand according to the specific needs of the analyst (Frank, 1991b; Kleinman, 1988; Osborne, 1991; Turner, 1992a). So in general, Foucault was methodologically pragmatic, using whatever research tools and concepts he considered appropriate to the context in which he was working and the problem to which he applied them. Yet, although individual elements of his research kit were varied, Foucault did have a very characteristic way of doing things that allows some generalisations about his approach to be made (Osborne, 1991).

For example, at no stage did Foucault attempt to formulate a grand theory of disciplinary history. His frequent changes in approach and his concentration on how things happened rather than why they happened are in fact contrary to the formulation of grand theory and teleology. For him, there was no such thing as an overarching theory or single method that could elaborate a teleology that did not exist. His ideas were founded on a respect for difference and the notion that a history requires multiple viewpoints to know the one reality. No one grand theory, therefore, could possibly account for the plurality of discourses that influenced disciplinary development. He regarded his approach as offering just one version of that reality.

Foucault also argued that the historian should not seek to interpret what a historical problem might mean in terms of the period being studied, nor in terms of the present period – a process that Foucault argued hooks into a perpetual cycle of interpreting interpretations (Foucault, 1973). The emphasis should always be on ‘how’ something is problematised rather than ‘why’ – a restrained analysis that seeks not to
discern the ultimately unattainable truth of breast cancer but to undermine the obviousness of how we presently see it (Foucault, 1986b; Osborne, 1991).

Foucault also believed that alternatives to present thinking about problematic phenomena such as breast cancer are only achieved by detaching from them. So another feature of Foucault’s project is objectivity. His version of objectivity was not, however, the neutrality demanded of scientific method. His argument that phenomena should be established as objects was as far as his objectivity went. Foucault did not totally isolate the object from its context, as in scientific method, but detached himself from an object that remained firmly embedded in its time and place. His aim here was to step back from a problem that a culture recognised must be managed, and to reflect upon it in terms of the problems it posed when it required government (Rabinow, 1997). Detachment served as a starting point for reflection on how that object, within a certain context, was thought about by the disciplines that problematised it. It also initiated deliberation on what was actually done about the problem; on the conditions under which individuals and societies came to act in different ways around that problem; on the effect this conduct had within a given social context; and the social system that such actions served. A significant consequence of this type of objective exploration is that it can open up spaces for other ways of thinking about the problem (Danaher et al., 2000). As this thesis will demonstrate, the way that is most obvious now is not necessarily the only way to think about or deal with something.

The following is a discussion of the concepts and methodological equipment developed by Foucault that are applied in this thesis. This discussion of his project is by no means exhaustive, as my aim in this dissertation is to undertake a modest analysis, using some of his earlier and more developed ideas, for reasons of manageability and feasibility. Hence, many of Foucault’s later or relatively underdeveloped approaches (such as governmentality and the ethics of the self) while implicit in some areas of the dissertation, are not explored in depth.
The archaeology

This dissertation is essentially an archaeology of surgical practice in the field of breast cancer. The archaeology was the first significant tool developed in some detail by Foucault. The overall purpose of the archaeology is to excavate the socio-historical contexts in which truth and knowledge are produced by disciplines (such as pedagogy, psychology, the law and medicine) and institutions (such as hospitals and the State). The archaeologist aims to understand the conditions that hold in a given time and place for producing disciplinary knowledge about a problem and which justify saying what is true about that problem. It does not aim to uncover the ultimate truth about the problem. The archaeology does not privilege, for example, the unquestioned truth upon which all breast surgery is based that a breast tumour is abnormal. Instead, it acknowledges that this is held as true by surgeons and unearths the conditions that have allowed them to construct this truth. So one task of the archaeologist is to isolate the discourses that articulate the thoughts and practices through which people made sense of their historical time and contemporary concerns (Danaher et al., 2000).

The archaeological approach also demonstrates that the development of disciplinary truth and knowledge is not linear. That is, knowledge does not accumulate in a smooth trajectory over time towards a truth that provides the ultimate answer to a problem. It is a bumpy ride. For example, leading up to the modern understanding of breast cancer, humoral theory did not contribute seamlessly to tissue theory, which in turn did not contribute smoothly to cellular theory. Each theory was a revolution in its time seemingly erupting out of nowhere and rife with intra- and interdisciplinary politics. Neither is the present state of disciplinary knowledge an inevitable outcome of what has gone before, it is a chance-laden process. We have arrived at present understandings only because of the contingent interplay of historical events, and because new ways of speaking the true happen to be developed, not because present knowledge is true knowledge. This thesis will illustrate that modern cytotoxic treatments only exist, to use a simplified example, because of contingent and often-unrelated developments such as the theory of the...
cellular nature of tumours, the invention of the achromatic microscope and the use of mustard gas in the theatre of war. Similarly, with the more recent privileging of lumpectomy over radical mastectomy, it seems that the large-scale breast surgeries that have been the gold standard of practice for so long will be relegated to redundancy. More recent ‘truths’ declare that the aetiology of cancers is multifocal, challenging the once unassailable dogma of the unifocal nature of cancer in the surgical field that justified routine amputation of the breast regardless of tumour size.

This process of abrupt and non-linear change is a central Foucaultian conceit; and in comparing the strata of disciplinary history, the archaeologist pays particular attention to these rifts (which Foucault called discontinuities) in the layers of history that occur during disciplinary development. He characterised discontinuity as the sudden formation of certain disciplines, scientific concepts, practices and so on that appear to start from nothing and which then appear to progress extremely rapidly. They are always accompanied at the time of their appearance by resistance in the form of prejudices and obstacles (Foucault, 1989). This thesis will demonstrate, consistent with Foucault’s argument, that discontinuities accumulate in successive transformations of truthful discourse to:

continuously produce reshapings of their own history; what had for a long time remained a dead-end, today becomes an exit; a side attempt becomes a central problem around which all the others gravitate; a slightly divergent step becomes a fundamental break (Foucault, 1989, p.15).

In summary, the archaeology exhumes and examines these favoured and out-of-favour ways of conceiving things that appear at a given time, noting where they differ, where they overlap, and where they suddenly reappear. Historians of the present concentrate on these sudden transformations in received views, looking at how these changes occurred and how they were influenced by the politics of the time. They are concerned with the history of the disciplines, excavating the social,
political and cultural rules that inform accepted disciplinary discourses and exclude others. This emphasis on disciplines in Foucault’s project entailed a thorough understanding of what a discipline might be, so this concept is addressed in the next section.

**The disciplines**

In his archaeologies, Foucault developed a sophisticated interpretation of the disciplines that differed from those of many philosophers and historians of science. While he did acknowledge the disciplines as fields of professional study in the more conventional sense, he also posited them as sophisticated systems of social control (Prado, 2000). Foucault characterised the disciplines as belief systems arising through specific sets of social, historical and political relations (Nettleton, 1992). He believed disciplinary knowledge resulted in practices that shaped the behaviour of others through their intimate knowledge of their subjects (Foucault, 1977).

According to the archaeological approach, the surgeon has viewed and therefore treated the body differently at different times in disciplinary development. As this dissertation will demonstrate, for centuries a body analysed for deranged humors was treated for deranged humors, just as the hungry ‘wolf’ of cancer was fed by bandaging hunks of meat to the breast tumour (Pouchelle, 1990). These days a body is explained in terms of genes, cells, organs and tissues and therapies are targeted at them accordingly, and a body analysed for psychosocial distress remains a psychosocial object (Lupton, 1997). The term Foucault uses for a disciplinary belief system or paradigm at a given historical time is episteme. An episteme provides the discipline with a conceptual framework to explain its world. It is essentially a period of history organised around, and explicable in terms of, a specific worldview (Danaher et al., 2000). It is one task of the archaeologist to examine the goals of disciplinary practices as articulated in the episteme, in order to gain insight into what the subjects and the practitioners of a discipline regard as the legitimate worldview.
The goals of the discipline are often achieved by way of normalising judgements, which are integral to disciplinary practices in two ways. First, these judgements control the entry of members to the discipline and ensure their actions are congruent with the espoused values of that discipline. Surgeons, for example, are socialised to think in terms of the altruistic and heroic values of surgery and to regulate their behaviour according to those values. If their behaviour does not conform to the norms of the discipline, then they are no longer recognized as surgeons. Second, normalising judgements are the tools that disciplines use to measure and categorise the abilities or qualities of subjects. They also measure the gaps and differences between subjects. Such judgements allow the discipline to assign a value to these abilities and qualities and establish what is normal for that category. In the hospital, the normalising judgement determines who is healthy and who is diseased, who has cancer and who does not. In effect, the normal can then become an instrument of coercion to ensure that subjects conform to what is considered appropriate. If a normalising judgement indicates a subject has breast cancer, for example, the woman\(^5\) usually conforms to disciplinary practices in order to reach a state where she does not have cancer. Interestingly, disciplines can also make claims to objectivity because a normalising judgement is not a negative criticism (Prado, 2000). It is an assessment by disciplines of individuals and groups by way of comparison with a dominant belief system - a belief system that is considered at the time to be an objective reality.

The disciplines have several examination techniques that enable and sustain disciplinary discourse. The two that are most apparent in the surgical archive are the gaze and the confession. The disciplinary gaze refers to the way members of a discipline have been socialised to view their subjects. A perceptual field that is conditioned by the dominant discourse of the time gives the surgeon a specific frame of reference, circumscribing and directing what is actually seen when he is

\(^5\) Throughout this thesis, consistent with convention in the period examined and the texts in the archive, the breast cancer patient is gendered as female, and the surgeon as male.
confronted with a breast tumour. The perceptual field guides the way the eye and other senses settle upon a tumour. It ensures that the gaze of the surgeon does not observe an isolated object called a breast tumour but is focused upon certain aspects of that structure according to the disciplinary norms that prevail at the time. This thesis will demonstrate, for example, that at one time or another the surgical gaze has constructed breast tumours that are manifestations of humoral derangement, cellular abnormality, emotional repression, moral impurity and so on. The sociocultural conditioning of the gaze ensures that surgeons are trained to notice some things and not others.

Confession by the patient in the form of supplying a health history and submitting to care is another important aspect of the medical examination. In the Foucaultian sense, the confession makes individuals participants in their own control. In the confession, patients initiate contact with the surgeon. They then contribute to the knowledge that the surgical profession has amassed by making themselves amenable to examination, more thoroughly able to be known and therefore, more able to be controlled. Confession is one reason why, particularly before the development of asepsis and anaesthesia, women submitted to breast amputation in the archive. It was the woman who first recognised her problem and brought it to the attention of the surgeon (Canguilhem, 1989c). If she had not initiated and then participated in her own control in this way, the operation would not have occurred.

Foucault’s overall project was revolutionary, complex and unfinished. My aim in this dissertation is to undertake a modest initial analysis of the issues surrounding breast cancer using the simpler and more developed tools he provided that have been described so far. It is an archaeology, which attempts no more than to lay the foundation for a beginning understanding of one significant aspect of breast cancer care. Hence many of the tools that Foucault developed later in his career, especially the genealogical method focusing upon power, and the notion of an ethics of the self, do not play a significant role in this thesis. Nonetheless, they are notions that Foucault toyed with even in his archaeologies; they are implicit in all of his work,
and therefore warrant a degree of explication as they also inevitably play a role in the analysis of the archive undertaken here.

**Power/knowledge**

Foucaultian power is best defined as a pervasive energy that allows society to function (Kendall & Wickham, 1999). It is generated by the relationships between individuals and groups. The nature of power changes if this relationship is disturbed in any way. It is similar to the network of forces generated when several magnets are placed in close proximity to each other - there are lines of energy generated between the magnets, and if one magnet is moved, the lines of energy change (Prado, 2000). In this sense, we are all magnets in a network because we all possess this energy in some form. We all use power in some way and we all act as its conduit.

It must be emphasised from the outset that unlike more conventional interpretations of power, Foucaultian power systems are not always conceptualised as negative, repressive systems. Central to this interpretation is that power is also productive - it generates and orders forces as well as restricting them. Health systems and the disciplines that prop them up, for example, can be viewed as productive because they can in fact extend their subject’s abilities and possibilities. There are many forms of power, however, and force, domination, intimidation, coercion and authority are its negative aspects. Yet ultimately, these forms of power can only constrain what individuals do rather than what individuals think and can therefore only be exercised over free subjects. In Foucaultian terms, where there is no option other to do and to think in compliance with power structures, then that is slavery, not power (Foucault, 1984d).

A basic Foucaultian premise is that conventional histories focus upon centralised representations of power such as monarchies and states. Foucaultian power never emanates from a central source like this; it is all-pervasive. It is part of a network that moves people and moves through them. Like the lines of energy in our network of magnets, at any one time, individual magnets are both subject to, and exercising
lines of power (Prado, 2000). To take the analogy further, like the positive and negative poles of magnets, the configuration of power relationships is also sustained by the disjunctions and contradictions that separate disciplines from each other. Genealogists do acknowledge that in the network of energy produced by societies, people do occupy different positions and in a given situation, some, like surgeons, are more dominant than others. They do not believe, however, that dominant individuals, groups and institutions represent a centrally-directed system of power. They are merely crystallisations of the energy within a given society, which would shatter if the configuration of other power systems that shores them up were to be removed.

Intrinsic to an understanding of the Foucaultian conception of genealogical power is that all forms of energy encounter resistance when they are operating. It is this resistance that makes the energy or power most visible. Conversely, if power forces or energies are so closely aligned that they are not resisted, they are not visible. The resistance of the filament in a light bulb to electrical energy, for example, is what produces light and makes the power of electricity manifest. Similarly, resistance to disciplinary norms makes disciplinary power obvious because it sheds light on the very power structure the individual is trying to resist. Resistance by breast cancer patients in the form of rejection of chemotherapy, for example, illuminates for the genealogist the norms and unpalatable aspects of power and oncology practice; that is, that chemotherapy is not the safest of treatment modalities; that it is no guarantee of cure or even relief of symptoms; and it has some extremely unpleasant side effects. As this example demonstrates, the presence of resistance in power relations ensures subordinate agents such as cancer patients are never totally disempowered. Dominant agents are constrained to sustain a certain alignment of power and the subordinates are, therefore, always in a position to challenge the aligned agent’s complicity in their disempowerment (Rouse, 1994). Furthermore, the resistance of subjects enables actions and alignments with other power structures, and forces reflection on what is taken for granted. Resistance can in fact take the form of education in the very norms of the dominant disciplinary alignment and use such
education to challenge them. For example, the Green Party in Australia educate themselves in environmental science and use it to compete on the same terrain as the chemical companies they oppose. Similarly, a breast cancer patient with an understanding of scientific principles can counter the scientific ‘evidence’ of the pharmaceutical companies underwriting chemotherapy clinical trials. If a manufacturer, for example, states that a certain cytotoxic agent confers a measurable improvement in the life span, an informed cancer patient can refuse such a trial on the grounds that a six week increase in life span with a concomitant chemotherapy-related decrease in their quality of life is not acceptable evidence for a measurable improvement.

From the Foucaultian viewpoint, knowledge cannot be separated from power. This is because disciplinary knowledge produces experts who determine what we are and how we are supposed to act. Knowledge, therefore, both enables and sustains power relations, because the more that is known about someone or something, the more readily they can be controlled. Power, in its turn, sustains disciplinary knowledge by guiding how further knowledge is sought and by confirming what is already known. Subjugated knowledges are the hidden histories or disqualified accounts of low ranking people at the periphery of disciplines. This dissertation will demonstrate that the resistance encountered in subjugated knowledges is useful for the historian of the present to explore because it sheds a great deal of light on present systems of knowledge. For example, within the surgical archive, surgeons have actively suppressed lay explanations and therapies concerning breast cancer. Yet where it suited them, surgeons accessed these alternative accounts and called them their own.

**Genealogy**

Genealogy represents the middle phase of Foucault’s project. A genealogy is a Foucaultian history of disciplines that augments the assumptions and tools of the archaeology. It takes the archaeology further by mapping the systems of disciplinary power within institutions and the discipline’s relationship with other systems of power. A genealogy particularly focuses upon the effects of disciplinary power on
the individual body; examining the ways that people are made subject to it and the methods they use to resist that subjection. Taking it to its most cynical level, Foucault’s earlier premise was that the disciplines, which are overtly neutral, are in fact enmeshed in a political struggle that is exercised on people’s bodies with the aim of controlling them in the interests of the discipline. Foucault moderated this cynicism in his later work on genealogies and power, recognising that most disciplinary power games are unconscious and a result of the enmeshment of disciplines in a network of power. Eventually, he conceded that the ultimate aim of genealogy is to make us see beyond the ways we are currently controlled by disciplinary discourse and to choose a power system which better suits our needs.

The genealogical analysis of discourse is informed by the dispositif. This is a grid of analysis that maps the practices, discourses, institutions, architectural arrangements, laws, philosophy and morality of a discipline (Deleuze, 1992). It examines all of those things that support the power base of the disciplinary worldview. Using the dispositif, the genealogy, like the archaeology, unearths what the discipline once was, including the more unpalatable and hidden origins, and what it has become. Foucault, for example, exposed the development of psychiatry as a method of isolating those who deviate from a societal norm of sanity as well as the noble enterprise aimed at rehabilitation for the good of the individual that it sometimes claims to be. Similarly, a genealogy of the discipline of oncology might expose the major beneficiaries of chemotherapy as the pharmaceutical companies whilst examining the discipline’s more public ideology of the extension of the life of a cancer patient for the individual and common good.

Foucault’s genealogical approach offers a sophisticated alternative to the traditional linear approach to history. Like the archaeologist, the genealogist does not view history as progressive. A genealogical history of the present characterises disciplinary power as discontinuous, contingent upon socio-historical events and imbued with no ultimate meaning because for the genealogist objects, events, concepts and power structures do not retain their meanings over time. An elucidation
of the differences between traditional accounts of disciplinary history and genealogical accounts best illustrates the tools commonly used by genealogists.

Foucault’s premise was that traditional historians examine continuities within concepts; they assume that disciplinary knowledge progresses towards an absolute truth and state of stability. They examine the noble origins of power conflicts such as war, the building of empires, the discovery of new medical treatments, revolutions and treaties. They concentrate on issues and events related to centralised manifestations of power such as kings and governments. In contrast, genealogical history emphasises the discontinuities and disjunctions that have also contributed to power relations amongst the disciplines. A genealogy is not underpinned by the assumption that the history of a discipline represents some overarching progress or that there is some objective reality or goal towards which the discipline is steadily progressing (Nettleton, 1992). Instead, the genealogy concentrates on events at the local level. It maps local knowledges, particularly those that have been subjugated, hidden or repressed by the dominant paradigm. It examines the periphery of power systems, where power is less legal in nature, resistance to power is more common and therefore, the workings of that power are more obvious. In looking at the minutiae of power systems from the outset, the genealogist can then trace the relationship of local systems of power to more centralised systems of power. Essentially, genealogy maps the emergence of local power strategies at the periphery of disciplines, tracing the ways these local interests contribute and prop up larger crystallisations of power such as the State.

Genealogists commence their charting of power systems from the periphery of the network - at the level of individual magnets - because they visualise power as arising from local needs in particular conditions (Davidson, 1996). These gradually form complex structures of support with other local needs and power configurations. Power only has direction however, in the sense that its components are a cumulative set of actions upon actions (Prado, 2000). Furthermore, each strand in a power network retains its individual distinctiveness. For example, in the discourses of
breast cancer, disciplines such as sociology, psychiatry, psychology, medicine, pharmacology, theology and law all support each other but retain their own disciplinary interest in the interplay. Disciplinary power systems dominate when many individuals are aligned to the same practice, knowledge or outcome. This is exemplified by the influence of the medical model within the current health system. Larger scale structures of power depend on others acting in concert with them, and when this occurs, power is invisible. Because disciplinary power is so dependent on these alignments, a genealogist would argue that it isn’t possible to simply remove the power from a given discipline and hand it over to the subjects. For example, it is not feasible to take the control of breast cancer care away from doctors and hand it over to the patients. In Foucaultian terms, that power is not in fact the possession of the doctors - it is relational, invested and transmitted through all the social groups associated with cancer care. All involved in cancer care – patient, oncology nurses, surgeons, radiation oncologists, medical oncologists, the pharmaceutical companies producing cytotoxic drugs, the pastoral carers and social workers - are the conduits of disciplinary power and all of them are the subjects of that power.

In relation to the management of individuals and groups by a given society, the genealogist is primarily concerned with what Foucault called biopolitics (Hewitt, 1991; Rabinow, 1994). Biopolitics foster the growth and care of the population and are manifest in institutions such as schools, prisons and hospitals. It is a strategic alignment between the sciences, law, medicine, psychiatry and sociology. These disciplines form structures of power that manage people in order to produce a stable social body. Their alliance views disease as central to economic processes and therefore legitimately subject to State and disciplinary control. It has two main techniques: those such as mass screening for cancer campaigns, which are used to manage large population sets; and techniques of disciplinary power which focus on the management of the individual body, such as chemotherapy. Biopolitics render the individual body an object to be manipulated and controlled, forging a docile body that can be used, transformed and improved for the benefit of society. Genealogists characterise the ideology of cancer prevention, for example, as a
refined technique of biopolitics. To the genealogist, the ‘Slip, Slop, Slap’ campaign to prevent skin cancer is in fact a promotion of the norms of healthy behaviour and self discipline which subtly interfere with individual choice (Gastaldo, 1997). In effect, it is a tool that produces the healthy behaviours desired by the disciplines and ultimately, the government. The uptake of these behaviours by individuals is discussed in relation to the ethics of the self.

The ethics of the self
Foucault’s conception of ethics differs from traditional conceptions of ethics that focus upon right and wrong. Much of Foucault’s later, unfinished project examined how people make themselves subjects and how people transcend these subjectivities. He concentrated on those practices which individuals choose to govern and transform themselves, which for example, allowed them to attain happiness or health (Davidson, 1996). Foucaultian scholars, therefore, not only explore the subjectification of people through the practices imposed by the health disciplines - for example the practices of medicine in The Birth of the Clinic. They also explore how individuals become more active participants in their own control and acquiesce to the manipulation of their bodies, minds and behaviour in order to improve their health. A significant Foucaultian assumption is that power can only be exercised on free subjects who choose to submit to such manipulation, and who bring to their subjectification an element of self-understanding that they allow an external authority to mediate. In a world that is saturated with expert knowledge, it has become a moral (ethical) choice to adopt the tenets of this knowledge as a responsible citizen and to use it – by improving one’s own health, mind and situation - so one can contribute to society. In Foucaultian terms, the individual who has gained access to their inner essence through practices of the self (ethics), is both an object of pleasure and in control - a transcendent and healthy being (Foucault, 1986a).
Achieving authenticity in discourse analysis

Humanism and post-modern philosophy have successfully challenged the influence of positivism on research by recognizing that the relationship between the researcher and the researched, whether conducted in the empirical, interpretive or critical paradigm, is always interactive and unique, and influenced by socio-historical issues of the time (Knafl, 1994). Therefore, the notion of reproducibility has no credence with non-positivist researchers, and authenticity is the desired goal instead. Given that a Foucaultian analysis is based on the post-modern assumption that there are no universal truths and that every analysis regardless of paradigm is unique, claims of reproducibility are irrelevant. So long as the historian places the analysis firmly within its time and place, examining discourses for their contemporary social function and what this meant for the personal practice of the individual clinician, the historian is consistent with their research aim, their method and paradigm of choice. Another way of expressing this is that from the Foucaultian point of view, individual interpretations have as much power to inform the care of breast cancer patients as larger-scale ideologies formulated by health systems. The Foucaultian approach is founded on a respect for difference and the notion that an event needs these multiple individual viewpoints to know the one reality. It would be simplistic in the extreme to assert that this single interpretation of a complex disciplinary issue can account for the plurality of discourses and the modes of power that characterise disciplinary politics. It is also simplistic, therefore, to insist that this interpretation be consistently reproducible.

The historian of the present recognises the inherent non-reproducibility of the research by explicitly stating their relationship with the research, which was undertaken in the Introduction. I will also state that this dissertation will be one discourse in the plurality of discourses contributing to the present reality of breast cancer care. It will be acknowledged throughout that it offers just one version of that reality.
Conclusion to the methodology

To summarise, Foucault developed a variety of ideas for the analysis of disciplinary history. Historians of the present familiarise themselves with the archive then choose the specific Foucaultian tools that strike them as best fit for their purpose. The tools that are applied here include the archaeological ideas of discontinuity, discipline, the gaze, normalising judgements and to a lesser extent, some aspects of power/knowledge and the ethics of the self. These tools will be applied to an analytic framework constructed around the surgical modes of consciousness delineated by Foucault.

There are also several general rules that inform a Foucaultian history of the present and the selection of texts for analysis. According to Kendall these have been clearly articulated as:

1. The use of archival discourse to unsettle claims about the naturalness of the present day practice or object under scrutiny (Kendall, 2001). Studying discursive formations requires a double reduction: bracketing the truth claims of the discourse, and bracketing the meaning claims. The historian must therefore remain neutral as to whether the truth claims make sense in terms of the current ideology (Dreyfus & Rabinow, 1982b).

2. Description of discourse rather than sustained interpretation or a search for the ultimate truth or meaning of breast cancer. A history of the present definitely does not seek to discover something new, or to determine the overarching rules that influence the spirit of the age (Kendall, 2001).

3. The examination of programmatic texts that seek to impose order within a chaotic field (Kendall, 2001). In this dissertation, these are the gold standard texts of valorised authorities like Galen and Wiseman, which summarised the state of knowledge at the time and ensured there was no more to say on the subject for some time.

4. The examination of texts where a concept is enunciated for the first time: when a practice or object or concept becomes thinkable. This involves the unearthing of a discontinuity, where something very different from what went before emerges.
Methodology: The Foucaultian History of the Present

(Kendall, 2001). These are generally those texts that are recognised by the disciplines as revolutionary, such as the writings of Bichat that are used as examples in this thesis.

5. Finally, a history of the present entails the search for “series, division, differences of temporality and level, forms of continuity and mutation, particular types of transitions and events, possible relations and so on... [It] opens up an attention to detail, grain and complexity” rather than imposing a homogenous network of relations and notions of cause and effect (Dean, 1994, p.93).

A history of the present is not what Canguilhem called a history of the referent (Osborne, 1991). So in writing this history of breast cancer, I will not begin by writing a traditional history that privileges one understanding of the disease over another; or which lionises the succession of admirable figures who have contributed to the steady progression of our contemporary and ‘true’ understanding of breast cancer. Neither will I go on to expose the shortcomings of one surgical practice in comparison with a more ‘advanced’ modern approach to the management of the disease, or champion one of the older techniques in the archive. Rather, this history of breast cancer begins by concentrating on critical modalities, which open those spaces where breast cancer is perceived as a problem and where the surgical rationality underlying the problem is made clear (Foucault, 1989). The dissertation goes on, in the section exploring enunciative modalities, to tease out how that problematisation and rationality came to be. I conclude with a discussion of both the tangible results of those rationalities (practical modalities) and the implicit surgical truths underlying all forms of surgical consciousness with regard to the disease (analytic modalities).
OVERVIEW OF THEORIES OF DISEASE AND THEIR RELATIONSHIP TO THE CRITICAL MODALITIES OF BREAST CANCER

For a problem like breast cancer to be manageable, it must first be knowable. The critical mode of surgical consciousness establishes what can be known about a disease; it is therefore a style of thought that highlights particular aspects of breast cancer and constructs them in certain ways. Analysis of the critical modalities within the surgical archive establishes what is visible, sayable and do-able in relation to breast cancer. Critical modalities establish that, within a given professional culture, breast cancer actually exists. They affirm that it can be clearly defined and differentiated by surgeons as breast cancer, and that it is not confused with another condition. In addition, critical modalities also explain why breast cancer occurs, and these explanations of its genesis assist surgeons to formulate solutions to the problems it poses.

The critical modalities of breast cancer have varied between times and cultures, so definitions and explanations of the disease have also varied. For example, this section will demonstrate that definitions of breast tumours in the 17th century oncology archive are not necessarily recognisable in terms of current criteria; yet breast cancer undoubtedly existed according to the criteria of that time and was treated as such according to the medico-surgical norms of the day. Moreover, even within the same time frame and within the same general disciplinary culture of health care, competing discourses may define and explain breast cancer differently.

There are three main theories of disease evident before 1900 that allowed surgeons to define breast cancer; to establish that it was present within the woman’s body; and to explain its aetiology. These theories established the conditions for current conceptions of the disease. Consistent with Foucault’s notions of continuity and discontinuity with regard to disciplinary discourses, these theories often co-existed during this timeframe, absorbing useful elements from each other and appropriating these for their own purposes; while at other times they competed with each other for
dominance. For the purposes of this thesis, they are classified as theories derived from:

1. Galenic humoral theory. Humoral theory was established in the West by writers of the Hippocratic tradition in ancient Greece, and was further elaborated and codified in Western tradition by the ancient Roman physician Galen. Galenic humoralism subsequently dominated Western medicine for nearly two millennia; persisting in attenuated form until the mid-nineteenth century. In Galenic medicine, the body contained humors or bodily fluids that in health were in optimal balance. Illness was caused by an excess or deficiency in one or more of these humors. In order to understand the complex explanations of breast cancer within the surgical discourse, particularly those between 1600 and 1850, it is necessary to thoroughly understand the principles of ancient humoral doctrine.

2. Theories derived from the study of gross (macroscopic) anatomy. The approximately two hundred year period in the surgical archive that witnessed the privileging of knowledge derived from the study of gross anatomy is characterised by the fitful abandonment of Galenic humoral explanations of disease; the concurrent development of theories derived from anatomical dissection; and the abrupt advent and co-existence of knowledge derived from microscopy. Theories derived from the study of macroscopic tissue obtained at autopsy briefly dominated medical discourse by the early 19th century due to the work of practitioners such as Bichat and Laennec; yet over the two centuries that gross tissue theories are evident, variants of humoral theory were never entirely discarded. Consistent with Foucault’s proposition that continuities as well as discontinuities are evident in the evolution of disciplinary discourses, the transitional nature of theories derived from developments in gross tissue pathology is emphasised by their many similarities to humoral theory, especially the emphasis upon acidity, acrimony, corrosion, stasis and coagulation of bodily fluids such as lymph and blood.
3. Theories derived from the study of microscopic anatomy. These theories were aided by the contingent refinement of the microscope, which had actually been available for some time prior to the eruption of microscopic pathology into medical consciousness in the mid-1800s. Cellular theory absorbed many concepts from gross tissue theory and some from humoral theory. It came to dominate surgical and medical thinking in the early 20th century. The primacy of cellular theory is threatened currently by those who subscribe to the doctrine of multiple aetiologies of causation – particularly those who emphasise the synergy of genetic, immunological and environmental factors.

So the first task of this history is to explore the area of concepts, such as humors, tissues and cells, and the rationalities underlying these concepts. The aim of the following three chapters is therefore to unearth the three significant critical modalities – the definitions and explanations of breast cancer – that contributed to the Western surgical archive to 1900, and which helped establish the conditions for post-modern conceptions of breast cancer.
CHAPTER 3. CRITICAL MODALITY: HUMORAL EXPLANATIONS OF BREAST CANCER

Overview of the doctrine of the humors

Humoral theory, particularly the humoral theory of Galen, dominated Western medical and surgical thought from the 2nd century AD. The primary concepts of humoral doctrine can be traced to ancient China, India and Egypt (El Ansary, Steigerwald, & Esser, 2003; Haddow, 1936; Zimmerman, 2003). It is not known when they reached ancient Greece, or whether they developed there separately. These ancient explanations of health and disease were all based upon notions of bodily equilibrium, predicating health as the balance of the vital bodily forces or elements usually known as humors. These systems posited the body as existing in a constant state of flux, with bodily equilibrium strongly influenced by internal and external factors such as diet, environment, personality, predisposition and supernatural forces (Helman, 2001; Porter, 1997). It followed that ill health was the imbalance of two or more vital elements, due to alterations in these various internal and external factors. The role of the healer was to preserve or to restore bodily equilibrium.

In the West, Hippocrates elaborated these concepts into a medical system around 400BC. This system was a coherent explanation of the dark interior of the human body in the absence of direct access to its inner workings, because Hippocratic physicians did not practise human or even formal animal dissection (Grmek, 1998). Roman physicians embellished this system in succeeding centuries. The number of variations of humoral theory extant by the Roman period prior to Galen is confusing, as it elaborated the original Hippocratic corpus with various elements of Roman thought such as atomism, in addition to knowledge gained from the development of the practice of animal dissection. For the sake of simplicity, medical historians

---

6 See p. 53-54 and p. 92 for more detail on atomism.
accept two general categories of humoral doctrine, which were ultimately codified into its authoritative form by the Roman physician Galen around 200AD (Grmek, 1998). These are the qualities and substance model, derived from the teachings of Hippocrates, Plato, Empedocles and Aristotle; and the particle and void (atomist) model based on the teachings of Democritus of Abdera and Asclepiades of Bithynia.

In the qualities and substance model, bodily forces assumed two inter-related forms:

1. The two pairs of contrary qualities
   - Hot (exemplified by blood) and cold (exemplified by black bile)
   - Wet (exemplified by phlegm) and dry (exemplified by yellow bile)

2. The four root substances – fire, air, earth and water - which are the physical manifestations of the contrary qualities and humors. Fire was represented by blood; water by phlegm; air by yellow bile; and earth by black bile (Flemming, 2000).

The particle and void (or atomist) model was compatible with the qualities and substances model, and was subsequently subsumed into Galenic humoral doctrine. It proposed that the universe and all things within it, including human beings, were composed of invisible elements, which were spatially separate but constantly moving and interacting. The properties of all things, including fluids and humors, were dependent on the shape, weight, position and size of their individual particles (Flemming, 2000). Between each particle (or collection of particles), was a network of tiny interstices through which percolated body fluids, themselves composed of tiny particles. Incongruities between the diameter of these pores and the size of the fluid particles would either accelerate or impede the flow of bodily fluids – resulting in fluid imbalance and subsequent disease (de Moulin, 1983).

Both of these models assumed the human body contained active agents of somatic activity – variously named atoms, vapours or humors - that moved through passive solid structures such as organs. The organs were more complex structures that comprised aggregates of these elemental agents. Whether the practitioner subscribed
to the atomist or the classical humoral doctrine, there was always a contrast between the static, immobile solid structure and the dynamism and mutability of the liquid, vapour or atom. It is this activity that accounted for changes in homeostasis (Jouanne, 1998). Whatever their elemental composition, when properly balanced within the body, these humors, and their inherent qualities, formed an elegant matrix of binary opposites that allowed ancient Graeco-Roman physicians and those who followed them to propose a sophisticated, consistent yet versatile explanatory system for those educated in its principles (Porter, 1997). Figure 1 is a representation of this matrix.

The four cardinal humors

By the time of Galen, humoralism viewed the human body as a fluid entity, proposing that the source of all life is the fluid within living beings (Flemming, 2000; Porter, 1997). In plants, this is sap; in humans, it comprised fluids known
collectively as the humors. Humoralists believed that the living body and all of its constituent parts were the product of a combination of a few basic substances – the *humores cardinales* (Virchow, 1962f). The four cardinal humors in the Galenic system that eventually dominated humoral doctrine were blood, phlegm, yellow bile and black bile. *On the Natural Faculties* and *On the Nature of Man* illuminate their role and function (Galen, c.200A.D.; Hippocrates, c.400B.C.-c).

Blood was the humor considered most essential for life. In addition to being a humor in its own right, blood also functioned as a transport mechanism for the other humors, distributing them where they were required and carrying off their excess. It also carried other diverse elements necessary for life. Blood was mixed in the lungs, for example, with atmospheric air to both cool the overheated body and to form, in combination with the blood, the pneuma or vital spirits that propelled the blood and the nutriment it contained through the rest of the body (Hippocrates, c.400B.C.-c; Porter, 1997).

The other humors, due to their inherent qualities, were necessary to maintain balance within the body and were always present in smaller quantities than blood in the healthy body. Unlike blood, however, they were usually visible only in illness (Galen, c.200A.D.). For example, cool moist phlegm was vital to temper the heat produced by the body, but was generally seen only when the individual had an excess of phlegm in conditions such as influenza. The desiccating properties of yellow bile and the earthy qualities of black bile were similarly vital for normal function, but often became apparent only when the individual was ill from an excess of these humors, necessitating expulsion by way of vomiting or diarrhoea (Porter, 1997).

Black bile, also called the atrabiliary humor, was the most problematic of the humors and the one most commonly implicated in the development of breast cancer over succeeding centuries. While black bile was necessary to life in some quantity, unless it was maintained in perfect balance it was prone to form obstructions or to
ferment within the body, resulting in stagnation or an acrimony of the fluids that was detrimental to physical and emotional functioning (Galen, c.200A.D.; Zimmerman, 2003). There appeared to be several ways that black bile could stagnate or ferment within the body. These include dysfunction of the spleen, which was the organ believed to absorb excess black bile; dysfunction of the liver, which in health purified the blood that contained black bile; a general febrile state, as in malaria, that literally cooked the black bile and led to secondary atrabiliary ferment and putrefaction; or blockages in bodily structures such as mammary ducts that led to an accumulation of black bile in the breast and sometimes a backlog into other organs. Galen noted that regardless of the cause of atrabiliary surplus, when black bile is present in excess:

> it becomes sharp like vinegar and corrodes the animal’s body … and it produces a kind of fermentation and seething, accompanied by bubbles – an abnormal putrefaction having become added to the natural condition of the black humor (Galen, c.200A.D.Book 2).

So while all the humors were considered essential for life, their surplus or stasis upset bodily equilibrium, resulting in ill health. Accumulations of black bile, singly or in combination with blood, were deemed the most harmful. It was believed that the body expelled black bile naturally by way of nosebleeds and menstruation. The practice of bloodletting by way of venesection\(^7\), cupping\(^8\), and leeching\(^9\) was developed where for some reason the body was incapable of achieving this naturally.

**The role of the environment in humoral theory**

The humoral conception of the body posited it as inseparable from the cosmos. Both were saturated with identical atoms or elements, pneumata and humors. It followed

\(^7\) Accessing a vein to draw blood  
\(^8\) The application of heated glass cups that created suction, and therefore raised the blood to the surface of the skin  
\(^9\) The application of leeches to draw blood
that the air that humans breathed, the food that they ingested, and the location in which they lived, were one and the same (Flemming, 2000). This made individuals extremely vulnerable to environmental and cosmic influences, because the inherently dynamic and unstable nature of the fluid and gaseous components of the human body meant that the body itself was subject to change from a range of causes both internal and external to the body (Jouanne, 1998).

The humoral doctrine viewed seasonal change in particular as synonymous with changes in bodily equilibrium. This was because the inter-relationship of man and climate meant changes in ambient temperature and humidity resulted in alterations in the relative quantity of humors within the body. For example, in the Mediterranean climate where the Galenic doctrine originated, in the cold and damp of winter the frigid humor phlegm predominated. This was succeeded in spring, which was rainy and warm, by a preponderance of hot moist blood. The transition to summer resulted in the dominance of hot, dry yellow bile that mutated to dry, cool black bile with the advent of autumn (Hippocrates, c.400B.C.-b, c.400B.C.-c). Indeed, the prevailing climate so strongly influenced the genesis of illness that an understanding of local seasonal and environmental conditions conferred upon Hippocratic physicians an unprecedented understanding of local disease states (Hippocrates, c.400B.C.-b). Porter suggests that this is one of the rationales for the custom of distant diagnosis that developed in subsequent centuries (Porter, 1997).

**Indicators of humoral imbalance**

The consanguinity of individual, environment and cosmos within the humoral worldview meant that practitioners within this tradition did not view illnesses as entities in their own right. A specific disease, like malaria, would be named as such for convenience, but its existence was determined by the qualities and elements involved, and the symbiosis of these with multiple factors such as the unique physical structures of the person who developed it, the balance of these structures, the interactions between the person’s physical structure and their emotions, the surrounding climate, their diet and their exercise regimen (Nuttall, 1983).
demonstrates this well. For example, while no individual ever possessed any of the
humors in their purest form, those with a preponderance of blood exhibited a
sanguine temperament, florid aspect and a propensity to febrile illness. Those with
an excess of phlegm tended to be emotionally sluggish individuals with cold, white
complexions and a tendency to chest infections and other inflammatory conditions.
Individuals with a surplus of yellow bile had choleric personalities with sallow skin
and a predisposition to gastric complaints. Those with a surfeit of black bile were
melancholy individuals with dull complexions and a tendency to develop cancer
(Galen, c.200A.D.). As Chapter 6 will demonstrate, the humoral physician, using
indicators gleaned from appraisal of their patient’s daily regimen, temperament,
habitation, appearance and symptoms formed a careful profile of the humors
involved in potential or actual illness. Subsequent treatment aimed to equalise the
surfeit or insufficiency of the relevant humor to either prevent ill health or restore
the equilibrium of the patient.

**The role of organs in humoral theory**

Fluids or humors were not the only element in this complex system – the flow of
bodily humors must be initiated, and once initiated, contained within the organism.
Humoral doctrine attributed these functions to the organs. So while the humors were
considered the *a priori*, active, vital element of the living organism without which
life was not possible, organs were conceived as relatively passive humoral siphoning
mechanisms and structures for their containment. There were notable exceptions to
this notion: for example, the brain initiated the flow of humors; and the liver purified
the humors and was responsible for the generation of blood in some variations of the
theory (Jouanne, 1998).

The shape and composition of the organs determined their function with regard to
humors. The hollow organs, such as the bladder and uterus, passively attracted
excess humors so that they could be collected and eventually expelled. In contrast,
the spongy, porous organs were the most capable of absorbing the humors and
storing them for an extended time. These included such structures as the breasts, the lungs and the spleen (Jouanne, 1998).

**Humoral explanations of disease causation**

Dominant notions of humoral homeostasis determined the way Western practitioners defined, explained and treated illness for centuries – and in some forms, these notions still have resonance for contemporary practitioners in the field. For example, Galenic theory cites three conditions that must be present before an illness can develop; conditions which are remarkably similar to the generic conditions that are believed to contribute to many illnesses today. According to Nuttall (Nuttall, 1983), these Galenic precursors are:

1. *Causa procatartica* – an initial factor comprising something external to the person, such as a blow, tight garments, excessive heat and cold, or seasonal change, which resulted in harmful changes in the humors of the body. A contemporary example is exposure to nuclear radiation that can initiate the cancer process in the human body.

2. *Causa antecedens* – an inherent tendency or predisposition of the body to be affected by a disease. Galen used the example of some people being more prone to catch cold or develop heat stroke than others. Contemporary equivalents of this notion are disease models based on the notion of hereditary chromosomal and genetic abnormalities, including certain forms of heritable breast cancer.

3. *Causa contentiva* – the ‘cohesive’ cause that is brought about by the first two precursors acting either singly or in concert on a specific organ or bodily part to prevent it from performing its proper function. It is the result of the first two precursors, alone or in concert, which actually causes the disease. For example, with regard to pneumonia, exposure to external cold may result in an imbalance of humoral phlegm within the lungs. Similarly, the individual might have a predisposition to lung infections. Ultimately however it is the *causa contentiva* – the excess of the phlegmatic humor - not the actual exposure to cold or the predisposition to develop lung infections, that actively causes the disease.
Humoral theory and breast cancer

Definitions

Documents from ancient Egypt and Nineveh, and the number of votive offerings of female torsos, with retracted nipples and obviously cancerous breast tumours, excavated from healing temples in Ancient Greece indicate that breast cancer has been recognised as a discrete entity for centuries (Breasted, 1930; Haddow, 1936; Strouhal, 1976). However, humoral medicine recognised illness patterns rather than diseases as ontological entities, a practice reinforced by the Galenic practitioner’s categorisation of diseases within a botanical taxonomy known as species or classificatory medicine (Foucault, 1973; Porter, 1997; Pouchelle, 1990). As a result, many classifications of disease within species medicine – especially those classified as cancer - may appear outlandish to the 21st century health practitioner; for while these classifications were perfectly acceptable and wonderfully versatile for the practitioners who developed them, they are often incongruent with diagnoses and definitions developed in recent times. As humoral definitions of breast cancer may not be consistent with 21st century definitions, it is necessary to develop an understanding of species medicine in order to tease out what is, and what is not, a case of breast cancer for the purposes of this thesis.

Species medicine implied that, regardless of how complex the illness appeared in a given individual, it was always related to essences whose increasing generality as one moved from the periphery to the centre of the classificatory hierarchy implied an increasing simplicity (Foucault, 1973). Within the botanical taxonomy, the practitioner moved along the disease hierarchy from the individual manifestation of the disease on the periphery towards its essential essence, and it was this movement towards general essences that enhanced the ease of diagnosis and elucidated the treatment. So species medicine implied that the actual, immediate disease, attended as it was by all the muddling phenomena of modification in a given individual, was on the entangled periphery of the tree. This meant that individual manifestations of disease at the periphery were much more complex than the next, less peripheral, branch of the hierarchy (the species); and this in turn was more complex than the
next branch (the class). Classes in turn were branches of genera, which were the ultimate, and least complex, category in the classificatory tree. Genera contained all of the small number of elements, endlessly and variously repeated within the increasingly tangled branches of the taxonomy, that were essential in every individual case of illness (Foucault, 1973).

An example of a genus within this taxonomy is the genus of wounds, which included the cancers at its periphery. The surgeon de Mondeville, writing in early 14th century France, explained that the genus of wounds contained all of the elements of every smaller branch that emanated from it, and that the generic element essential to all wounds was a break in continuity of the tissue:

the solution of continuity is the genus for all wounds; the wound is the genus for cuts and ulcers, the ulcer for internal or open ulcers and their various species as well as for the fistula and the cancer (Pouchelle, 1990, p. 143).

De Mondeville also commented upon both the advantages and disadvantages of the early 14th century practice of classifying diseases into genera and species. He noted that genera and species should not be concrete realities for those who used them. Like all classificatory systems, their utility was in their capacity to apply labels that clarified disease entities and, therefore, their means of treatment according to the humoral doctrine of the time. De Mondeville also argued that consistency was required in the development of these classifications, to avoid confusion amongst practitioners at the time. He remarked that the terms aposthume, dubeluch, tumour, eminence, elevation, enlarging and unnatural swelling, were seven synonymous terms designating the same thing in his time. That is, they belonged to the genus of aposthumes, which had many species, including abscesses, pimples and pustules as well as cancer (Pouchelle, 1990).

De Mondeville’s assessment of the bewildering variety of terminology remained valid for centuries, for by the close of the eighteenth century, there was still much
confusion amongst surgeons and physicians as to the exact definition of cancerous tumours and their aetiology. There was, for example, a distinction that did not appear in nosological tables but nonetheless had persisted since Roman times – that of occult (hidden or latent) and ulcerated (or fungating) cancer (Haagensen, 1933). The writings of Celsus appear to be the impetus for this categorisation, for he provided a clinical picture of cancer that distinguished four stages, which unfortunately he did not explain very clearly (de Moulin, 1983):

1. *Cacoethes*\(^{10}\)
2. Carcinoma without ulcer
3. Ulcerated cancer
4. Thymium – a growth that resembled the flowers of thyme and bled very easily.

It is likely that the first stage, *cacoethes*, was possibly a scirrhus or a cancer that could not yet be visualised or palpated, was the forerunner of the classification of occult cancer that persisted in subsequent centuries, and which Wiseman discussed at length:

---

10 Literally ‘ill habit’
those affecting the Breast I have palliated a long time with easie Remedies. If any man will, instead of mild or occult Cancers, call them Scirrhous Cancers, I shall not gainsay him (Wiseman, 1676, p.99).

With regard to the confusion such fine distinctions generated, the surgeon Pearson noted in 1793 that:

While we remain unfurnished with authentick standards by which all observations may be examined, it ought not to excite any surprise, if the same name be assigned to two complaints, the histories of which are repugnant to each other; or if opposite modes of treatment be directed for diseases that bear a common appellation. To this want of discriminative principles it may be ascribed, that simple facts have been often perplexed by the subtilty of specious distinctions, and that the mind has been bewildered by the minute ramifications of genera and species: it may also be imputed that the same defect, that affinities have been so frequently discovered, and resemblances traced, where nature had impressed an incompatible disparity (Pearson, 1793, p.v).

Pearson’s chief criticism was that species medicine and its classificatory offshoots sought resemblances among lesions rather than differences, and ultimately furnished only the names and common characters of diseases. His solution, taken up in succeeding decades, was to leave the nosologists to their endless debate regarding whether cancer:

ought to stand in the class of cachexiae or locales; let us pursue a more interesting object, and endeavour to ascertain, by what signs the Cancer may be distinguished from all other diseases (Pearson, 1793, p.ix).

Pearson’s critique of cancer terminology used in his own time is a warning to contemporary analysts that they should approach the surgical archive with caution.
Until the early nineteenth century, cancer and tumours were merely species within a much broader genus of general inflammations or wounds, and depending on the affiliation and training of the practitioner; these species were interchangeable. They were not defined as they are today in terms of cell origin, degree of differentiation from the parent cell or extent of infiltration. For this reason, most definitions of tumour and cancer within the botanical taxonomy did not distinguish between what are today classified as neoplastic growths, and a variety of inflammatory conditions, localised oedemas, boils, sinuses, ulcers and gangrene (Cantor, 1993). All of these things could be called a tumour. This means it is not uncommon to read older case studies describing “breast cancer” that clearly depict conditions the 21st century clinician recognises as non-cancerous mastitis or fibrocystic disease, rather than benign or malignant tumours of the breast.

So the difficulty for the modern historian, as it was for Pearson in the late eighteenth century, is to establish that a breast tumour within the surgical archive is clearly cancerous in the 21st century conception of the term. Before this can be achieved, one further distinction must be made. The terms scirrhus and cancer, which in the archive are often used synonymously, must also be clarified for the purposes of this thesis.

**Scirrhus and true cancer**

Scirrhi within the botanical taxonomy appear to be what we understand today as benign cancers and pre-cancerous tumours – generally harmless, non-fatal tumours that remained encapsulated and did not metastasise to other parts of the body, but which had the potential to do so for various reasons (Baum, 1986; Cantor, 1993; Scotto & Bailar, 1969). Galen defined scirrhi as hard and heavy tumours, immovable and painless (de Moulin, 1983). Contemporary equivalents include basal cell carcinomas of the skin, which can be harmless but which are potentially malignant when exposed to certain conditions, and are therefore removed prophylactically.
Scirrhi developed for the same reasons as other species of the tumour genus – trauma, predisposition, seasonal change, mastitis and so on (Wiseman, 1676). The obstructed humor involved in scirrhi, however, was not necessarily black bile. It could be any of the other humors, and therefore scirrhi were not especially carcinogenic. Moreover, general good health and youth could offset their malignant propensities if they happened to have an atrabilious origin. Norford’s comments on this issue are representative of many surgeons influenced by humoral theory:

But this I have observed, that, in young and healthy Subjects, a Scirrhus will remain Years without any Inconveniency, unless seated on a Part where it becomes troublesome by its mere Bulk or Pressure on adjacent Parts (Norford, 1753, p. 65).

The danger of any scirrhus, whether made of black bile or not, was that if the obstruction around it was not cleared, or if it was damaged in any way, the flow of the atrabiliary humor could eventually become impeded within the breast, thus giving rise to cancer:

by ill handling or increase of Acrimony, they frequently terminate in raging Cancers, and torment the Patient with exquisite darting pains (Wiseman, 1676, p. 99).

A Scirrhus … is not always the Fore-runner of a Cancer, tho’ it frequently may be so; and tho’ these Tumours are hard to disperse, yet this Difficulty arises not from the Tumour being of a cancerous Disposition, but because the Matter of the Swelling lies beyond, or out of the power of the circulation, to remove (Norford, 1753, p. 66).

A true, or exquisite, breast scirrhus on the other hand was malignant from the moment of its inception. Moreover, an excess of bitter black bile always caused it (Cantor, 1993; Pearson, 1793; Wiseman, 1676). One of the proofs of the
Acrimonious origin of breast cancer, for example, was the presence of a bitter taste (acrimony) in the mouth reported by breast cancer patients (de Moulin, 1983). The definitions peppered throughout many humoral treatises provide a picture of true scirrhus of the breast that are indistinguishable from 21st century descriptions, and make it apparent that malignant breast cancer has been recognisable as breast cancer since Hippocrates at least, regardless of the vagaries of classification. For example:

Cancer is the name of a tumour arising as it is thought from an adust or atrabilious Humor. It is round, unequally hard, and if not inflamed of a livid or brown colour, with exquisite pricking pain: the Veins appear turgid in the Skin upon the surface of the Tumour (Wiseman, 1676, p.98).

The factor that ultimately distinguished a benign from a true scirrhus, and established it definitively as cancer, was its incurability:

The true or exquisite Scirrhus, being altogether without cease admits of no Cure. The reason is, because the induration of the Part is so great, that it will not open to receive the free afflux of Bloud into it, but keeps its own hardness despite all Applications, and thereby the use of Medicaments is rendered ineffectual (Wiseman, 1676, p.91).

Humoral explanations of breast cancer

_Causa procatartica – external initiators_

_Environmental exposure_

Although there had always been theorisation about the role of environmental toxins in carcinogenesis since Hippocrates, a specific environmental carcinogen was not documented until the late 18th century, and not quantified until 1916, when Yamigiwa and Ichikawa experimentally induced cancer in rabbits by exposing them to tar (de Moulin, 1983; Sebastian, 2000). The surgeon Percivall Pott, working within the humoral model, identified the first indisputable environmental carcinogen in young chimney sweeps towards the end of the eighteenth century. He had
investigated the tendency of these young men to develop scrotal cancer, which he believed, after compiling an extensive series of case studies, was the result of occupational exposure to chimney soot. He clearly identified that unlike the humoral derangement that caused breast cancer in older women and prostate cancer in older men, in younger people a specific environmental carcinogen was the likely initiator (Pott, 1775).

Humoral theorisation about environmental aetiology did not construct the level of specificity of subsequent theories. Humoralists did not identify, for example, the role of discrete chemical, radiation or hormonal toxins in the development of cancer; and Pott could not know that it was specifically the tars in soot that initiated carcinogenesis and not the soot as such. Instead, environmental mediators of cancer cited by humoralists were of a diffuse nature. They included fluctuations in climate, contagion, trauma (including ill-advised surgical treatment), the exposure of scirrhi to air, and diet (de Moulin, 1983).

The role of the prevailing climate in the initiation of breast cancer was explained by the doctrine of mutation, which was discussed in the Hippocratic treatise *On the Nature of Man*. The doctrine of mutation posited that one disease could transform into another through mutation of the humors. The emphasis in the treatise of the consanguinity of quality, substance, individual and environment grounded the notion that the relative quantities of the humors varied according to the season, and that the body was actually recomposed by seasonal variations in ambient climate (Hippocrates, c.400B.C.-c). Accordingly, a body did not simply sustain fluctuations in temperature or humidity; it actively adapted to change by reorchestrating the structure and balance of its humors. The body was in fact recomposed by exposure to the environment (Dean-Jones, 1994). Hence, in springtime, phlegm did not just heat up; it was transformed into or replaced by hot blood. Similarly, in autumn, blood did not simply cool down; it was actually replaced by, or mutated into, frigid black bile. As each transformation occurred, the body was exposed to an abundance
of the respective humors; hence it was more prone to diseases caused by those humors.

The most commonly cited examples of the doctrine of mutation within the surgical archive are the transformation of scrofulous tumours (attributed to excess phlegmatic humor) into cancerous tumours. Hence scrofula of the lungs (tuberculosis) was believed to mutate into lung or breast cancer. Elements of this doctrine persisted until quite recently, when it was argued that conditions like fibrocystic disease of the breast predisposed women to breast cancer. By the end of the eighteenth century, however, the doctrine of mutation was viewed with some suspicion:

The doctrine of the mutation of diseases into each other stands on a very uncertain foundation … I do not affirm that a breast which has been the seat of a mammary abscess, or a gland that has been affected by Scrofula, may not become cancerous; for they might have suffered from this disease, had no previous complaint existed; but these morbid alterations generate no greater propensity to the Cancer, than if the parts had always retained their natural condition. There is no necessary connexion between the Cancer and any other disease, nor has it ever been clearly proved, that one is convertible to the other (Pearson, 1793, p.9).

Contagion

Dedicated cancer hospitals were established towards the very end of the period dominated by humoral theory (de Moulin, 1983; Sebastian, 2000), chiefly because the inter-relationship of human and environment promoted the notion that cancer was contagious. Like lazar houses that contained the corruption of leprosy (which was also caused by accumulations of black bile), cancer hospitals contained the cancer ‘virus’. This was particularly so for ulcerating cancers, whose effluvia allowed the disease to be passed on to anyone who came into contact with it (de Moulin, 1983). A famous case related by Zacutus Lusitanus concerned a woman with breast cancer who transmitted it to three of her children; and another by Tulp
involved a maid infected with breast cancer by her mistress (Sebastian, 2000). Both case studies influenced the doctrine of contagion among lay and professional people alike by the 17th century (Pearson, 1793). That eternal sceptic Pearson disputed this notion, even though it remained markedly persistent in his time:

> Many ingenious conjectures have been proposed to the world, concerning the mode by which the Cancer contaminates; but I do not know that any author has favoured us with a series of legitimate proofs, sufficient to convince us that Cancer is actually a contagious disease (Pearson, 1793, p.19).

His counterargument, which was hard to dispute, was his observation that surgeons and their attendants were exposed frequently to the cancerous sores of their patients without developing the disease (Pearson, 1793).

**Interference with the humors**

Any factor that interfered with the natural flow of the humors was capable of initiating breast cancer. Hence blows to the breast or tight corsets consistently appear in the surgical archive as the *causa procatartica* of scirrh and cancerous tumours. The following quote from the archive is representative of this view:

> A Lady, near 40 years of age, had for a considerable time a large hardened swelling in the right breast, supposed originally to have arisen from an accidental blow; it had not been much noticed for some years, as it had not occasioned pain (Rowley, 1779, p.10).

Blows to the breast were not the only traumas associated with breast cancer; surgical trauma associated with an existing tumour was another commonly cited *causa procatartica*. Surgical interference with breast tumours was considered a risk factor by some practitioners because of the humoral doctrine of translation. The basis of this doctrine was that where a tumour existed, it was due to an excess of black bile; and the tumour itself was an outlet for this excess that drew it away from other parts
of the body. In these circumstances, the tumour should be let well alone – removal or other surgical trauma would only translate the harmful humor elsewhere in the woman’s body, causing the appearance of the cancer elsewhere and further unpredictable problems (Norford, 1753; Pearson, 1793). There was some debate concerning exactly where the harmful humor was translated. Norford and Rowley believed that interference translated the cancers to other glands:

The right breast had been taken off by the knife, about one year before at St. George’s Hospital; the wound afterward healed; but the disorder being transferred to the other sound breast, which is no uncommon thing where the amputation is performed, caused great pain and inflammation (Rowley, 1779, p.22).

When the vitiated Humors … are translated to the Glands, I look upon that Translation as an Endeavour of Nature for the critical Discharge of them (Norford, 1753, p. 103).

Pearson, on the other hand, believed surgical excision of the cancer resulted not only in its translation to the glands, but also to the joints, viscera, bladder and genitals (Pearson, 1793). Regardless of where it appeared, the prognosis in a case of translated breast tumour was consistently bleak. The lecture series of the influential surgeon Monro exhibited this nihilism:

The Disease does not always return to the Part where the former Tumour was taken away; but more frequently in the Neighbourhood, and sometimes at a considerable Distance. Upon a Return, the Disease in those I saw was more violent, and made a much quicker progress than it did in others to whom no Operation had been performed (Monro cited in Wright-St.Clair, 1964, p. 45).

The resemblances between the doctrine of translation and 21st century concepts of metastasis and relapse are evident in these examples, and this continuity in the
Critical Modality: Humoral Theory and Breast Cancer

discourse requires some clarification. In the 21st century, metastases are defined as secondary tumours that separate from the primary or parent tumour, and colonise in adjacent and distant parts of the body. They are of identical cellular origin to the parent tissue. So a bony metastasis of breast cancer is essentially breast tissue lodged in the skeleton – it is not a cancer of bony tissue. A lung metastasis is breast tissue lodged in the lungs – it is not a different type of cancer such as lung cancer. Once a tumour has metastasised into adjacent or distant bodily structures in this way, it is termed malignant. The danger of metastasis is that multiple tumours are seeded throughout the person’s body, and as they increase in size, they can impair vital function. For example, they can erode or place enormous pressure on surrounding organs and tissues, resulting in a range of debilitating symptoms such as pain or haemorrhage. 21st century explanations of metastasis attribute this systemic spread of the tumour to the dispersion, by blood or lymph vessels, of single cells or clusters of cells that have broken from the parent tumour.

In the humoral period, the doctrine of translation meant metastasis was conceived somewhat differently. Up until the 17th century, while it is not uncommon to find mention of enlarged and indurated axillary glands connected with malignant breast cancer, and to find them attributed to the same cause as the original breast tumour by virtue of the doctrine of translation, there is no concrete evidence that the concept of wider metastasis of the primary tumour to the viscera or bone had been explored prior to the eighteenth century (de Moulin, 1983).

The first appearance of the term ‘metastasis’ in connection with breast cancer appears in the discourse in the early eighteenth century, a time when later humoral theory was vigorously challenged by theories derived from pathological anatomy. In 1735 de Gorter used the term ‘metastasis’ for the first time, when he described cancerous matter that separated from the primary tumour and metastasised from gland to gland by way of the circulatory system (de Gorter, 1735). The anatomist le Dran subsequently described what is now understood as the path of metastases in breast cancer through both haematogenous and lymphogenous spread of cancerous
Critical Modality: Humoral Theory and Breast Cancer

deposits to the axillae, lungs, brain and skeleton (Le Dran, 1757). So later practitioners contemporaneous with late humoral theory were familiar with both the terminology and the concept by this date, if not in exact agreement about the mechanism. For example, where surgeons still subscribed to the idea that cancer was a result of the derangement of bodily humors, metastases were considered multifocal cancers at different sites rather than primary and secondary tumours (de Moulin, 1983). Alternatively, humoralists also argued that re-routing the acrimonious humor caused it to appear in other structures in the body:

It hath been commonly taught by the most respectable writers, that the Cancer is generally caused by, or at least that it is connected with a particular deprivation of some of the humors. Hence, some have supposed, that an open Cancer was a sort of outlet to the morbid matter; and that where the local affection has been extirpated and the wound completely healed, the virulent humor must either be deposited on some other part, or that, by circulating through the blood vessels, &c. it will produce some disorder in the general system … It may perhaps appear extraordinary to speak of the Cancer as a transitive disease, liable to wander from one part to another; and yet this kind of doctrine is neither new, nor entirely unsupported. Richard Wiseman has hinted at this tendency to metastasis more than once (Pearson, 1793, pp. 35-36).

Pearson himself understood metastases as offshoots of the primary breast tumour, but was aware that other authorities attributed it to a sort of internal contagion rather than deranged humors or humoral translation. In his description of a case study reported by the French surgeon Sauvages, Pearson noted that:

A woman who had a Cancer in her right breast of the bulk of a man’s head, was … during the progress of her disease … attacked with a severe and fixed pain in the middle of the right humerus. On examining the arm after death, the periosteum was found a little separated from the os humeri, at the
particular point where she had complained of the pain, and a drop of thin watery fluid was underneath it. [Sauvages then asks] whether the cancerous virus, having been deposited on this spot, had eroded it? and finally observes, that although this case be rarely seen, yet this instance is not to be regarded as a solitary one (Pearson, 1793, p.38).

Regardless of their theoretical affiliation, surgeons were also aware by this time that axillary metastases inevitably limited survival. This is evident in Rowley’s description of his disagreement with a colleague who recommended mastectomy for a patient. He believed this

would have been exceedingly cruel, and probably fatal, as no prospects of success could have been entertained, owing to the axillary affection (Rowley, 1779, p.19).

*The role of air and putrefaction*

When exposed to a range of adverse environmental conditions, a benign scirrhus had the potential to become malignant. The progression of a breast scirrhus to cancer, or of an encapsulated tumour to ulcerating cancer, was further hastened if the skin was eroded in some way. Erosion of the lesion exposed it to air, which was believed to have putrefying properties (de Moulin, 1983). Wiseman discussed this notion in his treatise. He explained that while the inherent acrimony of the atrabiliary humor was the decisive factor in the development of tumours, they increased only slowly in size when encapsulated. They proceeded rapidly to malignancy, however, once the skin was breached:

Being such, it doth increase apace while the Skin is yet whole, but much more when, upon breach of Skin, the accession of air adds to the vigour of the Ferment [of the atrabiliary humor], upon which it grows fierce, and thrusts itself out into Fungus and Tubercles, &c. (Wiseman, 1676, p. 2).
Breaches of the skin that caused exposure to air and ulceration were generally recognised as signs of adverse outcome in breast cancer. In some cases, however, particularly when the tumour was completely encapsulated, infection with its associated haemorrhage and putrefaction was considered an encouraging sign. Mortification of the tumour was viewed as nature’s way of sloughing it from the body, and the associated haemorrhage was the body’s attempt to drain itself of devitalised humors. Norford explained it by way of analogy with gangrene:

In the Disease termed a Gangrene, the Part destin’d to be destroy’d for the Preservation of the whole, has all the Communication cut off with the vital Parts, so that Nerves, Arteries, Veins, &c. equally suffer; and the Effects produced by this Distemper, are almost consonant to those occasioned by an actual or potential Cautery. In the last Case [ie during cautery] an Eschar\textsuperscript{11} is produced, ie. the life of the Part is totally destroy’d as far as the Caustic penetrated; but in a few Days afterwards, the Circulation of the healthy Juices continuing to push strongly behind the cauterised Part, and not finding the Vessels as pervious as usual, the Eschar, or burned Part, will be broke off from the sound Flesh, &c. and a laudable suppuration will ensue (Norford, 1753, p. 80).

*The role of diet*

The quality and composition of the diet was extremely influential in the genesis of breast cancer. The humoral paradigm taught that the products of digestion were taken up by the blood, and mixed with the humors it contained. A bland diet was believed to enhance the humoral balance of the blood because it did not add to or detract from the quality of the existing humors; thus minimising the likelihood of developing cancer (Norford, 1753; Rowley, 1779; Wiseman, 1676). For example, if bitter, sharp, sour or salty foods were ingested, the general composition of the humors was rendered more acrimonious and liable to the stagnation and

\textsuperscript{11} Scar tissue
fermentation that resulted in a tumour. Hot foods, such as spices, were also problematic. Any untoward heat within the body could alter the composition of black bile by subjecting it to combustion, thereby rendering it doubly acrimonious (Pouchelle, 1990). Combustion of the humors, an important concept in humoral theory, is discussed further in connection with *causa contentiva* below.

**Causa antecedens** – predisposition and breast cancer

*Causa antecedens* were the most significant of the factors that led to the development of breast cancer. If the woman did not have an inherent tendency to develop breast cancer, regardless of the many external and internal carcinogens she might be exposed to, a tumour would not arise:

But whatever external Accident may be supposed to have given Birth to this Disease, there certainly, I am inclined to think, was some internal pre-disposing latent Cause in the Blood and Juices which conspired with the external one to occasion it: For there are some Constitutions, which, if you were to bruise, or otherwise hurt every Part of their Bodies, where this Disease is observed most frequently to fix upon, you could never make the thus injured Parts terminate in a Cancer. On the contrary, there are others so prone to this Disease, that almost the slightest Blow or Pressure shall immediately give Rise to it (Norford, 1753, p. 57).

This section will discuss these ‘internal, pre-disposing, latent’ causes – the *causa antecedens* of breast cancer. Within the framework provided by humoral theory, these were female gender, familial predisposition, age and the passions.

*The role of gender*

One of the most important concepts in the aetiology of breast cancer is gender predisposition. According to Dean-Jones, what we now consider the patriarchal moral assumptions of humoral theory meant that female gender entailed an inherently greater risk for developing any illness – especially cancer (Dean-Jones,
1994). In the first instance, the female was perceived as idler than the male. Second, unlike the male, her body was conceptualised as essentially glandular. Witness Norford on this point:

The parts most subject to a Cancer, are … the Breasts and Uterus in Women … yet there is no Part where this Disease has not sometimes fixed. The Reason why a Cancer generally fixes on these Parts is, because they are most glandulous; but as there are Glands interspersed throughout the Body, no Part is entirely exempt from it (Norford, 1753, p. 12).

The glandular nature of female flesh – loose, spongy and absorbent - meant the female readily soaked up more humoral matter than the male, yet she was less inclined to expel these through exercise than a man due to her more passive nature (Dean-Jones, 1994).

The growth of breasts at puberty was an indicator of the potentially harmful looseness and absorbency of female flesh. Large porous breasts were capable of absorbing excess humors, which excess had the potential to stagnate or coagulate within the breast tissue and so cause disease. Men, who obviously had the potential to develop larger breasts than their usual rudimentary organs, did not do so because their inherently firmer flesh was less prone to absorption of the humors that led to breast development. They were also less likely to become ill because their constitutionally greater levels of activity ensured they expelled excess humors more efficiently than women, and they also had specific organs (particularly the male gonads and their ejaculatory function) that prevented this occurring (Dean-Jones, 1994).

Breasts contained another inherent danger: milk production. Scirrhi were frequently attributed in younger women to lactation. William Fabry was representative of surgeons in the 17th century who argued that cancer began with a drop of milk curdling within the breast (Baum, 1986; de Moulin, 1983). His credibility in this
respect was grounded in the humoral observation that milk was by nature inclined to coagulate and thence stagnate in the lactiferous vessels. It gradually adhered permanently to the vessel walls to form a scirrhus (Norford, 1753). Another reason lactation was dangerous was that any related mastitis could result in abscess formation, which was potentially scirrhous – a point vigorously disputed by Pearson in the discussion of the doctrine of mutation above (Pearson, 1793).

Fortunately, women had one singular attribute that moderated their tendency to retain acrimonious matter – their ability to menstruate. From its earliest days, humoral doctrine taught that the monthly flux of blood from the uterus was the feminine method of ridding the body of excess humors, particularly black bile (Hippocrates, c.400B.C.-c). The malefic nature of menstrual blood, and the subsequent need to rid the body of it, was emphasised by the practices of 13th century surgeons such as De Mondeville (Turner, 1991b). Menstrual blood was conceived as so poisonous that men, especially surgeons and priests, were obliged to avoid all contact with it (Pouchelle, 1990). Hence the maintenance of menstruation, entailing the expulsion of unwholesome humors, was a cardinal practice within this paradigm. If menstruation could not be achieved, the practitioner resorted to other bloodletting practices. The implications of these practices are discussed in Chapter 7.

Embedded within this notion of menstruation as purgation are moral assumptions concerning femininity, evil and idleness: woman was more inclined to retain malefic substances, and was not inclined to exert herself to rid her body of this excess. To neutralize these tendencies, nature provided her with a monthly period. There was another type of woman in the humoral discourse though, who did not conform to this languorous feminine archetype. Paradoxically, this woman was also in danger of developing breast cancer because she had a limited ability to menstruate. Aetios of Amida, who greatly influenced this notion and who derived the greater part of his treatise from Galenic doctrine, discussed how female singers and dancers were unable to menstruate. He attributed this to the excessively violent nature of their
exercise, which was believed to consume all their blood and heat, and left no outlet for the excess atrabiliary humor in their bodies (Aetios, 1978).

Amenorrhoea was not only confined to younger women who were more active than the norm; libidinous and lower class women were also at risk:

In general, women of a hotter temperament [high libido], those accustomed to vigorous exercises and peasant women have scanty periods. When therefore a woman is hotter than normal, either on account of a natural temperament or on account of excessive exercises, she will be without the menstrual purgations. Owing to too much heat, the body remains dry and this hot temperament completely digests the foods so that there is nothing superfluous in the entire body [for menstrual purposes] (Aetios, 1978, p. 55).

The completely non-natural woman – the one who resembled a man – was also in danger:

There is a type of woman of mannish traits, dark complexion, strong constitution, robust nerves, with many veins, having thick thighs and big nates, broad breasts and shoulders, firm mammae, deep voice, stronger and more hairy than normal. This type of woman menstruates scantily or not at all (Aetios, 1978, p. 55).

Lean and unfeminine women were not the only younger women who did not menstruate. Aetios also noted that “excessive adiposity” predisposed the woman to amenorrhoea:

The fat ones are more anaemic and have the smallest veins, and the blood in these is very scanty and almost all goes into fat (Aetios, 1978, p. 55).
The inference in this statement is that in large women, the small amount of circulating blood available is inequitably distributed to the fatty tissue, leaving none available for menstruation.

Women were most vulnerable to breast cancer during the menopause, but gave indications of their propensity to develop it long before the onset of the climacteric. In the precancerous state, the feminine predisposition to retain the atrabiliary humor manifested as various systemic complaints at the time of perimenopause. These were typically ‘women’s problems’, such as the vapours, and vague aches and pains (Norford, 1753). Once a woman reached menopause, she was unable to evacuate the atrabiliary humor at all; hence the excess humor and its generalised symptoms became concentrated in the breast area. This localisation of the disease resulted in the disappearance of the vague systemic symptoms:

Women a few Years before and after the Age of fifty, are then the most subject to this Complaint; as this Time of life their periodical Evacuations are about going off, or are mostly over with them; and therefore their Juices often become vitiated which at first may occasion violent Headaches, nervous Complaints, or the Symptoms of a Rheumatism, &c., but as soon as the cancerous Poison is lodged in the Ventricles, or Receptacles of the Glands, scirrhous Tumours appear, and then, sometimes, the preceding Diseases in a great Measure abate, or go off, and the unhappy person seems to enjoy a better State of Health than for some Time past; and this Ease may continue ’till an interruption is put to it, by the painful Approach of the Cancer (Norford, 1753, p.31).

Ironically, while many essentially female attributes – passivity, feminine primary and secondary sexual characteristics - were considered dangerous, the final jeopardy for women was the inability to fulfil their assigned gender role. Nulliparity – which implied failure to fulfil the designated female function of childbirth – was also a risk factor within the humoral paradigm. Childbirth cleared the passages and made them
more amenable to subsequent flows of menstrual blood. It was believed that
nulliparous women were not able to evacuate menstrual blood as well as those who
had given birth, hence they were predisposed to develop breast cancer (Dean-Jones,
1994; Hippocrates, c.400B.C.-c).

The role of heredity
Causa antecedens in contemporary disease models are increasingly attributed to the
genetic potential to develop cancer once exposure to a carcinogen has occurred. In a
percentage of women, for example, there exists a familial form of breast cancer
dependent on a discrete genetic flaw. The role of heredity as conceived in the 21st
century however received comparatively little attention from humoralists, and only
relatively late in its period of influence. Wiseman, for example, distinguished in
passing between faults in the original constitution of the body, inferring that they
were congenital or inherited rather than acquired; and Wiseman’s contemporary on
the continent, le Dran, also referred to it (Le Dran, 1757; Wiseman, 1676).
Nonetheless it is occasionally fully articulated in the surgical discourse:

This lady has remained perfectly well since the cure, which is now about five
years, and has been advised to take the remedies … by way of prevention,
because there has been an hereditary cancerous and scrophulous complaint in
the family (Rowley, 1779, p. 10).

The role of age
Humoralists were aware of the correlation of increasing age and cancer. Norford
explained it thus:

A Scirrhus, form’d by the stagnation of an atrabiliary Humor, may
degenerate into a Cancer by Age, without any other concurring Cause to
occasion it. Thus, e.g. a Person, from the Suppression of a natural or
praeternatural Evacuation, may contract such a depraved Habit of Body as is
productive of a Cancer; at first, only a scirrhous Tumor may be form’d in
some glandular Part, afterwards this Habit may be mended by proper Remedies, or, perhaps, perfectly restored to a healthy State by the Return of the usual Evacuations; yet, the Scirrhus remains: But in the Process of Time, this Scirrhus may become cancerous, by the Degeneracy of the stagnating Humor, into a greater degree of Acrimony by Age only (Norford, 1753, p. 71).

The role of the passions
An inevitable assumption of the qualities and substance model that grounded humoral theory was the correlation between humoral balance, temperament, passions, body and soul (Porter, 1997). For example, temperament was considered an indicator of disease predisposition. Those of a sanguine temperament, indicating a tendency to excess blood, were more prone to malaria. Those of sour temperament, indicating a surfeit of yellow bile, were more prone to intestinal complaints. It followed that women of depressed temperament – those with a preponderance of the melancholic humor or black bile – were more likely to develop breast cancer.

This connection extended to the passions. Humoral theory posited that because passions were generated in the soul and expressed outwardly in bodily movements, passions and body formed a psychophysiologic complex (Grmek, 1998; Sotres, 1998). Passions then, initiated at the level of the spirit or imagination, had immediate effects on the body, where they produced a series of vital reactions (Sotres, 1998). Any untoward emotion such as anger could overheat the humors, while fear and anxiety tended to chill and desiccate them; all resulted in coagulation of the humors (de Moulin, 1983; Sotres, 1998). In addition, grief and bad frights were believed to cause a constriction of the finer vessels, resulting in the humors being trapped in the breast and prone to coagulation (de Moulin, 1983; Wiseman, 1676).
Causa contentiva – the accumulation of black bile

Galenic theory is consistent in attributing breast cancer to the accumulation of black bile within the breast (causa contentiva), which was usually, but not always, caused by the synergy of causa procatartica and causa antecedens.

The remote Cause of this Tumour is, either a fault in the original Constitution of the Body, or an acquired one, as by Bruise, Tumours, ill handling, &c. Or it may be an error in the diet, viz. a great acrimony in the meats and drinks meeting with a fault in the full Concoction, which, not being afterwards corrected in the Guts, suffers this acrimonious matter to ascend into the Bloud, or Urine, or the like, the mischief may be prevented; but if upon any defect in those the humors divert to some other peculiar Part, then the foundation of this Disease is laid, whether it be in the Breasts, or other glandulous or spongy Parts, or indeed any other Part of the Body (Wiseman, 1676, p.99).

However, it is always the causa contentiva, the cohesive cause, which results in breast cancer, regardless of the presence or absence of causa procatartica and causa antecedens. A blow may damage the breast tissue and cause an accumulation of black bile within it; but it is the excess and accumulation of black bile, not the blow itself or the susceptibility to develop a tumour, which ultimately triggers the development of the breast tumour.

This notion has parallels in current oncology theory that proposes that not only must the carcinogenic initiator and the genetic predisposition be present in the individual, but that these two factors must be present to precipitate damage in the actual chromosomal structure before cancer can develop. If the damage does not occur, then there is no cancer. Monro provided a wonderful example of the way that causa procatartica (in this instance changes in temperature, trauma, and a pre-existing lesion); causa antecedens (menopause and passions); and causa contentiva (the
synergy of the first two *causa*) precipitated a malignancy of the breast. Monro discussed a patient with a pre-existing indrawn nipple on her right breast who:

was suddenly frighted when her Menses were upon her; and she never had any Return of them … [Four years later] she recovered from a dangerous Fever, soon after which she was exposed to Cold, and was violently in Wrath, Fear and Grief, receiving at the same Time a Bruise on her right Breast. This Shock confined her to Bed for three Months, and soon after it she perceived a small painful red Tumour in the inferior exterior Part of the right Breast, which she neglected (Monro, 1781, p.485).

A contentious aspect of humoral theory for practitioners was the aspect of *causa contentiva* known variously as adustion or combustion of the humors. Some discourse about cancer aetiology is based upon this notion, but a great deal ignores it completely. Adherents proposed that once the melancholy humor had accumulated in the gland, it was subject to burning – adustion – resulting in ‘twice-combusted’ black bile that was subsequently more acrimonious than the original humor. The earliest version of this concept, while not specifically labelled as adustion, appears in Book 2 of *On the Natural Faculties* (Galen, c.200A.D.). Galen proposed that inherently acrid black bile was further acidified by stagnation and subsequent fermentation of the humor within the gland, much like the way that the acidity of “new wine not long pressed from the grape” is intensified through fermentation arising “through the agency of its contained heat”:

even the black bile itself becomes much more malignant than when in its normal condition, but no particular name has been given to [such a condition of] the humor, except that some people have called it corrosive or acetose, because it also becomes sharp like vinegar and corrodes the animal’s body … and it produces a kind of fermentation and seething, accompanied by bubbles – an abnormal putrefaction having become added to the natural condition of
the black humor … [and] has its quality changed to acid (Galen, c.200A.D., Book 2).

This notion was elaborated in succeeding centuries into the concepts of ‘natural’ and ‘preternatural’ (or twice-combusted) black bile. De Moulin explained the origin of preternatural bile in relation to breast cancer in the following terms:

Its cause may be internal or external. The internal cause is combusted and putrefied melancholy, either melancholy which normally occurs in the body as black bile, or melancholy which arises from previous combustion of other body humors and which is, after having been burnt for a second time, potentially more malignant than natural black bile (de Moulin, 1983, p. 17).

The concept of adustion persisted into the 16th century, as evidenced by the Italian surgeon Fallopio’s discussion. Consistent with humoral theory, Fallopio believed that blood was endowed with the elemental quality of heat. Black bile that came into contact with blood was then burnt, which produced an inflammatory or ulcerating cancer rather than one that was benign or encapsulated (Rather, 1978).

The domination of humoral theory for such an extended time is remarkable; but like any dominant dogma, humoral medicine and surgery were riven with rivalries that produced variations of the doctrine. The rival discourses concerning adustion appear to have confused the issue so much that the concept became too bewildering even for humoral practitioners. Wiseman inferred, in a swipe at his rival physicians, that black bile was malefic in its own right and did not require embellishment with perplexing notions of combustion to cause cancer. In his critique of the medical establishment of the time, Wiseman argued that:

The Cause of a Cancer is usually said to be adustion of Humors, which upon overconcoction, or rather broiling, grow retorrid and sharp. I cannot imagine what heat these Authorities suppose to be in the Body which is capable of
making such an Adustion as is here spoken of. I rather impute the corrosive Venom that attends this Tumour to the materials of which it is made, than to any extraordinary heat; and that because we see the highest Fever not attended with a Cancer, and on the contrary a Cancer not often attended with any extremity of heat; so that it cannot be Adustion that is the cause of the Malady. But rather I think the matter of the [original] Humor to be in fault…… This Humor, being of itself sharp and corrosive, is apt to convert whatever comes into it of Blood into the same acrimony with itself (Wiseman, 1676, p.98).

In the event, the notion of adustion was eventually unsustainable and the doctrine reverted to the assumption that black bile was acrimonious enough in its original state to engender disease. Wiseman was a highly respected medical and surgical authority in succeeding centuries, and his vigorous critique seems to have ended the debate, for there are no references to twice-combusted atrabiliary humor in the English surgical archive after his time.

Conclusion
Many 19th and 20th century historians argued that the dominance of Galenic humoralism dogmatised medical thought and obstructed the understanding of breast cancer for nearly two millennia (Baum, 1992; Haagensen, 1933; Virchow, 1962d; Wood, 1923). From this perspective, Galenic rationales were questionable and the therapy weak. It has also been argued that the Muslim and European surgeons and physicians who wrote after Galen were imitative and lethargic; their compendia of Galen’s work further debased the little useful knowledge he had to offer; and they contributed to a long period of barren conservatism with regard to medical practice. According to these critics, writers after Galen are not studied for their own contributions to the understanding of illness, but because they are merely representatives of earlier Galenic authority (Nuttall, 1983).
Moreover, while admirable for its appreciation of the connection between man and his universe, the environmental aspect of humoral theory is criticised for the ethnocentricity derived from its Graeco-centric origins. This is most evident in the Hippocratic treatise *Airs, Waters and Places*, which contrasts the unhealthy, pale, phlegmatic peoples of the north and the dusky, desiccated bilious Africans of the south with the Greeks, blessed as they were with an equable climate and general good health (Hippocrates, c.400B.C.-b; Porter, 1997). The cosmic permutations of the doctrine also encouraged a great deal of metaphysical speculation regarding the origin and nature of disease. As Chapter 6 will demonstrate, this was one of the many factors that contributed to the divisiveness between physicians and surgeons that persisted until quite recently in the history of health care (Pouchelle, 1990). In our own godless time, such cosmic speculation can also make the finer points of humoral doctrine difficult to comprehend.

Yet there are some who appreciate the sophistication of the Galenic corpus. There is growing recognition that humoralism was an ingenious doctrine that not only explained the then unknown interior of the human body, but also offered an elegant account of the influence of heredity, regimen, climate, life experiences and the person’s character in the development of illness (de Moulin, 1983; Jouanne, 1998; MacKinney, 1952; Nuttall, 1983; Porter, 1997). Indeed, the layperson in European contexts never entirely abandoned humoral concepts (Baum, 1992). They are evident, for example, in widespread beliefs that attribute colds and flu to exposure to the cold, and which subsequently advocate treatments based on balancing the cold with hot foods and invigorating applications of menthol to the chest (Helman, 2001). They are resurgent in spirit in contemporary medical contexts as well. Many diseases are now attributed to deficiencies or excesses of certain enzymes, genes, trace elements, hormones and so on; and are treated by correcting the imbalance (Helman, 2001).

Foucault argued that it is not possible to clearly see a pathology like breast cancer until one is able to offer a complete description of it. Thus, if the cancerous body
was to become the rightful object of the surgeon, he had to conceive it in a particular way, and accord those explanations privileges (Foucault, 1973). Humoral theory fulfilled this disciplinary function admirably. There are other things to learn in the Foucaultian sense from the exploration of the humoral critical modalities of breast cancer. First, despite the range of competing discourses that existed in this episteme, the general principles of humoral doctrine were dominant for a very long time – its inherent sophistication and congruence with the wider worldview ensured that many elements of the theory comprised the most persistent discourse of any found in the archive. Foucault’s approach was to demonstrate that things could have been very different from the way they currently are: if the microscope had not been invented, if surgeons had not allied themselves with medicine, if someone had not come up with the idea of the autopsy, we might still view breast cancer in this way. Contingency was a significant factor in the ultimate abandonment of humoral conceptions of disease, not its inherent lack of truth.

Second, on the surface at least, humoral explanations of breast cancer in the surgical archive are convoluted and often contradictory. Due primarily, I suspect, to the vagaries of centuries of translation into other languages and what Foucault characterised as interpretation-on-interpretation, it is difficult at times to perceive an underlying epistemological integrity: a critical mode of consciousness that firmly directed the way that surgeons explained and described breast cancer. This observation is in keeping with Foucault’s argument that even where a discourse clearly dominates, competing elements will always challenge its primacy. Alternate discourses are repressed or embraced as necessary, but this resistance to a paradigm is ultimately the thing that illuminates and crystallises it. Hence close attention to the discourse does reveal some of the inherent unities that were described in this chapter.

Third, the humoral paradigm is essentially discontinuous from later conceptions of breast cancer in its emphasis on health as a state of harmony and the equilibrium of the woman with the world around her: woman and nature were one. Any disturbance
of this delicate balance between these two elements of the one entity resulted in disease. As Canguilhem suggests on this point, in this event, the breast tumour was not somewhere in the woman, it was everywhere in her and everywhere around her (Canguilhem, 1989a). Internal factors and external circumstances were the occasion of the disease, but not the cause. Moreover, disease was not simply discordance; it was an attempt on the part of nature to restore the equilibrium of nature and woman. So another disjunction between humoral theory and later ideas is the notion of the tumour as a generalised reaction intended to bring about a cure; for underlying all humoral conceptions of breast cancer is the premise that the body of the woman developed the cancer initially in order to get well. As will be demonstrated in Chapter 7, the therapeutic interventions of surgeons initially tolerated, and where necessary, reinforced these spontaneously therapeutic reactions of the body (Canguilhem, 1989a). With the exception of the alternate discourse of homeopathy in our own time, this idea has been abandoned by mainstream health discourse.

Fourth, although to the 21st century practitioner humoral theory can appear complex and inaccessible when first encountered, one does come to appreciate the elegance of this critical modality and its coherence with the wider worldview. Moreover, further study also reveals some remarkable congruency with modern ideas, with some theoretical elements of humoral explanations persisting to the present day. For example, breast cancer is still conceived as arising from a combination of external initiators, inherent disposition, and an ultimate, cohesive cause. Breast cancer continues to be framed as a result of often natural, but malefic, processes that result in discordance within the body. As in humoral times, it is considered today as the unfortunate consequence of the consanguinity of heredity, environment, temperament, lifestyle, age and accident. Breast cancer still entails implicit judgements of a moral and social nature. And above all, it is still extremely risky to be female.
CHAPTER 4. “IF BUT A FEW BODIES ARE OPENED”: THEORIES DERIVED FROM THE STUDY OF GROSS ANATOMY

Breast disease has been traditionally treated by surgeons. No other discipline has seen so much relevant new information emerge recently from the understanding of normal function and disease in general and breast cancer in particular. Breast cancer is a ‘battlefield’ where new and potentially dramatic discoveries are being applied to patient care (Forbes, 1986, p. 1).

The opinion expressed by Forbes in 1986 concerning the contribution of surgeons to the practice of oncology is not atypical and, depending upon the context in which such opinions are expressed, wholly justified. What is interesting about Forbes’ statement is that it is a neat précis of surgical mores in relation to breast cancer that developed in the preceding two centuries. Many of these persist to the present day. Particularly pertinent is his valorisation of the knowledge of human anatomy, physiology and pathology that surgeons derived from their practises of formal dissection and internal surgery; and the knowledge, manual skill and heroic cast they acquired from their work on battlefields (de Moulin, 1983). However in light of developments that occurred in oncology before and after this statement was made – for example, the equally important contributions from non-surgical personnel such as cytologists and histologists, and those made by related medical disciplines such as radiation oncology – Forbes’ statement could be interpreted as misguided and arrogant. His statement is grounded in the belief, promulgated by surgeons from the late medieval period, that surgery was in fact the only branch of the healing art capable of taking action with regard to breast cancer that resulted in an observable measure of respite from the disease. The purpose of this section is to explore the theories embedded in Forbes’ statement – those of pathological anatomy – that succeeded humoralism in the surgical consciousness, and which contributed to the way that surgeons defined and explained breast cancer by 1900 and beyond.
The emergence of pathological anatomy

The human body was inviolate for much of Western medical history. Consequently, the Hippocratic healers did not generally practise dissection in any form; the Romans usually practised only animal dissection; and the Muslim and European healers who preserved Galenic knowledge in the West were subject to similar restrictions concerning internal investigation of the human body (Haagensen, 1933; Porter, 1997). However, it is important to note two anomalies within Western cultural taboos connected with both surgical intervention and dissection.

The first is the discontinuity evident in the fact that despite Galenic notions of the inviolability of the human body, some Galenic practitioners did invade it in the name of therapy. For example, Aetios of Amida, a thoroughgoing humoralist writing in the 6th century AD, clearly described the excision of a breast tumour and the necessary cauterisation of the wound to staunch the flow of blood (Aetios, 1978; Sebastian, 2000). A century later, Paul of Aegina described a mastectomy despite the Galenic basis of his doctrine (Sebastian, 2000). There are also European treatises from the 13th century (including those of de Mondeville and de Chauliac) that advocated surgical excision of breast tumours long before surgery became socially acceptable or humoral thinking was challenged (Pouchelle, 1990; Sebastian, 2000).

The second point is that contrary to popular belief, the Church never explicitly forbade dissection (Foucault, 1973; Jacquart, 1998; Porter, 1997). Healers were in fact reluctant to practise dissection well before the establishment of ecclesiastical power in the West, principally because of the teachings of Galenism (Jacquart, 1998). However, as early as 520 BC Alcmaeon of Croton was reported to have practised human dissection; as did Eristatus of the Alexandrian school around 340 BC (Sebastian, 2000). So while Christian doctrine considered the body subordinate to the soul, and argued that it was more important that the soul of a dying man was saved by a cleric than his body be saved by a medical practitioner, it must be emphasised that the various papal edicts that concerned the dissection of corpses were not designed to restrict anatomical knowledge but to uphold the dignity of the...
Church (Porter, 1997). Edicts associated with dissection were actually targeted at grave robbers and thieves rather than anatomists (Jacquart, 1998). Indeed, Porter (1997) notes that some dissections were carried out in churches provided the body was of an executed criminal and was subsequently given a Christian burial.

It was actually this complex of surgical, moral, legal and spiritual norms that was vital in the ultimate shedding of the stigma attached to dissection and the surgeons who practised it, and to the privileging of pathological anatomy. By the late 13th century for example, the faculty at Salerno had established the practice of routine dissection of criminals to ground medico-surgical teaching with papal dispensation. In Italy at the same time, Mondino de Luzzi produced an anatomical textbook based on the dissection of human cadavers (which he also demonstrated publicly); and in France, Louis of Anjou had ordered that the bodies of executed criminals be delivered to the medical faculty of the university of Montpellier in 1376 for public demonstrations of dissection (Pouchelle, 1990; Sebastian, 2000). So Virchow’s widely accepted assertion that the “great dogma” of Galen that forbade dissection (a dogma reinforced by the supremacy accorded the Galenic corpus by the Christian Church) was only challenged once the supremacy of the Church was also challenged by the Reformation, is only partially true (Virchow, 1962d). The practice of dissection certainly gained impetus from the new freedoms of the Reformation, but it had never been officially censored.

The knowledge derived from such lawful, socially sanctioned dissection led by the time of the Renaissance, to many of its practitioners, such as Pare and Vesalius, becoming men of wider renown. By the late 16th century, anatomical knowledge was such that Antonio Benivieni was not only able to conduct fifteen autopsies, but to accurately correlate post-mortem lesions with symptoms reported while the patient was alive (Sebastian, 2000). This was also the basis of Morgagni’s fame in the early 19th century, for he had published the first systematic text book on morbid anatomy, in which he discussed breast tumours and also described the difference between the healthy and unhealthy body in relation to post-mortem findings (Haagensen, 1933;
Sebastian, 2000). It should be noted, however, that for at least three centuries after the seeds of pathological anatomy were sown in the universities, surgeons did not question the fundamentals of humoral doctrine. Furthermore, even when the credibility of pathological anatomy was well established in surgical consciousness by the early 19th century, elements of humoral theory were still discernable in the surgical discourse.

The modification of the cultural norms surrounding dissection laid the foundation for the slow shift away from humoral theories of bodily structure and function, as well as explanations of disease. This shift was augmented by the publication of Harvey’s work regarding the circulation of blood in 1628. Also significant was the work of Gaspare Aselli in Italy; he first dissected the lymphatic system in dogs in 1622 and extended this work to humans in 1627 (Qvist, 1981; Sebastian, 2000). Both discoveries contributed to two streams of pathological anatomy discernable in the surgical discourse in the seventeenth and eighteenth centuries. The first stream included theories grounded in concepts developed from atomism, which conceived the body as a machine that was essentially separate from the soul. The second stream involved theories focusing upon notions of vitalism, which conceived the body in terms of essential unity driven by an essential life-force.

Eventually, the knowledge derived from the surgical study of corpses was so privileged in the West that one French authority was able to declare that:

An entirely new period for medicine has just begun in France … analysis applied to the study of physiological phenomena, an enlightened taste for the writings of Antiquity, the union of medicine and surgery, and the organisation of the clinical schools have brought about an astonishing revolution that is characterised by progress in pathological anatomy (Rayer, 1818 cited in Foucault, 1973, p. 124).
Mechanistic conceptions of the body

The philosopher Demokritus of Abdera had initially developed the doctrine of atomism in the 5th or 6th century BC. From his ideas, a school of thought developed that competed with Hippocratic humoralism until many atomist concepts were subsumed into Galenic theory. Atomism (or solidism) proposed that all things comprised an infinite number of minute and indivisible solid particles, of varying shape. Both the solid and fluid parts of the body consisted of these cohesive particles, which were in perpetual motion. Within the solid masses of the body, there was a network of tiny interstices or pores, through which the body fluids could percolate. Disease was a result of incongruities between the diameter of the pores and the particles in the fluid, which either impeded or accelerated the normal flow of the fluid (King, 1970). It was this atomist concept of ‘fluid’ that was absorbed into Galenic humoral theory. Notions about fluid underwent further transformation within Cartesian explanations of the body into the rival doctrines of the physical (iatromechanical) and chemical (iatrochemical) sciences.

It was its conception as a hydromechanical fluid rather than as a humoral fluid that informed the variant of pathological anatomy known as iatromechanics. The theory of iatromechanics was contingent upon the revival of atomism by Prosper Alpinus (1553-1617) at the medical school in Padua, particularly the notion that the blocking of the pores initiated disease processes (de Moulin, 1983). Subsequent discoveries related to the structure and function of the vascular and lymphatic systems allowed iatromechanists to reconceive blocking of the pores as a haemodynamic process involving the obstruction of vessels and ducts. The emerging Cartesian conception of the body as a perfect machine also contributed to a new tendency to explain physiology in terms of hydrodynamics (Baum, 1986; de Moulin, 1983).

Iatromechanics did not entirely abandon humoral theory however, for lymph assumed some of the older notions associated with black bile, particularly that of an inherently acid fluid with the ability to become acrimonious. Its acrimony was explained, however, in purely mechanical terms. Fluid particles may be furnished
with hooks or other sharp protuberances, which, in certain circumstances, could damage the walls of the vessels. This damage produced the pain that iatrochemists described in terms of its acid quality (de Moulin, 1983). The early microscopical observations of Antoni van Leeuwenhoek, who had observed minute pointed particles in drying vinegar, helped to explain the sharp taste of similar acid substances and affirmed the views of the iatromechanics (de Moulin, 1983; Sebastian, 2000).

The rival iatrochemical school – founded by Sylvius in Leyden in the middle of the 17th century - was also influenced by recent anatomical discoveries regarding the lymphatic system (King, 1970). The iatrochemists, however, conceived the body as a filtering and straining system rather than a hydromechanical pump. Lymphatic fluids were slightly acidic, and iatrochemists argued that if they had the opportunity to become even more acidic through stagnation and fermentation, they developed into acrimony – the bitter juice that caused disease (Cantor, 1993).

Vitalist constructions of the body and disease
The energy generated by anatomical discoveries at this time resulted in a surgical archive hectic with multiple and competing theories of disease. The main rivals to mechanistic Cartesian conceptions can be broadly categorised as vitalist, and were heavily influenced by the work of John Hunter and Bichat. Bichat is credited as instrumental in the ultimate rejection of overtly solidist conceptions by the early 1800s (de Moulin, 1983; Foucault, 1973; Haagensen, 1933; Haigh, 1984; McGrew & McGrew, 1985; Virchow, 1962d). He was part of a tradition that can be traced as far back as Aristotle, who disputed the dualist conception of the body in ancient times (Haigh, 1984). For mechanist-dualists, the soul governed the voluntary actions of the body, while involuntary actions were the automatic result of a hydromechanical or filtering system comprising a network of pumps, pulleys and conduits (Haigh, 1984). For those with a vitalist conception of the body, all its parts were interrelated, and collectively determined the body’s structure, function and response to disease (Otis, 1999). Vitalists taught that living phenomena possessed
features that made them radically different from such discrete physical and chemical phenomena. Living tissues, organs, and organisms were distinguishable by the existence and activity of a vital cohesive force that possessed specific dynamic and purposive faculties, such as the will and the capacity to reproduce (Duchesneau, 1985). In 1818, Lordat summarised the vitalist stance, which was to subsequently exercise enormous influence upon subsequent conceptions of breast cancer:

in all functions of the animal oeconomy, certain conditions prevent their being resolved into mere mechanical or chemical phenomena, as well as their being explained by simple vital reaction, such as conceived by solidists; but that the actions composing those functions are continually directed by a higher-order cause, which links, co-ordinates, adjusts them to an end, and induces on organs modifications needed to adapt them at all times to the actually required mode of action (Lordat, 1818 cited in Duchesneau, 1985).

The emergence of the tissue

Conventional histories propose that the end of the eighteenth century witnessed an abrupt turning point in the understanding of disease due to the work of Bichat – what conventional historians call a revolution and Foucault calls a discontinuity – that raised surgical theory and practice to the highest conceivable level in the absence of aseptic technique and anaesthesia (Baum, 1986, 1992; de Moulin, 1983; Haagensen, 1933; Sebastian, 2000). In 1801, Bichat published his Anatomie Generale, which modern medicine privileges as a turning point in the history of medicine and surgery (Bichat, 1801). But the contribution of Bichat and his followers to the archive was not simply a turning point in terms of the production of new knowledge. For example, Jean Louis Petit and Grashuys had already discussed the notion of ‘cellular tissue’ when describing periglandular fat (Grashuys, 1741; Petit, 1774). Rather, Bichat and his colleagues harnessed the accumulated knowledge from centuries of anatomical dissection, focused on areas not previously subject to detailed examination, and in so doing shifted the surgical gaze to increasingly discrete and minute systems in the quest for explanations of disease. Hence the practitioner had
explored and treated organ systems, vascular systems, lymphatic systems, and now, with the work of anatomists such as Bichat and Cruveilhier, began to concentrate on tissue systems (Bichat, 1801; Cruveilhier, 1827). It was the work in tissues that is credited with the ‘revolution’ in the early nineteenth century surgical archive.

The school of Bichat narrowed the gaze of surgeons from nebulous fluids, juices and humors onto observable, inter-related elements. Bichat proposed that all living matter was comprised of twenty-one elemental or cellular tissues. These he designated as follows: cells, the nervous tissue of animal life, the nervous tissue of organic life, arteries, veins, the tissue of the exhaling vessels, the tissue of the absorbents, bones, medullary tissue, cartiles, fibrous tissue, fibro-cartilaginous tissue, animal muscular tissue, muscles, mucous membrane, serous membrane, synovial membrane, glands, the derma, the epidermis, and hair (Bichat, 1801). Bichat’s conception of the body was grounded in the notion that elemental tissue was the basis of all life and was consistent with vitalist theories, because unlike organs and other larger structures in the body, tissue appeared to be capable of reproducing itself (Haigh, 1984).

It should be noted that Bichat’s understanding of ‘cells’ and ‘cellular tissue’ cited above was not the modern one, for he did not work with microscopes. Microscopes at the time produced many artefacts and hazy views that distorted the image on the plate, and Bichat and his followers could not be persuaded that the poor images visible through the placement of a lens between the eye and an object were actually real (Haigh, 1984). So cells were understood to be the spaces between the connective tissues fibres that were barely visible to the naked eye (Cantor, 1993; de Moulin, 1983).

Bichat also believed that sensibility and contractility were forces vital to each of the elemental tissues, and through these forces, the tissues governed the integrated activity of the body (Bichat, 1801; Haigh, 1984). The vitalist tendencies of this school of thought were apparent not only in their interest in the form of the tissues,
but in exactly how they were distributed and organised, and the ways that they interrelated with other tissues and systems of tissues in the states of health and illness (Foucault, 1973). Each living body was considered an organic unit beset by, and responsive to, the forces of the surrounding inorganic (physical and chemical) world. Bichat also argued that although living forces were in organised matter only for a limited time, they inevitably dominated physical ones. It was by means of these combative vital forces that an organism grew, reproduced, obtained nourishment, and responded to its environment (Cantor, 1993; Haigh, 1984).

It was this understanding of the integration and reproduction of elemental tissues that led to Bichat’s theory of disease, which posited that different parts of the body might experience similar disease processes if they were made up of the same tissues (Cantor, 1993). So in relation to disease, Bichat argued that if each tissue was unique in health, it must also be unique in disease. He noted that diseases normally affected only discrete tissues, spreading to entire organs only if they remain unchecked. To illustrate this idea, he noted that it was rare for a syndrome to affect the entire mass of the brain, though it was common to find one tissue constituting the brain, such as the arachnoid tunic, to be inflamed. Similarly, only one membrane of the eye was affected in disease, while the other optic membranes remained normal; and that in convulsions or paralysis of the laryngeal muscles, the mucous surfaces were not affected, only the muscular tissue. As a result, he believed it was necessary for the physician to study alterations of cellular, arterial, venous, nervous and other systems rather than diseases of organs or regions. With Bichat, anatomical observation became more important than ever. It was his belief that decades at the sickbed spent observing diseases produced only a confusion of symptoms, which could be rapidly dispelled if a few dead bodies were opened (Bichat, 1801).

The confusion of symptoms
The confusion that characterised this period was a product of the ongoing argument about disease and symptom classification. The late Renaissance to the early 19th century was characterised by a new freedom of enquiry; however, the breadth of that
enquiry, the creative thought it produced, and the many therapeutic pathways it generated also confused surgeons working in the period. In a world that prefers a ready reference to ground understanding, there was no one classification or grand theory of disease to structure the ideas that developed. This is evident in the critique of Pearson (1793), who deplored the persistence of the competing theories, taxonomies and languages in his time. He was an early positivist, an advocate of sensual observation in which to ground surgical theory and practice, but he also noted the confusion amongst even his like-minded contemporaries that arose out of unfocused sensual observation. In an early discussion of the positivist principles that would contribute to later scientific method, he noted that:

Modern surgery is undoubtedly enriched with many volumes of valuable cases and observations, the intrinsick excellence of which cannot be disputed; but as long as these materials are permitted to continue in their original unconnected state, merely exhibiting to us detailed specimens of particular instances, their application to practice must be difficult and limited. Before such collections can produce their full effect, they must be arranged, generalised, and embodied in a regular structure; practical inferences must be carefully deduced from a sufficient number of well-authenticated facts; and it must be clearly ascertained, wherein the diseases there described agree, and wherein they differ from others that are remote in their nature, but not very widely dissimilar in their sensible phenomena. For although the narrative of a particular case, may present an accurate transcript from nature, it can pretend to no more than the merit of being the faithful copy of nature partially viewed in one individual; and may by no means exhibit an ample and correct view of the disease at large (Pearson, 1793, p.iii).

Pearson attributed many of these problems to the inadequacies of the language used to teach the arts of medicine and surgery at the time, and the persistence of teaching
practices that continued to emphasise book learning at the expense of first hand student observation:

In describing the signatures of diseases, we are often obliged to express our ideas by terms that are not exactly adapted to the thing signified. The force and significance of the words can only be fully comprehended, and distinctly conceived, by those who comparing the archetype with the symbol, may thus acquire the precise notions with which they are associated in the mind of the teacher. Besides, the information that we derive from examining many of the simple appearances of diseases, is of peculiar and limited nature; and the complex ideas which result from the combination of their concurrent symptoms being arbitrary notions, and mere creatures of the understanding; unless we could give perfect and real definitions, the writer or teacher cannot impart with distinctness, the perceptions and premises which constitute the basis of his conclusions. For as language is not rich enough to furnish words that will perfectly denote all the different shades of colour, though their dissimilitude is obvious when presented to the mind; so there is a species of practical knowledge, composed of simple ideas derived from observation, for which no competent terms have yet been contrived, and which no periphrasis can adequately describe (Pearson, 1793, p.3).

Given the dissonance in language evident in many of the discourses informed by pathological anatomy from the late Renaissance to the early 19th century, it was inevitable that the systems used to classify disease in this period were also discordant. Facets of humoralism and species medicine persisted throughout the seventeenth and eighteenth centuries, and taxonomies continued to emphasise similarities rather than differences. Peyrilhe in the late 1700s, for example, recognised an essential unity in many different forms of cancer and other swellings. He believed they were variations of the one disease (Peyrilhe, 1776). Hence, numerous tumefacient conditions, from varicose veins to scrofula, continued to be
included with cancers as preternatural tumours; and the distinction between scirrhi and cancerous tumours remained in force (de Moulin, 1983).

In competing discourses, some surgical authorities investigated the differences between various tumefacient conditions. This emphasis on difference was consistent with the data that were accumulating from the dissection of corpses – it became increasingly obvious to practitioners that anatomical features found in individuals who had died from certain diseases differed markedly from the structures found in people whose death had not been a result of those diseases. The English surgeon-anatomist John Hunter, practising in the mid-eighteenth century, was an influential proponent of this idea. In his lectures he stated his intention to:

begin with the physiology of the animal oeconomy in its natural or healthy state; and then come to pathology, or the physiology of disease, which may be called the perversion of the natural actions of the animal oeconomy (Hunter, 1835-1837, p.xii).

This idea that the surgeon must understand the functioning of the normal, healthy body in order to understand abnormal states – that is, disease - resulted in attempts by Hunter and others to develop classifications of diseases according to their differences (Qvist, 1981). For example, Henri Francois le Dran introduced a tumour classification based on four categories of body structure: cancers of the skin, of the breast, of the menstrual products, and those produced by abnormal lymph (Le Dran, 1757). Morgagni in Italy also produced a typology (Morgagni, 1761), but his classification ordered diseases according to different areas of anatomical origin. According to Foucault, for Morgagni:

Anatomical dispersal was the directing principle of nosological analysis: frenzy, like apoplexy, belonged to diseases of the head; asthma, pleuropneumonia, and haemoptysis formed related species in that they were all localised in the chest (Foucault, 1973, p. 127).
In England, Wardrop had grouped all soft, fungating and vascular forms of cancer under the general heading of fungus haematodes, including those of the breast, and provided descriptions that differentiated medullary and scirrhous carcinoma (Wardrop, 1809). And the dissections undertaken by the first surgeon of the Monro dynasty in Scotland led him to classify tumours into three main groups: those of the vessels, such as varices and aneurysms; dropsical disorders, such as hydrocele; and inflammation and its consequences, in which he included suppuration, gangrene, scirrhus and cancer (Lawrence, 1985).

Laennec also contributed a classification of tumours to the surgical archive. He did not classify them according to their phenomenological aspects; rather he distinguished between homologous tumours, which had an analogy in the body, and heterologous growths such as tubercules and scirrhhi, which bore no resemblance to normal tissue (Laennec, 1815). Laennec theorised that the more dissimilar the growth to normal tissue, the more cancerous it was (Laennec, 1812). Laennec’s taxonomy did not posit scirrhus as a pre-cancerous condition; it viewed it as a specific type of cancer. In contrast to the hard variety of cancer, which was represented by scirrhus, there was also a soft variety. Since it was reminiscent of brain matter, Laennec named it encephaloid (Laennec, 1812).

In contrast to these classifications grounded in difference, and despite the contribution of Bichat to the shift in surgical consciousness from humoral theory, Bichat’s version of pathological anatomy actually revitalised the old classificatory thought. Ironically, Bichat conferred such taxonomies with new vigour because he privileged the observational senses that provided them with a new and solid basis: analysis according to perceptible surfaces (Foucault, 1973). So, similar to species medicine, in Bichat’s nosography broad groups of diseases with the same major symptoms and the same type of development were categorised together. Bichat’s version of pathological anatomy commenced with a history of the pathological
alterations common to each system, regardless of the organ or region that was affected. Hence:

All inflammations of serous membranes can be recognised by their thickening, the disappearance of their transparency, their whitish colour, their granulous alterations, and their adhesion to adjacent tissues … Inflammation takes the same form in all serous membranes but it does not attack all the tissues as easily or develop in them at the same speed: in decreasing order of susceptibility … The presence of tissues of the same texture throughout the organism makes it possible to see from one disease to another resemblances, kinships, and in short, a whole system of communications inscribed in the deep configurations of the body. This non-local configuration is made up of interlocking concrete generalities, a whole organised system of implications. In fact, it really has the same logical armature to be found in nosological thought (Foucault, 1973, pp. 129-30).

As a result, Bichat’s detractors have argued that he simply regurgitated themes common to the eighteenth century – that his work is not original at all, merely a synthesis of concepts that appeared before his time (Haigh, 1984). In light of his classificatory system, this criticism is probably valid.

Pathological anatomy: definitions of breast cancer
The competing discourses of this period contributed to an apparent reluctance on the part of surgeons to offer concrete definitions of cancer. The few definitions provided in the surgical archive that were not grounded in humoral theory, however, were congruent with the major theoretical shifts of the time. Although hesitant to define exactly what cancer was, these definitions emphasised what it was not. Therefore, cancer did not resemble normal tissue – a concept of deviance from the norm that persists to this day. For example, Cruveilhier, a member of the Bichat school, explicitly defined cancer as a cancerous degeneration of normal tissue (Cruveilhier, 1827). The essential uniformity of tissue was central to Bichat’s thesis, as was the
notion that each type of tissue was a unit of life capable of reproducing itself. Hence tumours were considered overgrowths or abnormalities of tissue, differing only in the character of the morbid matter deposited in the cellular base (McGrew & McGrew, 1985).

**Pathological anatomy: explanations of breast cancer**

Despite the confusion regarding every aspect of disease causation in this period, there are some continuities in explanations of breast cancer aetiology, in that, similar to humoral doctrine, it was attributed to local and systemic causes, or a combination of both of these. The debate concerning local and systemic causes was ongoing during this period:

I will not take upon me to dispute the Propriety of saying a Cancer is a local Disease, when the Blood and Juices are only so far depraved as not to produce the Disorder ‘till an Interruption is put to the Circulation in some of the glandular Parts, by a Blow &c. … nowadays the most skilful Practitioners never attempt Amputation ’till they have first mended the Habit … frequently these Tumors are [also] the Consequences of a peculiar Disease at first existing in the Habit than the Beginning of the Disease itself: that is, I suppose the cancerous Poison to be *sui generis*, at first contracted, or, to speak more properly, generated in the Blood and Juices in the larger Vessels; and while it contributes to the common Road of Circulation, the Patient may seem to labour with sundry sorts of Distempers (Norford, 1753, p.61).

If it could be proved, that the whole habit were susceptible of contamination by the absorption of matter from a cancerous sore, in the same sense in which a venereal ulcer can produce its effects on the general system, this fact ought to make a considerable innovation in the mode of treatment. But if we may judge of men’s opinion by their practice, it seems probable that the greater part of surgeons consider the Cancer as a local complaint; [since]
they generally advise it to be removed, when its situation is favourable for an operation (Pearson, 1793, p. 30).

The local versus systemic thesis was still evident in 1802, when a meeting of prominent surgeons in Edinburgh tried to definitively establish the nature of breast cancer, discussing the question: “May cancer be regarded at any period or under any circumstances merely as a local disease, or does the existence of cancer in one part afford a presumption that there is a tendency to a familiar alteration in other parts of the animal?” (Baum, 1986). Typical of the confusion of the period, the meeting was equivocal in its findings, acknowledging that breast cancer should continue to be treated (if not entirely considered) a local disease (Baum, 1986). The emphasis upon the interrelationship of local and systemic causes in theorisation at this time is similar to the notion of the consanguinity of the elements in humoral theory. Surgeons at the time could not separate them, and it has not been possible to do so for the purposes of this analysis.

Hence the following section will explore the most common explanations of breast cancer that arose from the study of pathological anatomy at this time, rather than approach it from distinctly local and systemic perspectives. These elements can be broadly categorised as trauma, body juices, the passions, gender, diathesis, tissue and climate. The section will conclude with a discussion of explanatory systems related to tumour ulceration, relapse and metastases that arose from pathologic anatomy.

**Trauma**

Trauma, similar to humoral explanations, was still considered a precipitating factor – and the type of trauma was the same – tight lacing of corsets, misguided surgical or medical interference, and blows to the breast. In the new paradigm, however, the rationale was different. Some theories derived from pathological anatomy favoured trauma directly disrupting the clear passage of fluids through the glandular ducts, with the resulting pressure forcing the blocked fluids into the interstitial mass.
Alternately, trauma sclerosed the ducts, leading to a loss of ductal elasticity and subsequent intraductal stagnation and fermentation (de Moulin, 1983). Norford was an adherent of this view:

I don’t say, that ’tis impossible a Cancer should be produced by an external Cause only; because, I will not take it upon me to determine how far our Juices may be alter’d from their original healthy State, when once stagnated in the Glands by a Blow (Norford, 1753, p.61).

**Juices: derangement, stagnation, fermentation and obstruction**

By 1628, developments in human dissection had begun to focus attention on the lymphatic and vascular systems as sources of cancer (Porter, 1997). Theorisation about the fluids these systems contained was the result of a great deal of cross-fertilisation, so in many instances elements of these individual theories were interchangeable. For example, while some authorities regarded blood and lymph as totally separate fluids, others conceived of lymph as a form of blood. In general, however, while many Galenic distinctions remained in force with regard to these substances, the term ‘humor’ was gradually abandoned, and was replaced with terms such as ‘fluids’, ‘lymph’ or body ‘juices’.

Factors attributed to the development of breast cancer were sometimes related to blood components. In some instances, this resulted in a haematologous modification of humoral theory. As Boerhaave had pointed out, the four cardinal humors of the ancients could be conceptualised as different parts of the blood (Baum, 1986; de Moulin, 1983; Porter, 1997). This meant that yellow bile equated to the component of blood that could be separated as serum; phlegm was a derivative of stagnant serum; and black bile was analogous to the clot of extruded blood cells. A new concept was also developed as an adjunct to this theory: that of *materia phlogistica*, the component of blood thought to develop into pus (Baum, 1986). Many authorities favoured the theory that *materia phlogistica* coagulated internally to produce a scirrhus (Baum, 1986). This would happen in cases of inflammation, when blood
would contain *materia phlogistica* as a byproduct of the inflammatory process. Should this fluid come to a standstill in a gland, for example, in the head of a boil, its thin components would gradually separate and drain off, leaving the thick constituents behind. Drying-in of the deposit would result in scirrhous (de Moulin, 1983). The phlogiston theory was discarded however by the late 1700s, with the appearance of Carl Scheele’s treatise *Chemical Treatise on Air and Fire*, which debunked the entire concept (Sebastian, 2000).

Unlike some authors, who attributed the coagulation of blood or its components to the formation of tumours, Norford believed that the varicosities (dilated and congested blood vessels) around tumours were more a diagnostic sign of cancer than a cause:

The Ancients, if I am not mistaken, imagined all cancerous Tumours to be derived from the Atrabilis, or Melancholy of the Blood; and that which further confirmed them in this Belief, was the black and dark Appearance of the Blood found in the varicous Veins of these Tumours; and therefore, they thought the chief Intention of Cure consisted in giving such Medicines as should evaluate this Humor. But if they had had no other Reason for their opinion and Practice than the black Appearance of the Blood in these Vessels, they might have been greatly deceived; for, I believe, there are few Surgeons, of much Practice, who have not seen a similar Appearance of Blood in the Varices attending other Tumors [generic swellings] that arise by slow Degrees … These varicous Veins are occasioned by the impediment the Blood meets with by the subjacent Tumour; for, when Tumours encrease very slowly, the cutaneous Vessels have Time to stretch and dilate, and the Circulation being very languid, the serous Parts of the Blood will pass on first, while the Crassamentum will be more difficultly moved; so that, when these Vessels are open’d, the Blood has always a black grumous Appearance (Norford, 1753, p.67).
Atrabiliary doctrine acquired entirely different overtones when cross-fertilised with yet other aspects of knowledge derived from the gross pathologists’ study of blood. For example, authorities such as van Swieten took the ancient term of melancholia to imply the black, earth like constituents of the blood that were evident in blood clots (van Swieten, 1768). The gumminess of this substance was considered responsible for choking the minor vessels, leading to stagnation and tumefaction (van Swieten, 1768). Similarly, the atrabiliary concept of acrimony was easily translated to lymph. Norford reported le Dran’s discussion of a mastectomy that involved this acrimonious fluid:

Having cut off a carcinomatous Tumour from a Lady’s Breast, in the Middle of which was a Cystis filled with a Fluid, I [le Dran] opened it; and Part of it Contents spurting out upon my cloaths, destroy’d the Colour from them as if it had been Aqua Fortis. Some of it flew into my Face, and I felt continual Shootings there for several Hours, though I immediately washed the (Norford, 1753, p.51).

Norford himself had seen the linen taken off a cancerous ulcer quite corroded with the foul Sanies, appearing as if they had been dipped in Aqua Fortis (Norford, 1753, p.52).

This acrimonious fluid was also known at this time as cancer poison or cancer virus (de Moulin, 1983).

While Aselli had demonstrated the existence of the lymphatic structures in 1627 (Sebastian, 2000), it was not recognised as an absorbent system distinct from the

---

12 Hydrochloric acid
13 Discharge
capillaries until the time of William Hewson in England (Hewson, 1774) and the first surgeon in the Monro dynasty in Scotland (Monro, 1781). The influence of their writings and lectures subsequently endowed the lymphatic system with a cardinal place in the understanding of disease. John Hunter argued that:

> The discovery of the lymphatics being a system of absorbents has thrown more light on many diseases than the discovery of the circulation of the blood; it leads in many cases directly to the cause of the disease (Hunter, 1835-1837, p. 354).

As a result of such teaching, many iatrochemists and iatromechanics concurred regarding the lymphatic origin of breast cancer and both sects abandoned the concept of black bile, which still persisted in other schools of thought at this time due to the primacy of humoral doctrine (de Moulin, 1983). They disagreed, however, on exactly how breast tumours developed from lymph. Iatromechanists such as Hoffman and Bartholin attributed it to coagulation of the lymph, brought about by the obstruction of lymphatic flow (de Moulin, 1983). This theory was favoured by the noted English surgeon Sampson Handley as recently as 1955 (Baum, 1986). Iatromechanists believed an uncomplicated stagnation of lymph resulted in scirrhi, whereas if a corrosive acid lymph was involved a malignant cancer would result (de Moulin, 1983). In contrast, iatrochemists maintained that the bile of the Galenists was actually comprised of salty serum and gelatinous lymph, mixed with a small amount of true blood, that became trapped in the solid parts of the body (Cantor, 1993). Once trapped, it underwent further breakdown and became a noxious cancer. The idea that the seed of the cancer was a ferment, and like the ferments of bread and wine, could reproduce itself, persisted (Cantor, 1993).

Other lymphatic theorists contributed completely different ideas, influenced as they were by knowledge derived from the study of the blood. In 1771, William Hewson described the process of coagulation of the blood in terms understandable today, in which he isolated fibrinogen (which he called coagulable lymph) and discovered its
role in the clotting of blood (Hewson, 1774). He also noted that changes in blood temperature did not initiate coagulation – thus debunking several aspects of humoral theory (Sebastian, 2000). Hewson’s ideas influenced John Hunter, who conceived coagulable lymph as the constituent of blood that spontaneously clotted (Hunter, 1835-1837). He believed that transformations of fluid lymph into solid lymph explained all the growth and repair of the solid parts of the body. So for Hunter, the growth of a cancer was merely a corrupt form of the process that made normal bodily tissues, involving coagulable lymph.

Some authorities tried to cover all fluid angles and all theories simultaneously. Norford reported the findings of several members of the Royal Academy of Surgery in Paris, who emphasised that it was not just lymphatic fluid that coagulated; a number of ‘juices’ were involved that had a number of different effects. The Academy came to the conclusion that cancerous tumours comprised stagnant, inspissated, lymphatic and gelatinous juices; which, by a putrid dissolution were converted into a malignant and corrosive fluid capable of ulcerating the flesh (Norford, 1753).

Norford himself was clearly influenced by a combination of theories of breast cancer in the following explanation:

A chymical Analysis of the Blood informs us, that it contains much Oil, Salt, Sulphur &c. hence it is term’d a Heterogenous Fluid, the compounding Parts of which are of different Densities. For a red Blood-globule is six serous Ones in conjunction; and a serous Globule is composed of six lymphatic Ones, which may be divided and sub-divided, ’till they become undiscernible by the best Microscopes, and ad infinitum. Some of these Globules are more firmly, and intimately blended together than others, and their Cohesions more strong; as that Order of Globules which compose the red Part of the Blood more strongly cohere than the next Order, and so on. The chymical Art has likewise informed us that the Lymph, which commonly passes easily
through the Glands, contains but very little Oil, Salts, &c. whereas that Part of the Serum, which more strongly and intimately coheres with the red Globules, is plentifully saturated with Oils and Salts. Hence it may follow, that if the secretory Organs of a Gland, by any Cause, are too much enlarged [due to the distention arising from the blockage caused by a scirrhus or blow], there will ensue an Error Loci of the Fluids: viz. Some of the Grosser Parts of the Serum, and the red Blood, will pass with the Lymph into the Gland, and there stagnating, may grow highly corrosive, and irritate the Nerves, causing great Pains; and fresh Matter being pushed upon the diseased Part by the Force of the Circulation, the fine Vessels will be ruptured, and a large Collection of bloody lymphatic Juices will soon be accumulated, which, being discharged, will be salt to the Taste (Norford, 1753, p. 98).

For some surgeons, the humoral doctrine of translation remained credible in terms of pathological anatomy. Norford, for example, noted that a systemic degeneration of the juices could contribute to vague physical symptoms until the obstruction had formed. Once the systemic anomaly localised within a gland, all these subsidiary symptoms disappeared:

I visited a woman about sixty, the Mother of several Children; who had been afflicted with an ulcerated Cancer for several years. She informed me that after the Catamenia\textsuperscript{14} left her, she was ill with a rheumatic Pain in her right Shoulder, sometimes a violent Pain in her Head, attended with several nervous Complaints, and a frequent Haemorrhagia at the Nose: Thus she continued for the Space of two Years, in which Time she could get little or no Relief. At length a small Tumour arose in the exterior Side of her right Breast near the Nipple. After the Appearance of this Tumour the Pain in her Shoulder went quite off; and, as the Tumour increased, her other Complaints

\textsuperscript{14} Monthly menstrual period
abated. The Bleeding at the nose likewise quite left her (Norford, 1753, p.64).

**Passions**

Factors associated with emotions continued to have explanatory credence, with Hoffman at this time contending that 90% of women with breast cancer had suffered from great grief (de Moulin, 1983). The persistence of humoral doctrine is also evident in Boerhaave’s belief that cancer was easily treated in a plethoric woman but most difficult to treat in a melancholic one (de Moulin, 1983). Similarly, in his explanation of how organic disposition contributed to the personality, Bichat explained that an individual with a strong pulmonary apparatus and energetic circulation possessed a sanguine temperament, which disposed them to anger and to courage (Haigh, 1984). Envy and hate on the other hand were more pronounced in someone in whom the bilious system dominated. Bichat also described the opposite of the impetuous, sanguine individual as inactive and dull, an individual in whom the lymphatics were greatly developed (Haigh, 1984).

In a slight departure from humoral theory, in which temperamental melancholy was considered an indicator of cancer predisposition, and the passions resulted in alteration of the humors, authorities such as Le Cat preferred anatomical explanations. He proposed that sadness constricted the fine vessels within the breast (Le Cat, 1753). As a result, bodily fluids were driven into ancillary vessels that were not anatomically designed to contain them. In these finer vessels, the trapped fluids would coagulate and thus lead to breast cancer (Le Cat, 1753).

**Gender**

The dangers lurking in female gender were reinforced by the new anatomical discoveries and the emerging principles of positivism, neither of which challenged the patriarchal assumptions of humoralism. In this period, the presence of female sex organs, mechanical defects within the breast, and menopause were fraught with risk.
Anatomical dissection, for example, led Dionis in the seventeenth century to speculate upon the association between the uterus, the breast and breast cancer (de Moulin, 1983). In 1746, Theopile de Bordeu extended this idea further when he suggested in *Recherches des Glandes* that the internal secretions of the ovary had a remote effect on other parts of the organism, including the breast (Sebastian, 2000). In 1775, Percivall Pott performed an oophorectomy and reported that the patient’s breasts subsequently shrank (Sebastian, 2000). By 1794 the English physician John B. Davidge had theorised that the ovaries actually excite the vessels of the uterus to menstruate (Sebastian, 2000). Yet, although the association between the ovaries, uterus, menstruation, mammary changes and the inherent danger of female sex continued to be conjectured, concrete evidence of their nexus would not appear until just before the close of the nineteenth century.

Breasts also remained subject to speculation that their inherently glandular nature predisposed the woman to develop cancer. In light of the new anatomical knowledge, however, the mechanism was rather different to that proposed by humoral theory. Norford explained that the carcinogenic potential of breasts was not due to their absorbency, which enhanced their ability to soak up harmful humors; rather it was a result of their defective anatomical design:

> each Breast is a conglomerate Gland to separate Milk with its excretory ducts; which are capable of very great Distention, tending towards the Nipple, which as they approach, they unite, and make but a few Ducts at their exit (Norford, 1753, p.92).

This propensity of many ducts to collect into the one channel, and the coagulating nature of milk itself, made the breast a common site of the scirrhi that ultimately develop into cancer. Norford elaborated on this idea, and proposed that nature deliberately designed the breast, with both a highly vascular bed to absorb the juices plus an outlet with which to discharge them, specifically for the purpose of gathering up and discharging the juices that would otherwise harm the body. It was only when
this matter became too gross for these strainers that a tumour would arise (Norford, 1753).

The humoral association of menopause with breast cancer was also implicit in many explanations of breast cancer in the gross anatomical period. Many prominent practitioners in the mid- to late-eighteenth century still attributed menstruation to fluid anomalies unique to the female, as evidenced by the following excerpt from a student’s notes of the lectures of Monro primus around 1750:

The different Opinions about the Cause of it [menstruation] were partly advance’d by the Chymists and partly by those who accounted for it in a more mechanical way; the Chymists imagin’d there were Fermentations, Effervescences &c. in the Uterus, but all these are now put out: It is now generally allow’d to proceed from an over fullness of the vessels, or a Plethora .. I need not mention to you the alleag’d influence of the Moon, for that Opinion is demonstrably false … As women generally live an inactive life, and as their perspiration is less than that of Men, now when there is an over fullness of the vessels the blood must make way for itself wherever the most favourable place (Monro, cited in Wright-St.Clair, 1964, pp.45-6).

John Hunter was a contemporary of Monro, and the necessity of the monthly flux, and its dire consequences on cessation, underlay his association of breast cancer with the age of onset of menopause. He believed the cancerous age was from forty to sixty, though it might occur earlier or later in some cases (Hunter, 1835-1837).

Thus menopausal, stagnated blood with no outlet was still credited with causing breast cancer in these instances. For similar reasons, haemorrhoids in women, consisting of coagulated and stagnated blood, were also believed to precipitate breast cancer at this time (de Moulin, 1983).
**Diathesis**

Theories built around the concept of ‘diathesis’, meaning hereditary predisposition, were common by the 19th century. Diathesis initially seemed to compensate for the loss of the coherence afforded by humoralism (de Moulin, 1983). De Moulin notes, however, that it was ultimately a confusing concept even to practitioners at the time, for there was little consensus on what it actually meant. Still in the shadow of humoral theory, many authors attributed diathesis to a particular condition of the blood, while others recognised it as a concept but refused to speculate on its exact nature (de Moulin, 1983). A different concept of diathesis also existed, which understood it as a general condition of the constitution, of which cachexia was the most extreme form – it was therefore a result rather than a cause of cancer. Others speculated that diathesis may be something that passed from generation to generation. Hunter discussed a common opinion in his time that cancer was hereditary, meaning that an individual might have a strong disposition or susceptibility to develop a disease that they were capable of passing onto their children (Hunter, 1835-1837).

**Tissues**

Elements of tissue theory and the role of tissue in the genesis of breast cancer existed long before the tissue histology ‘revolution’ initiated by Bichat. For example, in 1700 Gendron, in a treatise that had little influence at the time and which remains largely unknown, described tumours as consisting of glandular, lymphatic and nervous ‘tissue’, compacted into a homogenous mass in which the individual elements were no longer discernable (Gendron, 1700). The mass became malignant when it formed solid protrusions that projected into adjacent areas. It was these solid protrusions that were the true cancer roots, not the tortuous dilated veins of the ancients (Gendron, 1700). The surgeons Petit and Grashuys discussed breast cancer in terms that made it apparent they believed it originated not in the ducts of the breast, but in what they described as the fatty tissue around the mammary glands (Grashuys, 1741; Petit, 1774).
The work of Bichat, however, firmly shifted the focus of speculation onto the matrix of connective tissue (stroma), which matrix was the basis of the nourishing parenchyma (or the actual substance of the gland) (Bichat, 1801). It was this connective tissue that gave rise to cancer. Bichat’s influential thesis was that connective tissue had the innate ability to reproduce itself through elongation and vegetation; therefore the formation of tumours depended upon the ability of the cellular tissue of which it was made to also reproduce itself (Haigh, 1984).

**Climate**

Ancient considerations of the role of the environment in cancer genesis are discernable in some texts. Hunter for example speculated on the role of climate. In his lectures he related how he had heard that cancer was more frequent in some countries than in others: it was believed to be very rare in the West Indies. While he denied climate could be a predisposing cause, he argued that it could have a considerable effect on both the prevention and development of the disease (Hunter, 1835-1837).

**Ulceration**

The link between air and secondary infection was known before Pasteur actually quantified it experimentally. Some aspects of humoral theory had postulated a link between air and tumour ulceration; and at the turn of the 19th century the surgeon Peyrilhe also discussed the role of secondary infection in the ulcerated tumour (Haagensen, 1933). As in humoral medicine, the rapid progression of the disease once the skin was eroded was attributed to the putrefying properties of air, which had full access to the cancerous process once the skin was breached (de Moulin, 1983).

Howard discussed an alternative cause of ulceration (Howard, 1811). He explained that as the tumour grew, the pressure it exerted on the surrounding skin became so great that the skin could no longer contain it. The subsequent break in the skin was ulceration. In his experience, ulceration could be relatively quiescent, or increase
rapidly. It could also cover a small or large area, but was invariably a bad prognostic sign unless the ulceration culminated in tumour encapsulation:

There is a circumstance I have sometimes seen… an exudation from the pores of the skin, followed either by an excoriation, or scab, or both. This scab, or crust, defends the part for a time from further ulceration, and seems to check the growth, in a measure, in some, and alter the figure of the tumour in others; and I have sometimes seen it tuck down in the middle of the tumour, having a thick, reddened, hardened circumference, like a wall around it, approaching sometimes to a figure nearly circular … It may be considered a work of nature to relieve herself, which gives some respite to the patient from the more distressing ravages of the disease; and it is, for a time at least, a defence from further irritation and further ulceration … it may happen, in some cases, to fall off, and to be renewed from time to time, without much increase of irritation. At first it is hard, and … crusty, and this crust may increase as the discharge increases and accumulates; it softens however by degrees, and at length it becomes a slough. Let this not appear a trifling circumstance, for the prolongation of life depends on this scab, in as far as it checks the progress of the disease to ulceration, which latter, when once established, is sure to lead to fatal consequences (Howard, 1811, pp. 18-19).

Explanations of relapse and metastasis

The local/systemic theses were at the heart of the explanations about relapse and metastasis. The following extract from Howard explains one popular conception of relapse in terms of localism:

The knowledge of the more minute glandular parts of our system is … only in its infancy; and both scirrhus and cancer, how small soever they may be, can and do generally affect the minute neighbouring glandular parts within the sphere of action, converting them also into their own nature, and imparting to them their malignity (Howard, 1811, p.17).
The degree of localisation of breast tumours influenced the danger of relapse, and the inevitable outcome of the disease:

The early extirpation of a Cancer, confers no particular security against the return of the complaint; on the contrary, if the removal of the morbid part were equally complete in two patients, one of whom had been afflicted seven months, and the other seven years, with a Cancer, I should esteem the latter patient in less danger of a relapse than the former. My reason for an opinion which to some people may appear singular, is this. That when the breast, for example, is affected by the Cancer, distant parts of the gland may become the seat of the morbid alteration about the same period. These several diseased portions may not advance with an equal celerity, but while one portion has acquired a considerable bulk, the other altered parts may be scarcely objects of attention. Under such circumstances, the more obviously morbid parts may be removed, but the disease being only in progression, no man can be certain without removing the whole breast, that he has not left some diseased fibres. If however the disease shall continue without increasing during several years, one may in general conclude, that its boundaries are more accurately defined (Pearson, 1793, pp.36-37).

Norford, who was influenced by both humoralism and gross pathological anatomy, at one stage argued from an anatomist’s point of view that relapse was more likely to occur if a portion of diseased tissue remained in the breast after mastectomy:

In these dreadful Circumstances, therefore, as fast as Nature gets rid of one cadaverous Part, another becomes corrupted by the Communication of the diseased Part with the sound, so that 'tis impossible Nature should free herself of this Malady, without the Assistance of a very skilful Operator (Norford, 1753, p.78).
In Norford’s (1753) opinion the disease did not always “return to the Part where the former Tumour was taken away; but more frequently in the Neighbourhood, and sometimes at a considerable distance” (p.7). He explained this in humoral terms, attributing it to the generally morbid predisposition of the woman. So despite the influence of pathological anatomy on his thesis of localisation, Norford’s ultimate explanation for metastasis was classically humoral. He believed that there might be a latent taint residing in the bodily juices, which conspired with the immediately diseased part to produce metastases (Norford, 1753).

Hunter was similarly influenced by humoral conceptions of breast cancer when he posited three ways that metastases could develop. He proposed in his lecture series that these modes were continued sympathy, remote sympathy, and direct contact or communication of cancerous matter to other parts of the body by contamination. He called the result of all three modes of metastasis ‘consequent cancers’ to distinguish them from primary tumours (Hunter, 1835-1837).

The notion of sympathy to which Hunter referred is a remnant of species medicine. In species medicine, diseases underwent metastases and metamorphoses as they circulated freely throughout the body – a disease was not constrained to remain in any one part of the corporeal space. So a nosebleed, as it moved throughout the body, could become a haemorrhage in the brain or a haemoptysis of the lungs. The only thing that remained constant was the discharge of blood (Foucault, 1973). In species medicine, such sympathetic communication of disease through the body could occur in several ways. One method was through a local relay of the disease; Norford’s corruption of the diseased part with the sound being a good example. Another was that the disease diffused to distant parts of the body by way of systems that serviced the entire body such as the nervous, vascular and lymphatic systems. This last is the third form of sympathy to which Hunter referred. Yet another method of sympathetic communication was by means of a simple functional correspondence, where a suppression of the humor in the breast resulted in the humor being forced out of the skin in the form of a breast tumour (Foucault, 1973).
The ‘remote sympathy’ mentioned by Hunter above may have subsequently influenced Bichat’s notion of the continuity of tissue systems throughout the body. Hence regardless of the organ in which a diseased part arose, the contiguous nature of tissue systems means that a cancer that originated in one part of the body will appear in an organ with a like membrane in another part of the body. Similarly, Laennec’s categorisation of cancers in the early 19th century allowed him to view breast cancer as both a local and a systemic disease: local because it was the product of textural alterations in the tissue in a given part of the body; general because similar tissues throughout the body were capable of undergoing similar processes at the same time (Laennec, 1815). In a departure from humoral doctrine, this version of the doctrine of sympathy emphasised that whatever the method of communication, the anatomical redistribution of the disease did not alter its essential structure. Breast cancer that appeared in a site distant from the primary tumour was still breast cancer - it was not another disease altogether.

Hunter’s discussion of sympathetic metastasis was old-fashioned compared to the theses of his contemporaries. Increasingly, pathologic anatomists discarded humoral conceptions, replacing Norford’s more ancient ‘latent taint’ and Hunter’s conception of sympathy with notions derived from direct observation. These focused upon observable regional and systemic spread from a localised node of disease by way of lymphatic and haematogenous routes.

The combined local/systemic theory in relation to metastasis had prominent adherents among pathological anatomists. Le Dran introduced the notion that cancer was a local lesion that spread along the lymphatic vessels to the regional lymph nodes (Le Dran, 1757). Hence le Dran regarded cancer as a local disease in the early stages, supporting his thesis of subsequent systematisation by describing the path of metastases in breast cancer, including the involvement of the lungs and axillary nodes (Le Dran, 1757). Peyrilhe subsequently supported the local/lymphatic spread thesis in France (Peyrilhe, 1776), and the theory of lymphatic dissemination gained
further prominence in England when Hewson published anatomical studies of the lymphatic system, including details of the lymphatic drainage of the breast (Hewson, 1774). John Hunter was also acutely aware of the importance of lymphatic involvement in breast cancer and supported the idea that once a localised tumour had spread systemically via the lymph nodes, the outlook was poor:

we are apt to be deceived with regard to the lymphatic glands, which often appear [re]moveable, when, on extirpation, a chain of them is found to run far beyond our reach, which renders the operation unsuccessful. As this is not easily known, I would, in most cases, where the lymphatic glands are considerably enlarged, advise that the case should be left alone (Hunter, 1835-1837, p.627).

At about the same time, Petit had also explained the systemic nature of metastases in terms of local origin and lymphogenous spread, but also believed that haematogenous spread could also take place from the breast to the axilla and thence to other organs (Baum, 1986). In 1828, Recamier’s studies of gross pathology demonstrated the process of local infiltration and invasion by way of the blood vessels (Recamier, 1829). He is credited with the wider use of the term metastasis from this date to describe the secondary growths in the brain that often appeared in patients with a primary breast tumour (Haagensen, 1933; Sebastian, 2000).

**Conclusion**

The study of critical modalities unearths the characteristic ways of thinking about the disease at any one time. It is a mode of consciousness that defines the objects of surgical knowledge, governing the way it can be talked about so that it is meaningful to the subjects and objects of the discourse. Essentially, critical modalities articulate what is accepted as the truth about breast cancer in a given episteme. Consistent with Foucault’s premise that truth is a specific historical construction, in the period that produced theories of breast cancer based on the study of gross anatomy, this truth changed. Some vital elements of humoral theory did manage to percolate into the
new truth – for example, despite variations in the exact mechanisms, breast cancer was still conceived as the unfortunate result of feminine gender, female passions, trauma, bodily juices, and inheritance. Breast cancer was still unwanted and still feared. The discontinuities between anatomo-clinical theory and humoral theory, however, were marked.

First, while humoral theory conceived disease as consanguineous with the wider world, disease was considered a discrete entity with a life of its own. So within the humoral paradigm, the various classes of breast tumour were imposed on the woman from elements around her; whereas in the age of pathological anatomy breast tumours arose from structures in the woman herself. Essentially, the elements of individuality and difference had been introduced. Clearly, the woman and her affliction were no longer seen as inseparable from the world around her, and differences arising in the individual rather than connections with her cosmos were now sought with respect to genesis and explanation. Elements of this dualist mode of consciousness persist in the positivist approach to the disease in the present day.

Second, explanations for disease processes were now sought from death – the autopsy – rather than life (Foucault, 1973). This was the beginning of the empirical search for cause and effect, where the symptoms of disease in life were correlated with lesions noted in death. Third, there was a new emphasis on direct observation of the elements of the tumour, a localisation of the disease that is also consistent with emerging positivist principles. This is particularly evident in the school of Bichat, the explanatory systems of which came to dominate the surgical discourses of breast cancer by the beginning of the nineteenth century. This emphasis on direct observation meant these practitioners undertook all their observations of very fine tissue samples without the assistance of instruments, such as microscopes, that would have enabled the study of even more minute structures. Their reasons for this were sound. For one, although microscopes had existed for at least two centuries, Bichat did not trust an instrument that interfered with direct observation – microscopes interposed a lens between the naked eye and the element being
observed. He argued that the interposition of the lens only artificially sharpened the senses, distorting what was really there and producing images that were less than real (de Moulin, 1983; Haigh, 1984; Otis, 1999). Furthermore, the instruments of the time were plagued by aberrations that produced distorted images. So Bichat and his followers were displaying exemplary scientific caution in refusing to use them (Bichat, 1802; Haigh, 1984). Consequently, after the 17th century, when researchers such as Hooke, van Leeuwenhoek and de Graaf had made many significant discoveries with their primitive microscopes, including the nature of capillaries, the existence of blood cells and the minute structure of some of the organs, microscopy came to a standstill.

Yet it was knowledge derived from the microscope, which had been subjugated knowledge in the episteme dominated by gross tissue pathology and Bichat, which was to prove instrumental in the development of the next truth embraced by surgeons where breast cancer was concerned. It was also discoveries enabled by the microscope that helped affirm the surgeon’s premier role in the diagnosis and treatment of breast cancer by the mid-nineteenth century. As Virchow noted, the study of gross tissue pathology, while coming ever closer to the ‘truth’ of breast cancer, had basically reached an impasse. Knowledge derived and applied from anatomo-clinical study was essentially an anatomical rather than a physiological science. While it helped determine purely anatomical questions with great assurance, it could only answer questions of physiology and pathophysiology tentatively. Virchow argued that it was necessary to bring objects which could currently be seen only in their spatial relationships into a temporal and causal relationship, and that pathological anatomy in his day could not determine these relationships in an acceptably scientific manner (Virchow, 1962h). Virchow’s complaint was that of the thoroughgoing empiricist and the early champion of the microscope: theories based on observation by the naked eye alone had reached an evolutionary dead end. Moreover, they were not experimental, and therefore could not illuminate the aetiology of breast cancer in the vital terms of cause and effect demanded by the emerging principles of positivism.
The period dominated by tissue pathology is extremely confusing for the historian, as it was for the practitioners of the time. Foucault has taught that situations that see disciplines competing for credibility and struggling for supremacy (as surgery was during the period of gross anatomy) do tend to be a confusion of competing theories. These struggles continue until some revolution rearranges what is known and cements a particular way of speaking the truth and establish the discipline as dominant. Chapter 5 will examine this revolution – the cellular thesis of breast cancer.
CHAPTER 5. OMNIS CELLULA A CELLULA\textsuperscript{15}: THEORIES DERIVED FROM THE STUDY OF MICROSCOPIC ANATOMY

The emergence of the cell

The conventional surgical history generally suggests 1838 as the year that launched a revolution in the medical sciences; a revolution that was driven by the premise that the cell is the basic unit of life. The physiologist Muller, the anatomist Koch, and the anatomist-political activist Virchow, who were roughly contemporary in Germany, are credited individually and collectively with the pioneering work that led to the emergence of cellular theories of health and disease around this time (Baum, 1992; Cantor, 1993; de Moulin, 1983; Haagensen, 1933; McGrew & McGrew, 1985; Otis, 1999; Porter, 1997; Sebastian, 2000). At the time this sense of scientific revolution was palpable (Virchow, 1962b). Witness Virchow’s description of the decade prior to the publication of his influential treatise Die Cellularpathologie as:

days of great scientific degeneration in medicine. The method of orderly investigation had been almost completely lost. The great upheavals that microscopy, chemistry and pathological anatomy had brought about were at first accompanied by dismal consequences. People found themselves helpless in the ruins as the old system collapsed; filled with exaggerated expectations they seized on any fragment which a bold speculator might choose to cast out (Virchow, 1962b, pp.71-72).

The seemingly sudden emergence of the cell from this chaos is another of Foucault’s identifiable chronological breaks, initiated by key individuals, which help structure the archaeological analysis of breast cancer (Foucault, 1972). The following section will conclude the analysis of critical modalities of breast cancer, with reference to

\textsuperscript{15} “Every cell comes from another cell”
the cellular thesis that cemented the foundation of 20th century conceptions of the disease.

In contrast to the more traditional approach, the alternate history demonstrates that the popular chronology, while useful, is in fact arbitrary. Alternate histories reveal that the surgical understanding of breast cancer did not progress suddenly and inevitably from a murky humoral past into an enlightened cellular present; neither is it the result of a series of revolutionary breakthroughs initiated by certain heroic individuals (Baum, 1992). Further scrutiny of this apparent rupture in understanding demonstrates that even though the cellular conception of breast cancer may appear, on the surface at least, to bear little relation to previous explanations of cancer aetiology, it is not so much a revolution as a reframing of the problem. The importance of the ‘pioneer’ pathologists lies not in their discovery of some ultimate truth about cancer, but in their ability to reframe and redirect the surgical discourse by harnessing existing knowledge and prevailing sociocultural norms into something that appeared altogether new. The challenge to the humoral orthodoxy posed by these key individuals and their ‘discoveries’ was only possible because complementary discourses were already in motion that facilitated the emergence of the cell (Foucault, 1972). These scientific and social discourses were harnessed by surgeons and enabled them to establish the new cancer orthodoxy grounded in the abnormal individual cell.

So this alternate history influenced by the work of Foucault argues that apparent upheavals in the received knowledge actually have some degree of continuity with the old order. Examination of the discourses reveal that, consistent with this premise, theories of microscopic human anatomy were stimulated to a great extent by knowledge derived from the study of plant anatomy; by the much earlier work on gross human and tissue anatomy; and even on elements of the old humoral theory – and that they cannot be attributed to the one individual (Otis, 1999). Cells were not new. They had been recognised as long ago as 1759 by Wolff, who, noting the presence of minute cavities in the tissues, proposed that they were capable of
developing into other cavities (McMenemey, 1967). Others also believed contemporaneously that the cell was the essential unit of life – for example, Oken in 1805, and Raspail who in 1825 had written a treatise that used the famous term later utilised so effectively by Virchow: *omnis cellula a cellula* (McMenemey, 1967).

Even Virchow himself, while generally credited with the widespread acceptance of cellular theory, and the adaptation of that theory to pathology, was nonetheless generous in attributing credit for his ideas where they were due; hence the influence of Schwann, Remak, Jahn and other German anatomists were duly acknowledged. Furthermore, at the same time that Virchow was conducting his studies of the cell, by 1843 English authors such as Barry, Goodsir and Bowman had all independently of Virchow proposed that the changes that characterise all organic life were mediated by cells (McMenemey, 1967).

Similarly, micropathology could not have dominated the ensuing century to the extent that it did without concurrent developments in scientific method. While a discussion of the advent of scientific method is beyond the scope of this thesis, it will be noted that the emphasis of some of the ancient medical authorities upon objectivity, practical experimentation and hypothetical testing that were renewed around this time formed the basis of the scientific method that grounded 20th century approaches to conventional health care (Rather, 1962b). In particular, the discoveries made by cellular anatomists depended upon experimental developments in the non-biological sciences (Virchow, 1962b). These developments included improvements in the microscope and the preparation of microscopical specimens for analysis. The achromatic microscope that now illuminated the cellular field, refined from the earlier primitive microscope over a period of centuries, was fully developed by 1824. The cell simply could not be known without this instrument. The plant physiologist Muller; his pupils Schwann, Remak, Kolliker and Virchow; and other prominent German individuals such as Koch, Purkinje, Valentin, Jahn and Henle fortuitously harnessed the achromatic microscope after this development. It enabled them to suddenly offer that which had been fundamentally invisible to the brightness of the surgical gaze (Foucault, 1973).
Contemporary social discourses also influenced the rapid acceptance of the cellular thesis. Rather has noted, for example, that notions about disease and man share in the development of, and reciprocally influence, the ideas of the nature of life and man characteristic of a culture at any given time (Rather, 1962b).Virchow, perhaps the most influential of the cell theorists, achieved international fame with the publication of his of his treatise *Die Cellularpathologie* in 1855 (see Virchow, 1962b), but is notable also for the way that he exploited this fame and his knowledge of the cell to influence social reform. Virchow firmly believed that medicine should be a cultural force in the life of the people, hence he wrote many medical articles intended for public consumption (Rather, 1962a). He argued that because medicine is the science of the healthy as well as the ill human being, and that the ill and the unhealthy body were reflections of human society, there was no better science than medicine suited to form the basis of effective social laws and structures. For him, health care was a “social science to its very bone and marrow” (Virchow, 1962g, p.66). The interrelationship of medicine and society that contributed to 20th century structures of medical disciplinary power, are already discernable in the following quote from Virchow:

> Once medicine is established as anthropology, and once the interests of the privileged no longer determine the course of public events, the physiologist and the practitioner will be counted among the elder statesmen who support the social structure (Virchow, 1962g, p.66).

Otis (1999) describes how surgeons and society accepted cell theory with comparatively little resistance despite the revolutionary nature of the thesis. This occurred not only because developments in the associated sciences demonstrated the existence of cells, but because at the time, there was an increasing cultural tendency to conceive of people and their diseases in terms of individual units with distinct boundaries. This tendency is evident in the discourse as early as Paracelsus in the 16th century, while the discourse of the 18th and 19th century tissue pathologists is
rich in the language of division and self-determination. Bichat, for example, had emphasised that functional healthy tissues, while able to communicate with each other, were largely independent units. It was only when their unit structure was breached that disease could gain a foothold, compromising the organism as a whole (Otis, 1999). This conceit was subsequently translated to the cellular thesis and enabled the descriptions of human cells by Virchow in particular to reflect the cultural appeal of the bounded individual replete with increasingly bounded sub-structures (Otis, 1999).

A complementary social conception of the individual had also arisen that required citizens to take personal responsibility for the cleanliness of their environment in order to prevent contagion. Virchow accessed this discourse by focusing notions of public health firmly onto the conception of the bounded individual – whether cell or person. He asked:

What is an organism? A society of living cells, a tiny well-ordered state, with all the accessories – high officials and underlings, servants and masters, the great and the small …Whoever has felt what it means when a certain number of these cells, these involuntary members of an organisation, fail in their duty, whoever has had his limbs crippled by some severe illness, knows well enough how to value the pleasure felt when every member responds in turn with full and easy activity (Virchow, 1962a, p.130).

Virchow has been described as driven by the need to create order out of chaos, and to translate his admiration for the orderly life of a community of healthy cells onto a healthy community of human beings. It is clear, for example, that he viewed social disruption as the equivalent of neoplasia (McMenemey, 1967):

As in the lives of nations, so in the lives of individuals the state of health of the whole is determined by the well-being and close interrelation of the individual parts; disease appears when individual members begin to sink into
a state of inactivity disadvantageous to the commonwealth, or to lead parasitic existences at the expense of the whole (Virchow, 1962a, p.139).

Thus Virchow framed the cellular discourse of health and disease in terms of social order and the control of individual agency in the public consciousness (Otis, 1999). He regarded societies of cells and societies of people as unified entities working towards the common end of life and health. In addition, the individuals who made up those societies were capable of self-determination, self-preservation and self-development. These activities, however, could only be achieved by harmonising with the collective – the well-being of the individual was founded on the commonwealth of its parts (Virchow, 1962a). The influence of this discourse was to shift the blame for disease from numerous factors beyond individual control, such as miasma and climate, firmly onto the bounded individual whose personal neglect had engendered the disease.

**Cell theory and cell pathology**

The earlier tissue theorists had used the term ‘cell’; however the cells of Muller, Virchow and Koch were not the spaces in connective tissue postulated by the school of Bichat. Tissue theories were harnessed in this different conception nonetheless; but the new individual element - the cell - became the basic structural unit of tissue, rather than the space between the tissues. Virchow defined a cell as consisting of:

A peculiarly constructed nucleus, often provided in addition with a special nucleolus, surrounded by a more yielding mass condensed at the periphery to form a membranous boundary which is sometimes tough, sometimes delicate, all built up from nitrogen-containing proteinaceous material – this is the organic cell. In itself it is already complicated, and is an organism in miniature; in itself it is already capable of carrying on a separate existence as we see realised transiently in the animal egg cell and for longer periods in the lower plants. For the cell is either the living individual itself, or it contains, in
outline at least, what we are accustomed to designate as such (Virchow, 1962c, p.105).

In a massive shift in thought, the cell was also reconceived from a simple cavity to the basis of all life: life was posited as cell activity; the uniqueness of life arose from the uniqueness of the cell (Virchow, 1962c). Life was indicated solely by the existence of the generative nucleus; and new life was possible only by the division of existing cells driven by the activities of the nucleus (Cantor, 1993; de Moulin, 1983; Haagensen, 1933; Porter, 1997). Any derangement of the cell that interfered with this generative function therefore equated with disease and possibly death. In another shift in thought, Virchow was convinced that all diseases occurring within the body were degenerations, transformations or repetitions of existing physiological structures (Virchow, 1962b). The unit of all these physiological changes was the cell. He also argued that it was not possible for a person to harbour within his body any community of cells, diseased or otherwise, that had not evolved from his own. Every mature cell, and every abnormal cell, could be traced back to a cellular progenitor. He expressed it thus:

Now if pathology is nothing but physiology with obstacles, and diseased life nothing but healthy life interfered with by all manner of external and internal influences, then pathology too must be referred back to the cell (Virchow, 1962b, p.81).

Rather (1962a) offered a neat summary of the theory that continues to influence surgical thinking today. He notes that Virchow’s cellular thesis was grounded in four hypotheses:

1. All diseases were reducible to active or passive disturbances of living cells
2. All cells arise from parent cells
3. The functional capacities of cells depend on intracellular physical and chemical processes and may to some extent be inferred from morphological changes
4. All pathological formations are degenerations, transformations, or repetitions of normal structures (Rather, 1962a).

Another significant aspect of Virchow’s thesis was that disease ultimately was regarded as an extension of its original cellular focus, which, as discussed below, was to have profound implications with regard to subsequent conceptions and treatments of breast cancer well into the twentieth century.

**Cellular explanations of breast cancer**

By 1858, the surgical gaze had narrowed so firmly onto the cell that Virchow was not only able to posit it as the sole essence of life, but to define the sick cell as the exclusive pathological entity (Virchow, 1962c). Virchow’s thesis was that disease is normal life operating under changed conditions – the reaction of a normal cell to abnormal stimuli – hence disease could only be understood by way of local analysis of cellular damage. This allowed him, in *Die Cellularpathologie* to state with certainty in regard to cancer:

> I formulate the doctrine of pathological regeneration, and of neoplasia in the cellular pathological sense, in simple terms: *omnis cellula a cellula* (Virchow, 1962b, p.88).

Although there was consensus amongst surgeons that cellular alteration was involved in the development of breast cancer, as always, alternate discourses abounded as to the nature of this cellular damage, its underlying mechanism, and the factors contributing to it. The nature of these alternative explanations is also consistent with what went before: cellular theory abounded in metaphors of abnormality, primitivism, chaos, deranged fluids, and so on. The following section examines the most influential of these in the greater part the nineteenth century, which shaped the 20th century conception of breast cancer.
Structural abnormalities

By the middle of the 19th century, the development of histological staining methods had fully eliminated tumour classifications based on similarities. Instead, tumours were now classified according to cell type (e.g. connective or epithelial); their normal (typical) or abnormal (atypical) features; and their maturity or immaturity compared to adult cells (de Moulin, 1983). Underpinning these classifications was a general agreement that breast cancers arose in discrete tissues from normal cells in response to abnormal stimuli (Baum, 1986). The idea of a discrete structural abnormality did not arise with the cellular pathologists – Virchow himself noted that Meckel in the early 1800s had demonstrated, in relation to congenital malformations and teratology16, how:

under certain circumstances, normal development might succumb to abnormal tendencies, in which the typical form – its peculiarity traceable back to a number, frequently small, of irregularities (defects, excesses or disturbances in the arrangement of the individual parts) – could still be recognised; finally, he found in addition the causes bringing about defective, excessive, or atactic formation in many anomalies (Virchow, 1962d, pp.184-85).

Once the focus of the abnormality shifted firmly onto the cell, however, such concepts were easily transferred to the language of breast cancer. The reason cancerous growths came to be considered abnormal was because, like other monstrous growths, the natural proportions of the cells within tumours had disappeared and the innate coherence of the cell mass was lost. For example, Bennet had proved that a squamous cell cancer had identical features to normal squamous cell epithelium, but that those features were of different proportions (Bennett, 1849). Muller had also argued that the elements of cancerous growths were comparable to the elements of normal growth – that is, they still had nuclei, cytoplasms and

16 The study of animal and plant monstrosities.
bounded cytoplasmic membranes - but their dimensions were different, and their structure more primitive (Muller, 1838). Billroth, who was a pathologist as well as a surgeon in Germany, noted that the typical mammary tumour consisted of cells that varied from normal tissue structures. He described it as filled with large, round and irregular cells – cancer cells – which contained large nuclei, each with a strikingly shining nucleolus. The intermediate connective tissue was also infiltrated by much smaller cells (Billroth, 1880).

**The role of tissue in tumour development**

The complementary nature of many elements of tissue and cellular theories facilitated a neat fusion of the two. This meant that by the end of the 19th century, tumour types were attributed to cells but classified according to the cellular tissue of origin. While cancers were generally believed to arise from either epithelial or connective tissue, connective tissue was credited with a special role in the development of all cancers. This is reflected in the contemporary notion of cancer stroma – conceptualised as the framework, usually of connective tissue, in which tumours were supported. Muller, for example, had noted the existence in some tumours of cells that contained ‘tailed bodies’, which he postulated were connective tissue cells in an early stage of development (Muller, 1838). While Muller did not describe tailed bodies as identifying features of all cancers, others who built on his work did so. Hence there arose a widespread belief that tailed bodies were an identifying feature of cancerous tumours (de Moulin, 1983). In relation to cancer stroma, Billroth postulated that its development was not related to the neoplasia or new growth of the connective tissue as such, but to the infiltration of glandular connective tissue by excess proliferation (Billroth, 1880).

An important aspect of the role of cellular tissue in tumour development is that it reinforced the localisation thesis that had always divided the surgical community. There remained two schools of thought with regard to the cause of cancer – local or systemic causes – until relatively recently. The surgeon Halsted and his adherents, for example, influenced by Virchow, considered that breast cancer had a purely local
origin in the mammary glands, and its contiguous spread from these structures could successfully be halted with radical excision of the affected tissue (Halsted, 1895). There were also numerous adherents of the systemic view. De Morgan neatly summarised the continuing debate when he discussed contemporary theories that firmly localised the cause of the disease. He argued that regardless of whether a tumour arose in one specific area,

> There are strong grounds for regarding cancer as something more than a local disease. The all but certainty of its recurrence, remove it as we will, its heritability … its often rapid diffusion, its power of infecting the system … naturally led to a belief that the disease must from the first be more than a mere local tissue change (de Morgan, 1874, p.290).

**How structural abnormalities develop**

It was established very early in the development of cellular theories of breast cancer that cancer cells developed from normal cells, and that they multiplied by normal cell division. Explanations for the mechanism underlying the development of cellular abnormalities from these normal units were numerous, but, consistent with sociocultural notions of individual agency and disease, the prevailing view was that the individual cell was predisposed to independent action with regard to threatening stimuli and required some form of societal control to keep it in check. This notion is implicit in the following comment by de Morgan:

> Admit that the elements of any tissue may take on independent action … Surely in such cases one can recognise a disposition … to perverse development in an atom of natural tissue (de Morgan, 1874, p.98).

The wayward behaviour of these individual units was often correlated with the immature appearance that is so characteristic of the more dangerous cancer cell. Some cellular pathologists believed these particularly primitive cells arose initially from adult cells. They were the separation in adult life of normal cells from their
natural relationship with other cells, which were capable of independent growth (de Moulin, 1983). The majority, however, posited them as perpetually juvenile cells that were, like all immature agents, naturally inclined to chaos. Cohnheim, for example, attributed cancerous tumours to an error in embryonic development. He argued that at a very early stage, clusters of cells would disengage from within the normal coherent cellular structure of tissue, lying dormant for an indefinite period of time. Later in life, they would start ‘festering’ (Cohnheim, 1877). Contemporaries such as Lebert, Muller and Virchow also believed that cancers, like all human structures, developed from primordial cells and were merely augmentations of these primitive units (Lebert, 1851; Muller, 1838; Virchow, 1962b). De Morgan, who was notable for his attempt to present a balanced discussion and acknowledgement of multiple truths with regard to tumour genesis, likewise endorsed the embryonic thesis when he noted that

when I speak of the origin of cancer I speak only of its place of origin, whether in tissue, or blood, or elsewhere, not of the conditions which determine its special form of development. These conditions we may be prepared to reason on when we have found out why one atom in the germinal membrane becomes muscle, another bone, another brain. I cannot help thinking that whatever determines the special forms of development of natural structure is in operation in the development of what we call morbid growths (de Morgan, 1874, p.19).

**Derangement of the fluids**

Elements of humoral theory were not entirely discarded by cellular theorists. For example, it was believed early in the development of the cellular thesis of breast cancer that cells were generated by an amorphous material, the blastema\(^{17}\), that had many of the generative attributes previously assigned to the humors. While its use by the early cellular pathologists should not be confused with the same term that was

\(^{17}\) Literally ‘sprout’ or ‘growth’
occasionally used by Galen to define tumours, the conception of the blastema did in fact reinvigorate some aspects of humoral thought. In particular, it renewed the idea of spontaneous generation of tumours from a fluid or plastic substance within the body (Virchow, 1962e).

Rokitansky and Paget, who both promoted the blastema thesis (Paget, 1874; Rokitansky, 1846), have been roundly criticised by conventional historians such as Virchow (1962d) for their role in the continuation of this humoral concept. It is now widely believed that the microscopical observations that led to their endorsement of the concept were the result of bad science; namely, that artefacts resulting from poor technique led to misconceptions about what was actually being viewed (Baum, 1986). There is some speculation that what they both described as blastema was likely to be fibrin (Baum, 1986; Haagensen, 1933). However, the notion of blastema appeared long before these men published their work. Virchow reported that Schwann was the first proponent of the blastema theory. Virchow believed Schwann developed the theory in the first decade of the 19th century, when he observed what he believed was the origin of cells arising from an undifferentiated fluid or semi-solid mass. Virchow described what his teacher had observed:

first small firm particles separated off, and then they came together into little clumps and masses which gradually changed into cell nuclei. A new precipitate or firmer substance now slowly accumulated around this, and the body the cell appeared. Hence the original amorphous substance would be the actual formative material, while the cell was formed by the nucleus; Schwann called the former cytoblastema, the latter the cytoblast (Virchow, 1962f, p.225).

Other authorities proposed different versions of blastema theory to the dominant one proposed by Rokitansky and Paget. Muller for example, while always acknowledging that the nucleus was the propagative organ of the cell, believed that cells arose initially from a generative blastema that was ultimately derived from the
circulating blood (Muller, 1838). Similarly, Lebert proposed that the origin of cancer was the assimilation of the muscle fibres and the glands by the blastema. He argued that by this process, the normal tissues would turn pale and disappear, to be substituted by the cancer mass (Lebert, 1851). Earlier in his career, before the advent of cellular pathology, Lebert had in fact theorised about cancer juices, and his thinking in this respect is congruent with earlier beliefs about cancers arising from a basically morbid condition of the blood (de Moulin, 1983).

Theorisation concerning blastema ultimately proved a futile and short-lived exercise in the context of cellular theory. Virchow and Waldeyer attributed life firmly to the division of cells (Virchow, 1962b; Waldeyer, 1872). Their influential published papers did not credit speculation about substances like blastema; and given their influence at the time, and the complementary work of Darwin that argued that new species can only arise from the modification of existing forms of life, theorisation about blastemata was quietly abandoned (Virchow, 1962f).

However, inherent derangement of other bodily fluids as a cause of breast cancer was still considered a viable proposition. In 1863, even Virchow had acknowledged that a blood dyscrasia might contribute to the development of cancerous cells (McMenemey, 1967), although subsequent papers made it clear that he doubted this. Virchow acknowledged, for example, that the discoveries of Harvey regarding the circulation of the blood satisfied humoral expectations regarding a homogenous material common to the whole body and to all processes in it. The blood had been one of the four cardinal fluids of the old humoral pathology (but after Harvey it was no longer) found only in combination (crasis) with the other three cardinal fluids ...After its individuality was recognised, however, the other fluids obviously had to move into the background; more and more they became mere secretions. But blood, too, is

18 A ‘bad combination’ of blood constituents
a mixture; it proved a complex rather than a simple thing, with a composition which could be changed by a variety of other substances. Thus it happened that its composition (crasis) and the changes therein (dyscrasis) very quickly achieved dominant significance. … A new humoral pathology gradually took origin, the same one that has persisted into our own time (Virchow, 1962d, p.172).

Like Virchow, while de Morgan did not subscribe to the theory of blood dyscrasia, he was forced to acknowledge what he described as the popular opinion of surgeons of his time that a cancer tumour was the expression of a specific blood condition (de Morgan, 1874). He also discussed another widely accepted contemporary theory, which involved a morbid material (within the blood which) coming into relation with an appropriate tissue enters into combination with and causes the growth of the tumour (de Morgan, 1874, p.290).

He also disagreed with this theory, on the following grounds:

There is some, possibly in all, cases a predisposition to the disease, which may, possibly, be distributed through the system, but which more probably has its seat in some one among the tissues in the body. I would question therefore the evidence of there being any special disease in the blood, which either alone produces cancer, or co-operates with tissue specially fitted for the development of the disease (de Morgan, 1874, p.290).

**Gender**

The hazards inherent in female gender were very real for those surgeons influenced by the cellular thesis. Congruent with humoral ideas, it was believed that if women were not women they would not develop cancer; and in the classic double bind, that if their primary sexual organs in fact ceased their female functions of secretion of
milk and blood, they would be more prone to develop it. Rather than humoral reasoning however, numbers were now utilised to prove that this was so:

These figures confirm the rule, observed everywhere, that the female sex is more endangered by malignant growths and that mainly through tumours of the genital system [in which he included breasts] … The ratio of men to women is 9:11, and the greater danger of cancer of the uterus and breast in women is counterbalanced by the greater frequency of cancer of the stomach, gullet, lips, face and kidney in men. … The critical effect of the climacteric years and of the menopause in women stands out very clearly in the figures. I do not doubt that this is imputable to the localisation of the organ rather than to any eventual dyscrasia … That the female breast is most endangered particularly at the ages between 40 and 50, the very high figures of Baker also most clearly show (Virchow, 1985c, p.584).

The reason femininity was so risky remained open to conjecture. Billroth had speculated whether the breasts were especially predisposed to neoplastic growth due to their inherent adaptability to functional developments that occurred in the pubertal and mature female body (Billroth, 1880). Muller had posited early in the development of cellular theory that cells with an inherent tendency to reproduction, such as those in the breast, might enter into the circulation and give rise to tumour growth elsewhere in the body (Muller, 1838). Similarly de Morgan implicated degeneration in tissues such as the breast, which are inherently prone to change, in the development of cancer (de Morgan, 1874). The focus by the end of the century, however, had shifted firmly to those other defining female features – the ovaries. Beatson was convinced that ‘ovarian irritation’ initiated breast cancer. He did not understand why this should be so, but after presenting three case studies in which he utilised a combination of thyroid extract and salpingo-oophorectomy for the remediation of breast cancer, he decided that it was the surgical removal of the ovaries rather than the thyroid extract that slowed the progression of the disease. He concluded that
we must look in the female to the ovaries as the seat of the exciting cause of carcinoma, certainly of the mamma, in all probability of the female generative organs generally, and possibly the rest of the body … I am satisfied that in the ovary of the female … we have organs that send out influences more subtle it may be and more mysterious than those emanating from the nervous system, but possibly more potent that the latter for good or ill (Beatson, 1896, p.163).

Beatson’s thesis was that all cellular tissue in the body was capable of reproduction, not just ovarian tissue. However, while the ovaries remained functional in terms of reproductive ability, their “mysterious emanations” (what today we would call hormones) kept the reproductive capacity of other bodily cells in check. If for some reason the secretions from the ovaries were altered – for example, disease processes within the gland – this might “so affect the other cells of the body as to allow their latent reproductive power to come into play”, resulting in the uncontrolled proliferation characteristic of tumours (Beatson, 1896, p. 164). Interestingly, Beatson concluded after his experiments with salpingo-oophorectomy for the management of breast cancer that the procedure resulted in better outcomes for young women who had developed the condition rather than older patients (Beatson, 1896). Statistics have subsequently confirmed this thesis.

**Diathesis**

The concept of diathesis, reframed by cellular theorists into a predisposition to develop the cellular abnormalities that resulted in breast cancer, remains credible to this day. Velpeau, Lebert, Paget and Billroth all discussed their belief that there might be a predisposition to developing breast cancer (Billroth, 1880; Lebert, 1851; Paget, 1874; Velpeau, 1854). Similarly, the surgeon Moore attributed the recurrence of breast tumours even after wide excision to the then-popular belief that cancer might be
a constitutional malady, something apart from palpable local tumours, which hovers over the system, ready to alight on any or on many different parts of the body (Moore, 1867, p.246).

Obviously influenced by Bichat’s theories, Moore also discussed a species of textural or organic diathesis that arose within discrete organs or tissues, which, due to the specifically local nature of the tissue involved, did not metastasise so much as arise in similar tissues throughout the body:

But if it thus limit and localise the cause, this theory likewise connects it with the textural or organic functions, and requires that the tendency to disease should be co-extensive with the respective organ or texture. In the case of double organs therefore, on the removal of one that is cancerous, a prominent liability to the same disease should be transferred to its fellow (Moore, 1867, p.246).

De Morgan discussed the predisposition to develop cancer in terms that are comprehensible today. He clearly expressed the understanding of the heritability of certain types of breast cancer that informs 21st century surgical practice:

I believe cancer is more frequently inherited than is generally admitted. We find the proofs of inheritance quite often enough to allow us to reckon this as one its factors. In a large number of cases, moreover, in which no proof can be found of the existence of the disease in a progenitor, we can trace it in collaterals, and it seems to me reasonable to conclude that in such instances, though the common parent may not have lived long enough to develop the disease, it was present potentially. Nor is it contrary to reason to conclude that the constitutional disposition, whatever it may be, is often present without the disease becoming developed. This must be the case where a disease or peculiarity has skipped one or more generations (de Morgan, 1874, p.290).
Trauma
The role of trauma in theorisation, while still evident, was somewhat muted within the cellular thesis. Velpeau did not exclude such mechanical causes; similarly, von Winiwarter gave some credence to the notion that recurrent injuries to the breast might give rise to breast cancer, although he did not credit the idea of solitary trauma as a cause (Velpeau, 1854; von Winiwarter, 1878). Virchow stressed the role of trauma in the initiation of tumours, particularly such irritants as soot (McMenemey, 1967). De Morgan also implicated trauma as a predisposing factor to cancer, particularly when it occurred in tissue that was already susceptible to change, such as mammary tissue (de Morgan, 1874).

Climate
Virchow was a strong proponent of the idea that cancer was related to climate, although he did not discuss it in the humoral sense. In his early statistical studies on cancer mortality rates published in 1849, he noted

the frequency of deaths from cancer at certain periods, and hence I deem it important that in the future [such diseases] be accurately studied in regard to season and certain types of weather (Virchow, 1985b, p.579).

By 1863, his studies led him to conclude that thermal cellular damage associated with the change of seasons might be implicated. He based this conclusion not only on statistical data, but also on the correlation of these data with his findings at autopsy. These demonstrated to him that cancer was primarily a disease affecting parts of the body located at the surface, which automatically implied the danger of external damage by rising ambient temperatures:

As early as 1849, pathological-anatomical findings at the Berlin Charite have led me to note that certain tumour forming processes, not only tuberculosis, but also cancer, showed a sort of epidemic aggravation at the beginning of
the warm season … I had been especially struck by the observation that with the onset of the warm season there occurred among the bodies coming to autopsy a marked increase, in the first place, of cancer cases … From this it might be concluded that this season in a certain way enhances the processes mentioned (Virchow, 1985c, p.582).

Virchow also conjectured that the seasonal incidence may have a cause other than thermal damage to cells, and used an analogy with plants to explain this phenomenon:

having demonstrated that tumours develop and grow as do plants, it may perhaps be permitted to place the vegetative phenomena next to the pathological ones, for illustrative purposes. I am referring to that ancient notion which in the ‘spring cures’ has still retained a certain life, that at the time when the sap rises in the plants and their cellular activity is greatly stimulated, similar events also take place in the human body. True enough, the activity of the pathological cells have a destructive effect, but this is only their effect; the process itself is a productive one and thus comparable with the growth, bloom and fertilisation of plants. If to this is added the fact that in the harvest month a certain phase of standstill and regression occurs in the tumours too, reaching its minimum in December [winter] and finding its turning point in January, the analogy is almost greater than it needs to be, and one might doubt whether it was chance that dealt the figures. The question ought to be further examined (Virchow, 1985c, p.583).

**Metastases**
Little changed with regard to theorisation about the spread of breast cancer, which continued to be framed in terms that would certainly have been understood by the gross anatomists, and to a lesser degree by humoralists. These include theories of lymphogenous seeding of tumours (alone or in combination with blood-borne spread); and notions regarding the role of structural breaches of tissue integrity.
Speculation concerning the lymphatic spread of breast cancer in the later 1800s subsequently inspired the radical surgical technic that dominated the first half of the 20th century. Virchow had proposed an influential lymphatic version of the localisation thesis involving the centrifugal extension of the primary breast tumour along the local lymphatic vessels. The surgeon Halsted and his followers assumed, following Virchow, that cancer spread in continuity from its origin as columns of malignant cells, which passed along the lymphatic channels until they were initially arrested by the first group of regional lymph glands (Halsted, 1895, 1907). This view of breast cancer considered the circulatory system as essentially separate from the lymphatic system, with minimal communication between them. Rather, the lymph nodes were considered the prime filtration units of the mammary system, and once their filtration capacity was exhausted, the cancer cells spilled over into the distal lymphatic channels and thence to other regions of the body. This idea informed the practice of radical mastectomy advocated by Halsted, and the forequarter amputation advocated by some of Halsted’s more extreme adherents, which were designed to capture and excise the overloaded structures before they released their cancerous contents into the rest of the lymphatic system (Halsted, 1895).

There were many significant figures in the archive, however, who advocated the double jeopardy of lymph- and blood-borne metastasis. Billroth, one of the most influential surgeon-pathologists of this time, believed the two systems were interrelated and thought it probable that breast tumours seeded by both routes (Billroth, 1880), as did Waldeyer and de Morgan (de Morgan, 1874; Waldeyer, 1872). They therefore rejected the radical mastectomy on the basis that once a tumour had infiltrated local structures, it had most likely seeded throughout the rest of the body by way of the blood and the lymph. According to this position, the radical mastectomy was a futile exercise. Budd argued this convincingly when he wrote that post mortem examination of breast cancers revealed that:
not only are the lymphatic glands in relation to the seat of the original disease found converted into cancerous tumours; but the substance of the viscera is, also, studded with them … In what manner has this taken place? It is evident that the glands in relation with the tumour have become infected by absorption of cancerous matter, in the same way in which bubo is caused by absorption of syphilitic virus from a chancre. The lymphatics leading to these glands are always loaded with this matter. But the infection of the viscera, and of the system at large, cannot well have been effected through this channel. The blood is the only medium qualified, by its nature and diffusion, to be the means of such wide dissemination; and it is, in fact, by the agency of this fluid that the general infection takes place … [This is because] the viscera which are most liable to become infected with secondary cancer, are the very same in which foreign bodies in the blood usually stagnate; namely, the lungs and liver … the cancerous matter … having found its way into the circulation, lodges in those capillaries by which the course of other foreign bodies is arrested, and there becomes the germ of a new growth, which is itself a repetition of that by which this matter was first produced (Budd, 1841-1842, p.266).

Budd cited three factors that proved that regardless of whether cancer had a local origin, its systemic spread was by way of both the lymph and the blood vessels. First, recent contemporary investigations had demonstrated the presence of cancer cells in the coagula of veins both near the tumour and in coagula distant from the seat of the tumour in other parts of the body. Second, secondary tumours were pathologically similar to the primary tumour. Third, contemporary evidence appeared to demonstrate that if a primary tumour was excised before it could enter either the lymphatic or the blood vessels, no metastases appeared at all (Budd, 1841-1842). He also acknowledged that apparent metastases might in fact be primary tumours of multicentric origin, where the first formation of cancer has taken place at more than one point. That is, congruent with Bichat’s thesis, the same type of tumour can arise simultaneously in different parts of the body; nonetheless, whether
tumours were uni- or multicentric in origin, Budd argued that they all metastasised in the same way (Budd, 1841-1842).

Surgeons influenced by the cellular thesis also speculated about why cancer cells metastasised so readily. They proposed that a defining characteristic of the cancerous cell was its tendency to cohere weakly to other cancer cells rather than to attach firmly to the connective matrix like normal cells – which tendency allowed them to drift off into the systemic circulation and readily seed in other parts of the body (Budd, 1841-1842). Consistent with the norms of the prevailing culture, cancer cells were self-determining agents:

Each cell may be regarded as the individual representative of the disease, since it contains within itself all the powers required for its development and dissemination (Budd, 1841-1842, pp. 268-9).

Also consistent with sociocultural norms that emphasised the importance of all bounded individuals working together for the good of the whole organism, implicit in the cellular conception is the notion that the chaos of cancer was the result of just one unit flouting organisational norms:

recently it has been seen that cancer cells, like the white blood-corpuscles, show amoeboid movements and can thus travel independently in tissues spaces or even permeate delicate membrane. There is no doubt, I suppose, that these cells, whether the matter that forms their nuclei or the free granules, are the active agents in the reproduction of cancer (de Morgan, 1874, p.297).

The vascularity of malignant tumours had been recognised and speculated upon for millennia. Cellular theorists implicated tumour vascularity in the speed with which cancer spread throughout the body; for they believed that the rapidity of initial tumour growth and subsequent dissemination was dependent not only on the cancer
cell’s ability to detach from its parent tumour. It also required a plentiful supply of blood vessels to both nourish the parent tumour and effectively disseminate the cellular offspring. In an echo of arguments advocated in humoral times regarding soft tumours, Budd noted that their relative plethora rendered vascular growths, such as the encephaloid tumours, very dangerous indeed. Such soft well-fed tumours were notorious for the rapidity of their spread (Budd, 1841-1842). De Morgan supported this view:

the direction and rapidity of dispersion [varies] according to the density of the tissues and the abundance of connective tissue spaces, or of the lymphatic or vascular networks in which it lies (de Morgan, 1874, p.297).

An alternate version of tumour softness was also consistent with humoral thinking, and with later suppositions concerning the local origin of cancer supported by many gross anatomists. Some cellular anatomists still considered the firm encapsulated breast tumour to be benign, that is, not likely to spread. The danger of metastasis heightened however if the tumour softened, when it was “well known that … a sudden and remarkable increase takes place in the rapidity” of tumour growth and spread (Budd, 1841-1842, p.266). According to this hypothesis, once the tumour capsule or “limitating membrane” was breached, cancer cells came into contact with previously healthy tissue, which they subsequently contaminated (Budd, 1841-1842).

**Quiescence and relapse**

Cellular pathologists also speculated upon the reason tumours that had remained dormant for perhaps years after they first appeared, causing no trouble whatsoever, suddenly turned malignant. De Morgan explained the mechanism behind quiescence:

My conviction is that cancer and other tumours may remain in a rudimentary state for an indefinite length of time. In the case of recurrent cancer we often see that an enlarged and hard gland which is left after the removal of the
main tumour will remain quiescent for years, and that then active growth will set in (de Morgan, 1874, p.299).

De Morgan argued that such a process was natural to the human body, being analogous to other cellular tissues in the body that remained unchanged prior to suddenly taking on new phases of growth. He cited as a comparison the way that epiphysial cartilage mutated to bone or rudimentary female structures became breasts after puberty.

Cellular pathology also addressed the question of relapse. In explaining the reason cancer often returns despite wide excision of local tumours, Moore (1867) discussed the regional thesis of recurrence, in terms that recall the humoral doctrine of sympathy and the tissue thesis of Bichat. Moore attributed such relapses to regional sympathy of the tissues:

As so called supplemental organs are formed in the vicinity of a principle organ mass, or as some tumours bear a resemblance to the structure near which they originate, so Cancer is held to arise within a region by successive independent growths beyond the limits of the first tumours and of the organ in which it sprang ... [however] the distinction between a regional Cancer and a yet more strictly local growth is not easy to draw. It is then necessary to draw a distinction between a recurrence traceable to incompleteness of the operation and the return of the disease in which a morbid tendency may be supposed to possess every several structure throughout a region (Moore, 1867, p.247).

Moore also credited the idea that, due to the fundamentally microscopic nature of the cells that caused cancer, the total excision of the tumour might not be possible. He argued that relapse occurred because the original tumour had not been totally excised, that is:
A residual fragment of the original disease [might] remain quiescent for years, since it is known that whole tumours sometimes continue as long without a perceptible alteration of size, and then suddenly enlarge at some part (Moore, 1867, pp.247-48).

Conclusion

Many pathologists of the mid-eighteenth century continued to regard the arguments based on microscopical discoveries as fantasies derived from a complex optical mechanism. Moreover, techniques for the preparation of microscopical specimens lagged behind developments in the instrument itself. Kolliker in 1853 offered the criticism, justifiable at the time, that cell theory, while appearing to constitute the sole foundation of medicine and surgery by his time, did not offer one single law of cause and effect; moreover the materials on which any such laws could be based were relatively scanty (McMenemey, 1967). Similarly, it would not be possible until another century had passed to formulate therapies targeted at the cell.

Kolliker also critiqued the contemporary valorisation of microscopic anatomy in a manner that has particular resonance in our own time, prefiguring by a century the subsequent focus upon ever more minute elements of the body in the quest for disease aetiology. He argued that the science of microscopic anatomy would last only as long as no essential advance was made towards penetrating more deeply into organic structure and sub-composition of cells. He believed it would eventually be possible to visualise the molecules which constituted cell membranes; and to understand their laws of apposition and alteration during growth and activity. Kolliker foresaw a new era in histology, which would discover the laws of cell genesis and molecular theory that would be as celebrated in its time as cellular theory was in his own (McMenemey, 1967).

Regardless of these criticisms, by the mid-nineteenth century, many were convinced of the importance of the microscope. Virchow, for example, accurately opined that, despite the continuing scepticism of many of his contemporaries, the microscope
would be an instrument of reform with regard to the classification of disease (McMenemey, 1967).

The combined influence of two thousand years of study and theorisation is evident in the definition of cancer proposed by Tillmans at the end of the 19th century – a definition which is credible in many respects in our own time. Tillmans defined cancer as:

new growth developing from finished epithelial epidemic and glandular cells, which disturbs the normal tissue type of the primarily diseased part of the body. It is characterised by unlimited peripheral growth, by epithelial metastases particularly along the lymph vessels, more rarely along the blood vessels, and ends mortally in the great majority of cases under the symptoms of general intoxication (Tillmans, 1895, p.510).

So by the end of the 19th century, the conditions for our present explanatory system of breast cancer had been cemented by a fusion of the elements of theories concerning humors, gross anatomy and cells. It was as Virchow had envisioned: humoral and solidary pathologies were united with an empirically based cellular pathology (Virchow, 1962b). This analysis has demonstrated that surgical discourse about breast cancer does not address a set of objects that are defined for all time in a set way, and that even Virchow’s vision is transitory – while there are indeed continuities, there are also ruptures, replacements and renewals. They are not one specific group of statements, but a field of heterogenous types of statements (Dreyfus & Rabinow, 1982b). One theory had not superseded another; rather theories that had once been dominant were examined in a different light and rearranged, with some elements censored and others subsumed. But by 1900, explanations of cancer had been standardised in ways that are recognised today. ‘True’ cancers were differentiated from other tumours such as scrofulous lesions, cysts and ulcers. The cellular nature of cancer was recognised, and cancerous tumours were understood to develop from normal cellular tissue and reproduce...
through normal cellular mitosis with the support of nutrients supplied by the vascular system of the host. While tumours were understood to comprise abnormal cells, they were classified according to their tissue of origin, whether connective or epithelial. The difference between local and systemic spread was also understood – benign growths were known to be localised, encapsulated cellular overgrowths that did not spread to other parts of the body; whereas malignant growths were considered to be locally invasive (through direct contact of cancer cells with other structures; or through contiguous invasion of local lymph nodes); or systemically invasive by way of distant lymphatic and vascular channels. To paraphrase Foucault, by the end of the 19th century it is as if for the first time that surgeons, freed at last from the shackles of humoral theory, could approach breast cancer with the purity of the objective scientific gaze and see it for what it ‘really’ was.

But Foucault has also taught that this perception of surgical advancement must be turned on its head: surgery did not and has not uncovered the ultimate truth about breast cancer; it is merely that the forms of visibility and the statements that can be made about it that change. The visible and the invisible, the sayable and the not sayable in breast cancer merely follow a new pattern. 21st century theories of breast cancer and the 19th century formations in which they are grounded are no more than a different set of rules with which to explain it (Foucault, 1973). The next section explores these rules in terms of the enunciative modalities of breast cancer to 1900 that informed the visible, the sayable and the practicable with regard to breast cancer.
CHAPTER 6. THE CONDITIONS OF POSSIBILITY: ENUNCIATIVE MODALITIES

The social visibility of surgeons

The previous discussion on critical modalities demonstrated three obvious discontinuities in the way surgeons have explained breast cancer to 1900. These disjunctions resulted in three separate epistemologies that constructed breast cancer in terms of humors, tissues and cells. Foucault believed that another task of the historian of the present was to describe the ‘conditions of possibility’ that contributed to these discontinuities within disciplinary discourse. In the surgical archive, these conditions of possibility - changing socio-political needs, institutional mandates and intellectual frameworks – had two outcomes. First, the discipline itself was accorded a different social visibility and authority according to the conditions that prevailed at the time. Second, the breast tumour problematised by the discipline was also conceived in a different way, and therefore assumed a different subjective form. Hence, consistent with Foucault’s vision, the overall purpose of this section is to:

1. Describe the conditions of possibility that established the social visibility of surgery and conferred its authority to manage breast cancer
2. Explore the primary way that breast tumours were given form by surgeons.

Conditions of possibility are here explored by way of enunciative modalities, which Foucault defined as the particular sociocultural conditions and laws that bind discrete epistememes (Foucault, 1972). Enunciative modalities privilege certain disciplinary worldviews, and both sustain and direct their vision of things. So enunciative modalities authorise the surgical worldview and the practices that arise from them; they construe surgical discourse as the obvious solution to problems; and establish surgeons and their way of seeing things as indispensable to a given society (Foucault, 1972). In effect, enunciative modalities enable and sustain surgical
theories (what can be seen and said about breast cancer) and surgical technics (what can be done about breast cancer); hence they make it possible for surgery to dominate the breast cancer field.

The aim of the first part of this chapter is to articulate some of the enunciative modalities that affirmed the surgical imperative with regard to breast cancer prior to 1900, and which continue to buttress the discipline to the present day. Consistent with Foucault’s (1972) suggestion, they will be examined from the perspective of the social arrangements from which the surgeon historically operated. These include:

- The surgeon’s right to treat disease
- The social structures that enabled and sustained the surgeon’s knowledge, skills and mandate to practise
- The characteristics that defined the function of the surgeon in relation to society in general. These include the role attributed to the surgeon when he was consulted by a private person or compelled to work on behalf of society; whether he practised something that was recognised as a profession with the right to intervene or whether he merely carried out a function over which he had little control; and his relationship with associated disciplines (Foucault, 1972).

In the second section, enunciative modalities will be examined in terms of the perceptual field the surgeon constructed to render breast cancer visible, and which helped him formulate the sayable with regard to the disease.

**The apprentice surgeon**

It is commonly accepted that surgeons represented just one of the branches of healing in the West – along with physicians, apothecaries and empirics – who until quite recently in the history of the healing arts, had varying but generally negligible social standing and limited professional credibility. Many historians argue, for example, that for centuries there remained entrenched snobberies regarding surgery that cast it as a manual rather than an intellectual craft, rendering it an occupation not fit for gentlemen (de Moulin, 1983; Porter, 1985). While in many respects this
assumption is credible, it should also be kept in mind that there is an alternate discourse that has always valued the surgeon’s practical skill with broken bones and wounds inflicted in battle. In addition, surgeons of good family – especially those who offered their services without fee - had always been appreciated (Bodemer, 1979; Hippocrates, c.400B.C.-a; MacKinney, 1952; Porter, 1985, 1997).

One factor informing the time-hallowed snobberies that divided medicine and surgery was that until the nineteenth century, apart from the odd well-born surgeon who also happened to avail himself of a university education, all surgeons were trained through an apprenticeship system that varied greatly in quality (Bynum, 1985; Gelfand, 1985; Lane, 1985; Porter, 1985). It was illegal to call oneself a surgeon without first having been apprenticed. The potential practitioner was indentured for seven years with a master surgeon; or, if he was the son of a surgeon, he could forego the apprenticeship if he was able to pass a formal examination set by the barber-surgeons’ guild (Lane, 1985). He could then either elect to enter into private practice on his own, choose to continue his education in the university, or, from the eighteenth century onwards, continue as a surgeon-pupil attached to teaching surgeons in the hospitals and private anatomy schools to acquire more formal theoretical and practical training (Lane, 1985).

Because of this requirement for apprenticeship, regardless of the level of the surgeon’s training many people associated surgery with craft rather than art. As a result, at least up to the time of William Hunter in the 18th century, of the three legally recognised types of health practitioner in the English hierarchy (physicians, surgeons and apothecaries), physicians comprised the first class of healer in rank and legal standing (Porter, 1985). Even by the early 19th century, when the practice of the gentleman physician became increasingly eroded to the prescription of medicines compounded by the apothecary, the physician never undertook a menial apprenticeship. His continued to enjoy the privilege of a university education, and his role always entailed the supervision of operations performed by surgeons in
order to prescribe what was necessary to the general health of the patient (Lane, 1985; Porter, 1985).

All surgeons in England, however, belonged to the barber-surgeons’ guild until the eighteenth century - an affiliation that elevated them above the lay healer. The craft of barber surgery and its management by a guild was a step up from lay practice for several reasons. First, it was formally recognised as a craft by law. For example, the Seal of Cause granted by the Town Council of Edinburgh in 1505 established that the right of the barber-surgeon to practise was open only to those who know the anatomy, nature and complexion of every part of man’s body. And likewise know all the veins of the same that he may make phlebotomy in due time … for every man ought to know the nature and substance of every thing that he works or else he is negligent (Wright-St.Clair, 1964, p.20).

Second, apprentices accepted by the guild had to be literate, meaning that from the eighteenth century onwards apprentices were usually from families whose payment of a sometimes hefty premium ensured their sons were well treated, and that they generally had a grammar school education enabling them to comprehend the Latin that distinguished the more learned university-trained physician (Lane, 1985).

Third, the law also conferred upon barber-surgeons the right to dissect criminal corpses. The specialised knowledge they obtained from this practice enabled them to monopolise certain complex procedures such as phlebotomy and the setting of bones. Dissection was never a privilege granted the lay healer. Such was the eventual distinction conferred by the ability to dissect that a factor that contributed to the ultimate separation of the gentleman-surgeons from the barber-surgeons, and the consequent pre-eminence of the former, was that the Guild did not exercise its right of dissection for almost 190 years after the privilege was granted (Wright-St.Clair, 1964). Such procrastination was frustrating to the more educated element within the Guild, who valued the learning derived from the dissection of corpses and
increasingly travelled to France in order to obtain a fitting surgical education. In 1745, they formally dissociated from the Guild, undertaking their training completely in the university or, in England and Scotland, the private school of anatomy, where access to dissection was facilitated.

It can reasonably be argued, consistent with the conventional history, that because of its association with apprenticeship, it was not until the end of the 18th century that surgery began to attain the sort of status and rights that the physis had enjoyed for some time. From the 18th century, however, surgery was financially and socially well rewarded, a reflection of the surgeon’s increasing power and privilege. This is attested by the profitable and prestigious careers of William and John Hunter, Richard Wiseman, Percivall Pott and Cheselden (Porter, 1985; Qvist, 1981; Wright-St.Clair, 1964). From the 18th century onwards, this acknowledgement was grounded in the surgeon’s specialist knowledge and his increasingly valuable role not only in phlebotomy and the repair of bones and wounds, but as an inoculator of smallpox, manager of venereal diseases and lithotomist (Porter, 1985). A great deal of the surgeon’s social cachet in England at this time arose from clever entrepreneurship – particularly activities associated with private schools of anatomy and the exploitation of the new voluntary hospitals that were opening in the city. These issues are examined next.

The entrepreneurial surgeon

The private school of anatomy, as distinct from the public schools available at universities in both England and the Continent, was a particularly English phenomenon. It reshaped British surgical education in the era before the combination of hospital and university teaching became the dominant model (Bynum & Porter, 1985). It is consistently argued that the private school of anatomy was responsible for British pre-eminence with regard to surgical knowledge in Europe until the 1850s (Gelfand, 1985; Virchow, 1962f). While Eliot had opened the

---

19 The art and science of the physician
first private anatomy school in 1705, until 1745 the dissection of human bodies had been limited by an Act of Parliament to the public dissection at the Hall of the Barber-Surgeons’ Company of the bodies of four executed criminals annually - which privilege the Barber-Surgeons did not actively pursue (Qvist, 1981; Wright-St.Clair, 1964). In 1745, the alliance between the barbers and the surgeons in England was dissolved. Although the new Corporation of Surgeons retained the privilege of four annual public dissections, the demand for anatomical teaching became so great that the government, who needed more surgeons for the armed services, made little attempt to interfere with the establishment of the numerous private anatomy schools that were subsequently established all over the country (Qvist, 1981). In 1752, their activities were officially sanctioned when the dissection of the bodies of all executed felons was legalised.

While at least twenty six private schools had been established in Britain before William Hunter, Hunter established the most widely respected and successful of these schools in 1746 (Bynum & Porter, 1985). Porter attributed William Hunter’s success to his conception of anatomy as an enterprise in a competitive environment. This idea, implicit in his practice, was overt in his lectures. Porter suggested that William Hunter needs to be viewed not in terms of professional elevators or collective mobility, but in terms of entrepreneurship (Porter, 1985). One way that he gained pre-eminence was to emulate his own Parisian medical education, resulting in a then-novel insistence in England that all students were given cadavers to dissect as a learning tool rather than simply witnessing a demonstration of the procedure. He also preserved his trade mysteries by insisting that all his teachings were delivered in the lecture hall rather than in book form, thereby ensuring that only the privileged few had access to his instruction. This attracted some criticism at the time, on the grounds it excluded anyone who could compare Hunter’s teaching with the accepted doctrine and find it wanting (Gelfand, 1985; Porter, 1985). Criticism from his rivals did not, however, stop students flocking to Hunter’s lectures and demonstrations.
Another aspect of the entrepreneurial flavour of surgery at this time that endorsed the surgeon’s right to practise was the patron-patient. It has been convincingly argued that English medicine prior to the eighteenth century was client-dominated rather than practitioner-dominated (Porter, 1985). Practitioners shaped their careers and prestige more through interaction with the laity than through collegial control within the vocational hierarchy. Porter noted that in this patient-oriented context the price of favour was often obsequiousness; hence later struggles to professionalise and shelter within institutions were the practitioner’s escape from lay control. However this patronage system also laid the surgical career market extremely open, vibrant with opportunity (Porter, 1985). This argument is at odds with some Foucaultian critiques that equate medical care with the enforced subjectivity of the client and with social regulation mediated by the expert other. Analysis of the surgical archive of the eighteenth century reveals the exact opposite: an unctuous surgeon, greasing his way up the social hierarchy courtesy of the rank of the client base he has taken such care to cultivate. There is a great deal of shameless name-dropping in the discourse of this time, despite the fact that professional secrecy had been an essential precept of practice since the ancient Greeks and had always been fundamental to the Hippocratic oath. While this form of exploitation is already evident in the sixteenth century - Pare used the patient’s full name and social circumstances in his publications – the routine mention of the patient’s name, ‘quality’ and even address was rampant in the published works of seventeenth and eighteenth century surgeons (Norford, 1753; Pare, 1575; Pearson, 1793; Rowley, 1779; Sherwin, 1788; Wiseman, 1676).

Whatever its flaws, the entrepreneurial model that enabled the private anatomy schools to flourish remedied the theoretical and practical deficiencies in the surgical apprenticeship system. Many masters, for example, could not supply enough cadavers, experimental equipment or hospital patients as teaching aids for their apprentices, and this shortfall was adequately met by the private schools (Gelfand, 1985). The system also undoubtedly benefited the teaching surgeons. It enabled them to improve their own knowledge and reputation, make a prosperous living, and
did not restrict the number of pupils they could take in – guild strictures limited masters to one apprentice at a time, but this requirement did not apply to the private schools. That the entrepreneur surgeons were able to teach privately within the public arena of the hospital was also congruent with the unregulated capitalism that flourished at the time. As Gelfand notes, the voluntary hospital of the eighteenth century could only survive if it competed effectively with the many rival hospitals for the limited funds of private philanthropists and subscribers. The presence of renowned teaching surgeons with grand social connections gave them a competitive edge (Gelfand, 1985).

Pupil surgeons, depending on their means, could also benefit by purchasing the services of multiple private masters (Gelfand, 1985). These private arrangements defined the relative status of the students in London hospitals when compared with Parisian students, whose education prior to this had been considered superior to the British (Virchow, 1962f). English apprentices purchased their right to gain practical experience within hospital wards directly from their master surgeons. Similarly, pupil surgeons (who chose to continue their studies after completing their apprenticeship) simply observed events in the wards rather than practised, but also purchased this right from individual surgeons rather than the London hospital boards. In Paris, however, students were responsible to the hospital boards, performed many important functions within the institution, were usually compensated for the work they performed, and were consequently accorded the status of a formal position within the hospital. So, while the London hospital student had a modicum of power in that he purchased instruction for a fee, students in Paris assisted in the care of patients and were compensated and controlled accordingly. This came about because French hospitals were the products of State- and Church controlled administrative structures, while British hospitals were initially founded by private charitable foundations (Gelfand, 1985).

Although very successful in its time, the characteristic entrepreneurial flavour of both private education and hospital teaching in eighteenth-century Britain could not
survive beyond the glory days of unregulated capitalism that characterised the era, although hospital teaching did evolve into a different, more enduring type of enterprise (Gelfand, 1985).

**The hospital surgeon**

In his discussion of enunciative modalities, Foucault developed the notion of the hospital as a site of constant systematic observation that facilitated and sustained the surgeon’s privileged access to disease, and in providing this experience, increased his knowledge and power over it (Foucault, 1972). The conditions of possibility for modern surgery occurred around the end of the eighteenth century, when the surgeon began to work in a hospital that had evolved from being a species of dumping ground for the sick to what Osborne calls a curing machine. The hospital simultaneously became inclusive rather than exclusive, normalising, a facility that radiated outwards rather than a carceral panopticon, a site of knowledge as well as death, and a therapeutic instrument (Osborne, 1991).

The emergence of the hospital as the crucial epoch in modern surgical history is a complex issue that has been firmly established by Foucault and others; it is therefore not necessary to provide an exhaustive outline of the factors that contributed to this phenomenon here (Armstrong, 1983; Foucault, 1973; Nettleton, 1992; Osborne, 1991; Turner, 1992b). In summary, this ‘birth of the clinic’ is considered epochal because it finally unified medicine and surgery. It also taught surgeons to think of disease in terms of local (hence excisable) lesions rather than generalities (which was basically antithetical to the surgical therapeutic approach); to consider diagnosis with reference to certain systematic, standardised techniques; to establish that the signs and symptoms observed during the patients’ life correlated with the changes observable in their body at post-mortem examination; and to exploit the rich experiences afforded by numerous patients in the one place to formulate more accurate disease descriptions and more careful evaluations of treatments (Bynum, 1985; Foucault, 1973).
The scholar surgeon

The guild, the entrepreneur and the hospital all contributed to the eventual dominance of surgical discourse. The first stirrings of true surgical authority, however, are discernable in the early medieval period, which was a decisive time in the history of the health sciences generally, for it was then that the university faculties of medicine and later, surgery, were established in Europe (de Moulin, 1983; Pouchelle, 1990). When they were first established, neither medicine nor surgery had much credibility outside the faculty walls. In addition, the socio-professional structures embedded within the faculty initially enhanced the social superiority of medicine rather than surgery (Foucault, 1973; Pouchelle, 1990). Despite these early difficulties, it was the university faculties that incubated the positivist knowledge that ultimately privileged surgical conceptions of cancer and the acceptance and prestige of surgeons in the wider community that they experience today.

The first stirrings of the modern, non-Galenic surgeon and his professional mandate are evident in the writings of the medieval surgeon Henri de Mondeville, who through his student de Chauliac was to exert enormous authority over French - and ultimately English - surgical education. De Mondeville was a university man, learned in both the *phasis* and the surgery. He derived immense prestige from his medical education and from the surgical knowledge he acquired from his work as a military surgeon, and did not hesitate to exploit his cachet. Pouchelle’s (1990) masterly exploration of the work of de Mondeville, however, demonstrates that in de Mondeville’s time, despite the establishment of the first university medical schools and the good reputation of a few outstanding practitioners, the power of both physicians and surgeons was still uncertain. As he had done for centuries, the sick Christian sought succour in his religion rather than his doctor. De Mondeville, however, was a practical man of action, representative of the breed of surgeon who would come to dominate subsequent centuries with his martially-derived rational attitude and his subsequent contempt for the ministrations of the ecclesiastics (Pouchelle, 1990). His prestige and his forcefully couched writings on this theme are
representative of the very beginnings in Europe of the shift in the healing ministry from the Church to the educated professional (Pouchelle, 1990). The increasing mastery of surgical technic afforded by the arts of war meant surgeons like Henri de Mondeville began to openly advocate the dominance of the healing arts - especially surgery - over religion.

Regardless of their contempt for religion, medieval surgeons for some centuries nonetheless envied the authority society invested in the man of the Church; for they recognised it as the dominant power structure of the day and began to openly harness their own discipline to this power (Pouchelle 1990). Consequently, at this time surgeons reframed surgery in terms of its alliance with the rational laws of Nature (or God the Creator), arguing that Nature was the master, model and justification of the surgeon (Pouchelle, 1990). Hence the doctor observed what Nature told him, let Nature work as she wished, supported this where he could, and copied what she did. According to this alternate discourse, in times of war Nature was also vulnerable and required the help of doctors by way of medicines that she could not produce naturally. She could also become disordered and therefore required surgical restraint, for example, when she produced too much scar tissue in wounds. Consistent with his learning derived from the theatre of war and supported by the authority of his university training, this surgeon was poised to join the fray at any moment in the mortal war … waged, within the enclosed space of the human body, between Nature and her opposite, Disease. It is his task, armed with the wisdom of the ancients and that born of reason and experience, to manipulate the vital forces which govern the body, and thereby to govern Nature herself. This gives him a feeling of power, which ... brings him to see the creator unconsciously as an irritating rival (Pouchelle, 1990, pp.39-40).

De Mondeville also exemplified a combination that became common in his fellow university-trained physicians and in the more educated surgeons of the medieval period, and which became increasingly evident in the surgical archive in the years to
come. He is an early example of the pride of the surgical scholar and the consequently justifiable resolve of the men of learned bodies to monopolise the art they had mastered (Pouchelle, 1990). Increasingly from medieval times, specialised surgical knowledge was grounded in the systematic study of gross anatomy and its derivative, pathological anatomy. Anatomy is grounded in the human senses – especially that which can be seen. An assumption of this approach is that only by using the senses – by seeing, touching, smelling, and measuring the manifestations of illness – can the practitioner truly come to know it. Within the increasingly privileged positivist paradigm that had its genesis in pathological anatomy and its incubation in the university, sensual observation was the key to knowledge. In contrast, humoral theory, which dominated university training for some time, developed from more metaphysical concerns where ‘the seen’ was an adjunct to philosophical speculation in the diagnosis and treatment of a disease, rather than a necessity.

A factor informing the social and professional rift between surgery and medicine was their different emphases on the seen and the unseen. For example, humoral physicians could consult patients from a distance without ever examining them in person – their metaphysical learning conferred not only greater social standing but also inductive skills more sophisticated than those of other healers, and did not necessarily require them to attend to consultations personally. Similarly, physicians might choose to examine the urine to diagnose and treat a broken arm (Pouchelle, 1990). In contrast, the surgical approach was both concrete and intrepid. Surgeons practised with reference to the material reality conferred by all of their senses, however taxing that sensual experience might be. It was their custom of observing, feeling and cutting bodies, despite the risk of noxious sights and smells and contact with bodily effluvia, that ultimately provided surgeons with the positivist knowledge necessary to assume dominance with regard to breast cancer in succeeding centuries.

At the heart of this division between the branches of healing both within and without the universities were social and cultural taboos concerning the internal world of the
body that surgeons knew so well, and upon which humoral physicians, apothecaries 
and lay healers could only speculate. The reasons for this can be discerned at the 
intersection of society and medicine, the norms of which meant that for centuries it 
was unacceptable, for the sake of knowledge, to invade the human body. The body 
was considered a microcosm of the universe so to come into contact with human 
blood, or to open a live or even a dead body with the knife, was to risk exposure to 
the life force itself (Turner, 1992a). To breach the universe contained in the 
individual body with the sole intention of understanding its functions was reckoned 
blasphemous and arrogant in the extreme (Pouchelle, 1990). Furthermore, contact 
with bodily fluids exposed the invader to moral and spiritual dangers – witness the 
cleansing rituals surgeons must undertake prior to coming into contact with 
menstrual blood (Turner, 1992a). Given these sociocultural concerns, and despite the 
growing recognition by Western society that surgery had something to offer the 
healing arts, many historians continue to suggest that for centuries surgery was 
considered work only fit for menial persons such as barbers until relatively recently.

**The function of the surgeon and disciplinary boundaries**

The Foucaultian reading of a discipline such as surgery demonstrates it is simply a 
node in a larger network of relations. Apart from its internal configuration and 
autonomous form, a discipline is always caught up in a system of references to other 
disciplines and social structures (Foucault, 1972). In order for a discipline such as 
surgery to sustain its mandate to practise within this system, the surgeon as an 
individual and surgeons as a collective must perpetually interact with other 
individuals and groups – all of whom have a status and system of their own. In the 
case of the surgeon, besides the patients that have been discussed, these others with 
whom they had to negotiate a social contract were fellow surgeons, physicians, and 
lay healers. The sociocultural issues related to the mandate to practice are nowhere 
more evident in the archive than in the perennial territorial disputes waged within 
the discourse.
At the bottom of the health care hierarchy, beneath even the barber-surgeons, were the untrained healers with no guild attachments. Physicians, surgeons and apothecaries, regardless of their disciplinary affiliation or the type of training they received, collectively viewed the so-called empirics, the uneducated lay healers outside mainstream health care, with scorn. This is a view that persists to the present day. Wiseman, for example, argued that the empirics were merely money hungry:

Empiricks amongst us brag much of their skill in curing them; and, by the giving of Matthew’s Pill, or Opium mixed with some Purgative, they do now and then alleviate the pain, and thereby encourage diseased people to commit themselves into their hands, whom if they can persuade to an Amputation, they get some money in hand: but their frequent miscarriages in that work have taught the more prudent people to avoid them (Wiseman, 1676, p.104).

Other surgeons were more charitable, believing the lay healers were genuine in their concern for the patient but misguided in their approach. Norford related the case of a lay-healer who treated a breast tumour with a generally harmless remedy to disastrous effect:

Hence we learn the Danger of trusting to the Unskilful in the Cure of Diseases; for, sometimes, the most simple Remedy, in the Hands of the Ignorant, becomes like a Sword in a Mad-man’s Hand (Norford, 1753, p.21).

Other surgical critics of the empirics simply reflected the entrenched social snobberies of the day. Pearson believed that only the university education of the gentleman scholar-surgeon could

repress the arrogance of those pretenders, who cure one disease instead of another; who practice their profession by chance, and gain reputation from their very mistakes (Pearson, 1793, p.x).
Interdisciplinary rivalries are evident throughout the archive at least until the mid-nineteenth century. They pitted the barber-surgeon against his more learned surgical colleague; learned surgeon against learned surgeon; the surgeon against the apothecary; and the surgeon against the irrational supervision of the physician. Wiseman, for example, was the most eminent surgeon of his time, but he did not hesitate to publicly criticise the efforts of his less brilliant surgical colleagues in the treatment of breast tumours:

Some eminent Chirurgeons, I suppose, after a fruitless endeavour to cure them, have attempted the extirpating of them by Escaroticks. Guido hath commended to us Arsenick poudered and sprinkled daily upon them, the Escar being first pulled off … by the authority of some of these Authours young Chirurgeons have been sometimes engaged to their prejudice: and some years since an eminent Chirurgeon, since deceased, undertook the eradicating of an ulcerated Cancer in the Breast of a Woman that had strength and courage to endure it. He applied the strongest of the forementioned Escaroticks; they penetrated deep, and made great Sloughs, which he pulled off, and by repeating the Escaroticks raised new; but the use of them was not long continued: for the Gleet partaking of the Corrosives ulcerated the adjacent parts; and the Cancer was so enraged by the Escaroticks, as shewed there was no good to be done by them. Indeed if they had contrived Medicaments that could have penetrated deep with little pain, there might have been some hopes of success (Wiseman, 1676, p.105).

A century later, the physician Rowley was expressing the same ideas regarding his underling the surgeon:

She had been for near two years under the care of a surgeon, who asserted, with confidence, that she would certainly be cured. He applied caustics to some hardened tumours under the arm, as likewise to the breast; and it was reported, that he had given some preparations of arsenic; this last
circumstance, however, can scarce be credited, we should hope it not true … [Even though Rowley treated her with his ‘gentler’ cures, the patient died] most probably a victim to the pretended knowledge and cruel practices of her surgeon (Rowley, 1779, p.15).

Other eminent surgeons did not hesitate, like their predecessor de Mondeville, to advance the surgical case for pre-eminence in the treatment of breast cancer with reference to the surgeon’s innate practicality. Pearson, for example criticised the physician’s tendency to speculate about cancer rather than treat it, which he believed was a result of metaphysical training at the universities. With regard to the innate commonsense of the surgeon, he wrote:

the more evident advantages that must accrue from such an acquisition, would be, that of restraining the imagination from wantonly obtruding its fancies among historical facts; and of enabling men of science and probity to act with promptness and decision (Pearson, 1793, p.x).

Virchow noted that with the proliferation of even more university-trained disciplines related to the healing arts in the early nineteenth century – anatomy, pathology, physiology, physics, chemistry and so on – these schisms between the disciplines intensified for a time (Virchow, 1962b). There were many arguments as to which discipline had the right to determine the nature of cancer and how to treat it, but to Virchow, who was a more than able practitioner in many of these disciplines, such questions were irrelevant:

Whether someone is or is not a practitioner ex professo has little to do with the matter. Excision and cauterisation offer not greater opportunity for acquiring knowledge to the one who carries them out than to the observer … Whether a tumour retrogresses, whether it forms metastases in inner organs, whether it destroys much or little, can be established in the most exact
fashion as well by one whose hands were not directly involved in the operation (Virchow, 1962b, p.77).

Medicine, surgery and apothecaries unified and established their orthodoxy with the 1858 Medical Registration Act in Britain, and a similar trend occurred throughout much of the western world at this time (Saks, 1994). This did not necessarily bring an end to theoretical disputes, but it did demonstrate the underlying ideological unity of the ‘professional’ health disciplines, and conferred upon them the power to self-regulate and therefore exclude others. So by 1877, Virchow was able to speak confidently of the general acceptance of scientific method, and the contribution of all the scientific disciplines to the advancement of health, which forms the structure of breast cancer care today:

It is sufficient to point out how completely even the external character of medical practice has changed in the last thirty years. Scientific methods have been introduced everywhere into practice. The diagnosis and prognosis of the physician are based on the experience of the pathological anatomist and the physiologist. Therapeutic doctrine has become biological and thereby experimental science. Concepts of healing processes are no longer separated from those of physiological regulatory processes. Even surgical practice has been altered to its foundations, not by the empiricism of war, but in a much more radical manner by means of a completely theoretically constructed therapy (Virchow, 1962i, p.149).

The perceptual field
The previous sections have established that breast cancer in surgical discourse has been construed according to the dominant critical modality of the time, and that elements of three critical modalities of breast cancer causation developed prior to 1900 are the basis for our contemporary discourses of breast cancer. Some of the conditions that made possible these critical modalities – for example, the institutions from which surgeons have operated - have also been explored. The archaeology
must also describe another condition of possibility: the way that discursive objects such as breast tumours are rendered accessible to the discipline. So the next task is to explore another of the many silent configurations that have underpinned the surgical construction of breast cancer. Prominent among these configurations in the archive are the light energy that illuminated the breast cancer domain and the perceptual field that guided the eye of surgeon through the maze of data available to him when he encountered the body of the woman with breast cancer.

Each episteme has its own ‘curves of visibility’: its own way of structuring light and making things visible or invisible according to need, producing objects and concepts dependent on that light for their existence (Deleuze, 1992). This light suffuses the perceptual field of the surgeon, assisting him to gather his information in a systematic way and to create his breast cancer discourse. The site and the perceptual field from which the surgeon operated are two of the significant components of the surgical context that positively constructed people as objects with specific institutional forms. It is from these configurations that the tumour and the body containing it are cast as the object of the surgical gaze.

Foucault and many others have demonstrated that while the perceptual act of the surgeon objectifies, it is never neutral (Kuhn, 1970; Popper, 1959). Objectifying something is always a circular and referential process. It involves a particular way of directing the eye and the other senses upon an object according to a specific frame of reference, of constructing explanations and practices around that object consistent with the social configurations and discourses that sustain them. The ‘objective’ surgical gaze is always focused upon certain structures according to the set of disciplinary norms that prevails at the time, meaning that surgeons are trained to notice certain things and not others (Armstrong, 1983). The discipline of surgery is a belief system shaped through social and political as well as scientific relations, rather than a distinct set of facts or an irrefutable truth. Hence, the blood of a woman analysed for humors contains humors, not red blood cells; a woman analysed for organs and tissues is made up of organs and tissues, not atrabiliary obstructions; and
a woman analysed in terms of her psychosocial functioning is a psychosocial object rather than a configuration of cells (Lupton, 1997). So the perceptual act of the surgeon does not construct an isolated object called a breast tumour. Its curves of visibility construct an object fleshed out by a disembodied but value-laden surgical gaze that has been conditioned by the dominant discourse of the time; that is supported and justified by that discourse; which discourse in turn is validated by the perceptual field from which the surgeon operates (Nettleton, 1992).

The gaze of the surgeon has been refracted through three distinct lenses in the archive:
- The lens of botanical taxonomies, which accommodated the dimensions of height and width
- The anatomo-clinical lens, which added the dimension of depth
- The multi-dimensional lens, which configured an omnipotent and complex gaze that could simultaneously abstract, isolate, differentiate, generalise and predict breast cancer.

**The gardener’s gaze**

In *Birth of the Clinic*, Foucault characterised the gaze of the humoral practitioner as a gardener’s gaze that imposed botanical taxonomies upon the person with an illness (Foucault, 1973). The taxonomy organised and bounded the perceptual field, enhancing the manageability of the complex array of data that the disease presented to the practitioner. The taxonomy made it easier to classify and systematise illnesses, thereby facilitating diagnosis, prognosis and ultimately, treatment. According to Foucault, there were several characteristics of this gardener’s gaze that distinguished it from subsequent ways of perceiving disease.

First, the botanical gaze did not delve into the human body itself – it was restricted to the surface dimensions of height and width - because human dissection was not generally practised at the time (Foucault, 1973). The botanical gaze, however, did not hesitate to reconstruct the invisible world of the body according to data obtained
from direct observation of the surface and from animal dissection (de Moulin, 1983; Haagensen, 1933; Porter, 1997). For example, the Hippocratic humoralists were familiar with major interior structures such as the brain, heart, lungs, liver and kidneys, and organised the viscera within two distinct cavities separated by the diaphragm. Their perceptual field was therefore constructed according to this knowledge. Yet care must be taken with modern interpretations of the botanically constructed body. The gaze of the humoralists did not necessarily assign to generally invisible interior structures a discrete function or conceive of organ systems as we do, and the interior structures they did know were often assigned a completely different function to their attributions today. For example, the Hippocrates categorised nerves into what the modern surgeon designates as tendons – there was no conception of the modern nervous system. Reasonably enough, to a Hippocratic physician, the elements of the nervous system were ligaments whose purpose was to hold the body together and to initiate movement through increases or decreases in tension (Jouanne, 1998). Similarly, the gaze that discerned the angiogenesis surrounding the botanically constructed breast tumour not only conjured these from the surface perception of the height and width of these turgid blood vessels, but from an invisible field constructed by the humoralists that discerned vessels and congested with air and other humors as well (Jouanne, 1998; Porter, 1997).

Second, Foucault suggested that the botanical gaze filtered data collected by way of the visual senses – it did not generally admit data perceived through other sensual means (Foucault, 1973). Indeed, the humoral emphasis on the seeable means that even today, many of the purely visual observations of the earlier Hippocratic humoralists are celebrated. His particular lens enabled the Hippocratic doctor to see things with his eyes that the modern surgeon can no longer see – probably because a modern surgeon no longer needs to see them. Yet, as Jouanne notes, while modern diagnostic techniques render many of the humoral observations superfluous, signs important to the humoralists such as the clubbing of the fingers remain valued indicators of disease today (Jouanne, 1998).
With regard to breast cancer, visual inspection according to the botanical taxonomy generally resulted in the perception of two major types of cancerous objects – those that developed without ulceration and those that ulcerated (Anonymous, 1930; de Moulin, 1983; Haddow, 1936; Hippocrates, c.400B.C.-d; Porter, 1997; Pouchelle, 1990; Wiseman, 1676). Most non-ulcerating breast cancers were also referred to as hidden cancers, and in the typical reconstruction of the depths of the unseen body, many of these were believed to also secrete themselves in the uterus and intestines. When a non-ulcerated cancer existed in the breast, the tumour mass was often described as large, irregular, obstinately deep seated, and resembling a wild animal, spreading its roots far and wide, adhering to the surrounding veins, forming varices in the neighbouring areas, appearing now ashen grey, now purple red and now bluish black (Aetios, 1978). Ulcerated breast tumours on the other hand eroded continuously and penetrated far into the depths of the body, discharging a serosanguineous matter worse than all the poison of wild animals; horrible in amount, pain and odour (Aetios, 1978).

The surgical archive does not, however, wholeheartedly support Foucault’s suggestion that this botanical gaze was exclusively visual. Throughout its history and whatever the paradigm of the day, the art of diagnosis has always involved the creation of a profile of the patient’s way of life, habitation, work and dietary habits, although different elements of this profile have been emphasised at different times. The perceptual field of the humoral practitioner, for example, meant that a combination of direct questioning of the patient and the trained senses of the healer also directed his gaze towards significant changes in skin turgidity, temperature and colour, breathing patterns, and gastrointestinal symptoms (Porter, 1997). The Hippocratic authors advised the healer to use his senses of sight, hearing, smell, touch, taste and reason to appraise his subject (Hippocrates, c.400B.C.-a). So while the Hippocratics emphasised the visual, they also recorded every scrap of the limited plurisensual data they could obtain, as it was believed the slightest detail might have value as a prognostic sign.
The Hippocratics, for example, practiced auscultation by placing the ear directly against the chest and listening passively to the natural sounds within. They also actively caused sounds within the chest by shaking the patient (succussion) before listening – this allowed them to establish the site they would puncture in order to drain the chest of the excess fluid that sometimes accumulated in advanced breast cancer. These aural staples of medico-surgical practice were lost over time, and were not revived until Laennec in the nineteenth century, since which time they have become essentials in the surgical armoury (Jouanne, 1998). Along with the visual, what has never been lost in the perceptual field of breast cancer is the sense of smell, although with modern methods of wound dressing the importance of this sign is markedly diminished. Witness de Mondeville’s 14th century description of a breast tumour

The cancer sore is round, having thick, raised and inverted margins. It shows cavities, its base is hard and lumpy, livid or blue. It spreads a most offensive fetor defying any description: experienced surgeons can diagnose the disease at the mere smell without ever having seen it (de Mondeville cited in de Moulin, 1983, p.43).

What is not questioned here is that after the Roman humoralists, the perceptual field was essentially narrowed to the visual for physicians, who even then did not necessarily eyeball their patients. The drawbacks inherent in this limitation were recognised by surgeons, however, from Galenic times. They relied on visual examination and used their other senses where they could. According to de Mondeville for example, unlike his own surgical gaze, the visually reliant gaze of the physicians of his own period was not adequately rooted in reality. He scorned physicians who ‘examined’ patients from a safe distance, sometimes miles away (Pouchelle, 1990). He advocated a return to material reality – to the seen, to the palpated – although according to Pouchelle, it was not until the rise of human dissection that the physicians and the surgeons as a whole began to embrace this idea with enthusiasm. It was not until the mid-1500s for example that human morphology
was illuminated in anatomical atlases – prior to this, and with the notable exception of de Mondeville, the documentary discourse had relied on pure description rather than illustration (Pouchelle, 1990).

That the surgical perceptual field was increasingly shaped by both visual and sensual (particularly palpable) data is evident in the description of different tumours given by the humoral surgeon Wiseman in the late seventeenth century:

All Tumours which owe their original to Humors terminate in one of these five ways:

1. The signs of Discussion are Relaxation, Diminution, and ease of the part, without Suppuration.
2. The Signs of Suppuration are Pain, Pulsation, &c. with Fever … But the Matter being made, those Accidents cease, and the Tumour riseth in a Cone, and appears whitish: also the Matter fluctuates under your fingers. Yet it frequently happens in crude Tumours, and those that lie deep amongst the Muscles, that matter is not so easily discovered.
3. The signs of Corruption are a livid or blackish colour of the part affected, together with a sinking of the Tumour.
4. The signs of Induration are, Diminution of the Tumour and Pain, with increase of Hardness.
5. The Sign of its Retraction is, a sudden disappearing of the Tumour without Discussion or Suppuration: which, if it be from an inward cause, is always evill, and there ariseth Fever, [if there were none before] together with grievous Symptoms from the return of the Matter (Wiseman, 1676, p.4).

The third aspect of the botanical lens as described by Foucault was its tendency to focus upon resemblances or kinships between illnesses to enhance the fit of individual diseases into a pre-arranged botanical tree. These resemblances were perceived by way of an a priori expectation, informed by humoral theory, of what to
look for. In the following extract from Wiseman, the typical emphasis placed upon the kinship of the different species of breast tumours (phlegmon, erysipelas, inflammation, cancer, aposthume, oedema, tubercule) and their causes and effects, is evident:

Whether they begin in a Tumour or Excrescence, their first appearance is very small: and according as the Humor of which they are generated, so is their increase quick or slow, from the smallness of a Vetch to the bigness of a Pompion. If the Matter be very congestive, the pain is sharp … as if they were struck with a dart. And those painfull Tumours have frequently a Phlegmon joyned with them, or are overspred with an Erysipelas. And while they are thus inflamed, they will be fixed underneath the Inflammation, so may be thought full of Matter; but if you then open them, they will only gleet. If you asswage that heat, the same place indurates again. Yet I have frequently seen a Phlegmon suppurate in some part of the Cancer; after the cutting off a Cancer I have found an Apostemation of well-concocted Matter in the Body of it … If pituitous Humors abound in the Body, an oedematous Tumour may be found affecting some exteriour part of the cancerous Tumour; in which case the Swelling somewhat resembles a Tumour made by Congestion. These are they that grow to such a great bulk, and are pale or livid, with a mixture of a brown colour, and have those turgid Veins stretching over the Skin: whence Authors have likened them to Crabs, and these Veins to their Claws, and from thence imposed upon them the name of Cancer. The many Tubercles lying under the Skin make the Tumour round and unequal: at last they break; and from that time, be the Matter much or little, they ulcerate, thrust out hard painfull lips, discharge a stinking Gleet, and fix to the Ribs, as if they were nailed to them, and in progress are of horrible aspect (Wiseman, 1676, pp.101-02.

While the relationships between lesions were the initial focus of the botanical gaze, once the lesion had been fixed within the taxonomy, the practitioner was then able to
accommodate their lens to incorporate prediction of the outcome. The art of prognosis – the extension of the medical gaze into the future – was an essential part of the physician’s performance from earliest times, being one of the features that distinguished the learned professional from the empiric. Hence, Aetios of Amida was able to declare with confidence that the outcome of certain tumours would always be death, and that others would be curable:

Know that cancers arising in the breast invariably must be abandoned, just as [we must abandon] those which arise in the head, neck, humerus, in the axilla and the groin. These, of course, are incurable, because they cannot be extirpated completely, owing to the possibility of a severe haemorrhage, and the patient collapses in your hands. But those tumours which develop on the top of the nipple are curable because the diseased part can be easily excised (Aetios, 1978, p.50).

The prognostic gaze did not just forecast the ultimate outcome of a breast tumour however, or the distinction between curable and incurable cancers (Flemming, 2000). It also clarified the temporal dimensions of the disease, of which there were two aspects. The first temporal dimension was the reflection of the trajectory of the breast cancer – its nascence, ascension and resolution - in the sequence and force of pathological events. In effect, the lengthening of the botanical lens enabled each stage of the breast cancer to be mapped and its sequelae fixed in the future (Flemming, 2000). The second temporal dimension was the chronological substructure of breast cancer – whether its immediate manifestation was acute or chronic (Flemming, 2000). The acute manifestations of tumours arrived and departed (into death or recovery) swiftly. The humoral concept of krisis, or the moment at which the disease is resolved either way, is central to this temporal dimension. On the other hand, chronic tumours persisted, part of a chain of quick assaults and periods of remission which in many instances in the archive continued for up to thirty years (Flemming, 2000; Norford, 1753; Pearson, 1793; Rowley, 1779; Wiseman, 1676).
The final aspect of Foucault’s gardener’s gaze is that, although consistent with the holistic approach of the humoralist, the individual remained a homogenous whole upon whom the disease and the taxonomy were imposed, diagnosis was ultimately made by separating the facts of the individual and her context from her breast cancer. In effect, the tumour, like the hungry wolves and tenacious crabs with which it was often associated, was considered a species of life with an independent existence. The patient was ultimately only an external fact in the final diagnosis and the medical reading only accounted for her in order to bracket her (de Moulin, 1983; Foucault, 1973; Haddow, 1936; Hippocrates, c.400B.C.-d; Osborne, 1991; Pouchelle, 1990). Hence, the patient had in fact to be known very well – she added confounding factors, disturbances, predispositions, the sequelae of age, a way of life - a whole series of events that had to be accounted for and subtracted from the lesion itself for an accurate diagnosis to be made (Foucault, 1973).

The new surgeons however, with a grounding in pathological anatomy, criticised the gardener’s gaze as producing merely a chaos of symptoms grounded in the imagination rather than what was real (Foucault, 1973). They operated from a new perceptual field that, in plunging into the body, located the disease firmly within the patient and moderated this chaos by focusing only on the observable.

**The anatomo-clinical gaze**

For Foucault, the concrete conditions of possibility for modern medicine arose around the end of the eighteenth century. This was the time when the nosological idea of the disease as a distinct entity with a life of its own was replaced by the idea that the disease occurred in a discrete body in a particular way (Osborne, 1991). Prior to this time, the disease had been seen as a species of itself, and it was the task of the physician to determine the essence of that species by deducting the disease from the context of the human who bore it. Disease had been constructed within a perceptual field that scanned only the surface of the body. The new gaze was a function of an expanded perceptual field that scanned dead as well as live bodies. It
privileged direct observation of the disease within the previously hidden recesses of the body from which it had arisen (Osborne, 1991). In the process, the dimension of depth was added to the surface gaze: the previously invisible internal tissues and the organs they constituted became the unquestioned foundation for the description of diseases (Foucault, 1973). A new and much more detailed nosography arose, based upon the similarities between anatomical structures that had previously been beyond the field of observation.

As has been described elsewhere, this plunge into the body in the eighteenth century was the coalescence rather than the beginning of a new approach. For example, Fallopio in the mid-sixteenth century had provided much more differentiated and less subjective descriptions of breast cancer, based on dissection, than most surgeons before him. Fallopio’s explanation of the difference between scirrhus and cancer is an example:

> scirrhus is basically indolent; when a tumour becomes painful it means that it is changing into a cancer because of putrefaction of the ‘succus melancholius’. Irregularity [of the tumour] is a sure sign of malignancy, whereas swollen veins are not as typical as is generally believed. The tumour may be adherent to the pectoral muscles, in which case it is inoperable (de Moulin, 1983, p.30).

But it was at the turn of the nineteenth century that direct anatomical observation of diseased corpses became fundamental to the perceptual act: the confusion of symptoms apparent at the bedside of the patient was increasingly clarified by examining the lesions in the depths of the body that produced them (Haigh, 1984). So too did practitioners commence system-by-system comparisons of the observations of the one disease in the live body and the dead; seeking the resemblances between the living and the dead manifestations and correlating their observations to the destruction wrought on tissues and organs by the disease as it progressed throughout the body (Foucault, 1972, 1973).
The new perceptual field was characterised by four elements that shepherded the gaze of the surgeon and directed what he would find. These will be discussed next, and include:

- The construction of the body and disease as one
- The localisation of the disease arising within a discrete part of the body of a discrete individual
- The institutional repetition and purification of the gaze, which revealed what was normal in breast cancer and did not interfere with what it perceived
- A new emphasis on exact language to fix the plurisensual data obtained.

**Homogeneity of body and disease**

As Foucault suggested, one new task of the gaze was to recognize the breast tumour placed before it, horizontally, vertically, and in depth; as the tumour penetrated the body; as it circumvented and lifted bodily masses; and as it plunged into the most forbidden bodily recesses (Foucault, 1973). The perceptual field not only bounded the form and properties of particular tissues, but also illuminated the way they were distributed and organised, and how they interrelated with other tissues and systems. For surgeons of this era, particularly those influenced by Bichat (1801), an anatomical unit of tissue only made sense when considered in the larger context of the organism as a whole (Haigh, 1984). Breast cancer was visible as a set of forms and deformations; as a series of displaced, destroyed, or modified structures linked in a sequence that could be followed step by step within the corpse of the woman herself.

So this gaze did not construe the tumour as a pathological species inserting itself into the breast of the woman, the disease originated in the breast itself and consequently affected other related structures within the body. The new perceptual field demarcated by Bichat constructed a body that was a homogenous entity comprising differentiated sub-spaces, and these subspaces were the key to the cancer. One purpose of the gaze was to analyse with precision the properties of tissues and to
demonstrate that every pathological phenomenon is derived initially from tissue growth, diminution or alteration in one distinct area (Otis, 1999). So another task of the perceptual field was to define precisely where the tumour arose – which resulted in a gaze that increasingly sought the localisation of the tumour.

Localisation and individuation

In his treatise *Anatomie Generale*, Bichat (1801) argued that all living matter comprised twenty-one basic elements, which he called tissues. He broke such compound structures as bodies and organs into their simpler component tissues and studied each of these separately. Theoretically he deconstructed each body part until it was no longer amenable to further breakdown. He then studied these elemental tissues to determine their particular distribution of physical and vital properties (Haigh, 1984). This influential conception of the body encouraged surgeons to understand that there were generic classifications of tissues and anatomic resemblances of tissues throughout the body, so to understand disease one must examine the selective destruction of similar tissues. The gaze was thereby redirected in the first instance from the class of disease to the seat of disease. Localisation within the perceptual field also enabled doctors to explain illness and health in terms of increasingly smaller units (Otis, 1999). This is what encouraged Foucault to remark in *The Birth of the Clinic* that with Bichat, medicine became a science of the individual. The gaze was now directed onto a spatial and temporal point within a given individual that initiated the chain of symptoms throughout the body (Foucault, 1973).

Consistent with the localising lens that enhanced the study of the dead body, the physical examination of the living woman was limited in the first instance to the affected area and its immediate environment. Attention was paid to the colour of the skin covering the tumour, the presence or absence of swollen veins, the position of the nipple, the consistency of the tumour and the degree of irregularity of its surface, and its fixation to the skin or the thoracic wall. The examination was completed by a search for palpable nodes in the adjacent axilla, in the supraclavicular area and in the
neck (de Moulin, 1983). These are all evident in a description of breast cancer taken from a student's notes of the Hunterian lecture series. Apparently Hunter argued that he:

would call that cancer which produces the following effects: viz, a circumscribed tumefaction with much hardness, and a drawing in of the skin covering it, as if the cellular membrane underneath it was destroyed; then a species of suppuration takes place in the centre and ulceration of the external surface … Cancer is one of the first class of our first division of poisons, viz, that which only produces local effects, though it has been supposed to contaminate the constitution; which would be terrible, indeed, as we have no specific nor even a palliative for it (Dobson, 1959, p.176).

The emphasis on the anatomical resemblances of the tissues throughout the body did, however, eventually make it difficult to restrict the perceptual field to a discrete local area. If a breast tumour had metastasised prior to diagnosis it had already colonised elsewhere in the body, which made it difficult to locate its seat as well as its tissue of origin. Hunter in his lectures, for example, noted that more advanced breast cancer had a tendency to

vary its appearance by becoming less circumscribed, not having so determined an outline, from the cellular membrane around becoming diseased; the skin will be less moveable, the nipple more or less retracted, and the lymphatic glands going to the axilla will swell … in cancer the inflammation comes on earlier and goes on with the disease [ie does not subside]…the surrounding parts that are affected by continued sympathy also become cancerous near the skin, that is, all the parts become blended in one mass (Dobson, 1959, p.177).
One reason the search for anatomic resemblances was ultimately abandoned was the realisation that the key to understanding breast cancer resided in its inherent difference from normal tissue. Pearson was emphatic on this point:

Every disease must have a specifick and limited nature, and possess its own peculiar characters: these essential properties may be generally detected, either in the form of its first appearance; or in the mode of its progress; in the order of its symptoms, or even in the manner of its termination: and although foreign and accidental circumstances may obscure and perplex the subject of inquiry, yet it may be presumed, that the task will never be found superior to the efforts of patient industry (Pearson, 1793, p. ix-x).

Eventually, the idea of anatomic resemblances was totally discarded, and while the gaze still travelled from an initial seat to the systemic sequelae, it focused upon differences and changes throughout the trajectory rather than similarities:

At first all that can be discovered is a small, hard tumour, lying loose in the substance of the organ. This, now, constitutes the whole disease; for, at this time, there is no other tumour in the body, and the general health is not affected. If the cancer be cut out at this very early period, it sometimes happens that the disease never returns, and that the patient is radically cured. … But if, instead of being removed, the cancer is allowed to take its course, the following changes occur. The tumour continues to grow, and in its growth contracts adhesions with all the surrounding parts. The tissue of these parts is invaded by the new structure, and is soon obliterated by it. When the tumour has attained a certain size, it begins to soften in some part of its mass: soon after this, fluctuation may be felt; the skin becomes inflamed and ulcerated, and the tumour, bursting, becomes an open sore … While these changes take place in the original seat of disease, others occur in distant parts … In the first place, the glands in the axilla become enlarged, and, sooner or later, symptoms of visceral disease come on, together with hectic and
emaciation, under which the patient gradually sinks. In some cases, a short
time before death, cancerous tumours appear, in countless number,
immediately under the skin (Budd, 1841-1842, p.266).

The institutional gaze
The anatomo-clinical gaze differed from the humoral gaze in another respect. It was
no longer the gaze of the interested observer, the educated layman or the physician
interpreting for the surgeon. It was the gaze of a surgeon supported and justified by
an institution - the teaching hospital (Foucault, 1973). In the nineteenth century, the
hospital had developed into a locus of systematic, comparative observation of
disease. The hospital allowed for the repetition of constant phenomena in relation to
breast cancer. It was the site of large-scale encounters with tumours that were not
possible in private practice; a location that cancelled out the individual variants of
breast cancer by virtue of the sheer number of cases; and thereby established the
norms of the disease (Foucault, 1972). It was a place that consequently reinforced
the understanding of the average process of the average breast cancer. However,
much was also revealed to a gaze that sought the variations of breast cancer that
were presented within the institution. It was at this time the idea appeared that it was
as important to observe all the variations of the disease as well as the similarities to
know it well (Foucault, 1973). This hospital that aggregated patients with the one
condition in the one place thus revealed to the surgical gaze breast cancer in all its
endless modification and repetitions, enabling it to reveal the essential essence of the
disease.

Moreover, unlike the family home, where illness tended to be interfered with, the
hospital domain allowed the illness to unfold more naturally beneath the surgeon’s
gaze. It was a neutral field where the standardisation of the context made the
comparison of one breast cancer with another possible. Even the argument that the
hospital in fact caused iatrogenic modifications of its own to the pathology being
observed was invalid, because as Pinel noted:
the modifications in question are uniformly valid for all events; it is possible therefore to isolate them by analysis and treat them separately; by setting aside modifications due to locality, season, and nature of treatment one can succeed in introducing into the hospital clinic … a degree of foresight and precision (Foucault, 1973, pp.109-110).

The rise of the hospital facilitated the simultaneous appearance of surgical empiricism, which prided itself on its ability to quietly allow the manifestations of breast cancer to rise undisturbed within the perceptual field with no interference from a priori theories (Foucault, 1973). The archive of this time is abundant in statements that repudiate all the old humoral suggestions of the imagination that anticipated what the surgeon would perceive, discovered illusory relations, and articulated what the senses could not see. Yet Foucault demonstrated that while the illness was indeed allowed to unfold without intentional interference, there was in fact boundary, form and hence meaning within the perceptual field because the perceptual act was always guided by a certain logic of operation and guided by a particular curve of visibility (Foucault, 1973). There is never observation without interpretation and prior acculturation, as evidenced by the fact that the nineteenth century gaze had the paradoxical ability to hear a language of exact description as soon as it perceived the woman with breast cancer (Foucault, 1973). This language is discussed in the next section.

*The plurisensorial gaze*

The dimension of depth and the reference to death were not the only elements that fashioned the new perceptual field. By the nineteenth century, the field of visibility had widened to include colours, variations, anomalies, deviations, transformation as well as smells, sounds and tactile sensations. It was this period that witnessed, for example, the extension of the medical gaze into the living as well as the dead body by the recent rediscovery of the practices of percussion and auscultation by Laennec (de Moulin, 1983). So even the rigidly neutral, objectifying surgeon of this period did not keep his distance from his patient. As he had always done, the new surgeon
also touched his patient. He felt her pulse, he listened to her chest, he palpated her tumour to feel what was below the surface and elicit a pain response. Due to his familiarity with its depths, this surgeon could perceive what was immediately below the visible living exterior and chart the disease within the hidden depths of her body without having to open it up (Foucault, 1973).

The perceptual field also acquired a new language that meant the breast tumour could be made an object by a perceptual act that emphasised faithful description. A language – medical jargon - was developed that described the breast tumour in a consistent, extremely precise fashion by way of a systematic and unchanging vocabulary (Foucault, 1973). This exhaustive description had another function. Pre-nineteenth century medico-surgical language had been obscure for two reasons. First, it had been couched in an often-bastardised Latin that was inaccessible to those without a university education, and was frequently obscure even to those who had. Second, it tended to be used with abandon and to create a favourable impression rather than to achieve accurate description. In contrast, the accuracy and difficulty of the new language clearly defined the boundaries of the surgical profession. It conferred those practitioners who understood it with a mastery of the perceptual act and the structures it supported that was not possessed by the layman (Foucault, 1973). This is the sentiment underlying the following comment from Pearson:

He who desires to prognosticate with fidelity the events of diseases, and who esteems it more honourable to administer relief, than to propagate subtle or ingenious speculations, must habituate himself early to a severe and exact scrutiny, into the origin, progress, and effects of morbid alterations … this desirable end will be most successfully promoted, by improving the history of diseases, and by delivering their diagnostick signs with distinction and precision … They must be arranged, generalised, and embodied in a regular structure … and it must be clearly ascertained, wherein the disease there described agree, and wherein they differ from others that are remote in their
Enunciative Modalities

nature, but not very widely dissimilar in their sensible phenomena (Pearson, 1793, p.iii).

The multidimensional gaze
The last two thirds of the nineteenth century witnessed the development of a complex perceptual act, modulated by a multi-dimensional lens, which forms the basis of the modern surgical gaze. This perceptual field, constituted by elements of the botanical gaze (plurisensual, surface, prognostic, bracketing) and anatomo-clinical gaze (depth, individualising, normalising), was compounded by developments in microscopy and the science of statistics. This new perceptual field rendered the surgeon omnipresent and omniscient: he could simultaneously magnify, abstract, isolate, differentiate, generalise and predict breast cancer. He could operate in the individual and the social body at the same time. This perceptual field potentiated by the microscope and mathematics is discussed in the next section.

The microscopic lens
Between the 1830s and 1870s, developments in microscopy, such as the compound lens and histological staining methods, effectively neutralised Bichat’s misgiving that when one looks into the darkness everyone sees in his own way (Bichat, 1802). The microscope now was as necessary to assist the surgeon’s sense of sight, as the stethoscope was to assist his sense of hearing (Bennett, 1849). The new emphasis upon the cellular structure of the body also transformed the field of visibility in relation to breast cancer; for the gaze was now directed towards the cellular nature of the disease, and the structural differences in cells that indicated cancerous tumours. This new gaze enabled surgeons for the first time to discern breast cancers not as species of the various tumours, but different tumours as species of cancer.

By the 1840s, for example, the English surgeon Budd was an early adopter of the microscopical gaze. He argued that cancerous tumours in general were
almost entirely made up of cells, having all the characters of those which are now known to play such an important part in the formation of all organised tissues. These cells are, for the most part, globular, but some are caudate, or spindle-shaped; and in some varieties of cancer the latter form predominates. They nearly all have parietal nuclei, and their cavity contains a great number of granules, which are supposed to be cytoblasts, or germs of new cells. Granules of the same kind often lie crowded in the intervals between the cells, and sometimes even form the greater part of the mass (Budd, 1841-1842, p.268).

Four decades later, the increasing acuity of the microscopical gaze and its associated language of description resulted in Billroth’s attempt to put things in order by accepting only four kinds of breast cancer – all of which were the product of cellular anomaly. He and Waldeyer offered a detailed description of the gross and microscopic features of each of these, noting that breast tumours typically had an acinar appearance which, although also observable in tumours that arose elsewhere in the body, he believed was particularly characteristic for neoplasms of the breast. He described the acini and tubuli as filled with large, round and irregular cells – cancer cells – that contained large nuclei, each with a strikingly shining nucleolus. The intermediate connective tissue was infiltrated by much smaller cells (Waldeyer, 1867; Billroth, 1880).

Billroth was a surgeon, but he is also lionised in the surgical archive for the keenness of his histological gaze (Billroth, 1880). He argued that the morphological diagnosis of cancer aided by the microscope had in his time become so reliable that it offered at least as much certainty as the clinical signs relied upon in the past, and it persists as a valid clinical indicator of breast cancer today. Moreover, in an echo of the practice of humoral physicians, the woman did not need to be present for her diagnosis to be made.
Thus, instead of homology or even heterology of tissues, organs and systems, by the mid-nineteenth century the gaze had become permanently focused upon the typical or atypical features of cells with respect to their tissue of origin, their maturity or immaturity, and the normal and abnormal features of the many states of cellular transition (de Moulin, 1983). For example, this gaze actively sought evidence of those structural peculiarities that enhanced the uncontrolled proliferation that was typical of the cancer cell. Budd noted that one should seek cells with thin walls that cohered to other cells only slightly. This allowed them to detach easily from one another and wander around the body seeding elsewhere (Budd, 1841-1842). De Morgan reiterated this thirty years later, noting that the component cells of a tumour were “always free” (de Morgan, 1874, p.297). The surgeon also sought evidence of the degree of differentiation of cancer cells, and their incongruence with the morphological features of normal adult cells, recognising that the less the microscopical structure of the breast tumour resembled normal structures, the more malignant it was (de Morgan, 1874). The gaze was also directed towards the generational peculiarity of cancer cells, seeking instances where “several generations of cells are often included one within another, like a nest of pill boxes” (Budd, 1841-1842, p.268).

The numerating gaze
Foucault described how, at the end of the 18th century, the doctor’s status was profoundly altered when the health of the population became one of the economic questions asked of the flourishing industrial societies of the era (Foucault, 1972). In order to comply with this norm, the gaze of the surgeon needed to extend beyond individual bodies, percolating into the spaces between bodies inhabiting the social field (Armstrong, 1983; Osborne, 1991). So at this time, the knowledge obtained from attention to the microscopic and macroscopic details of individual bodies was complemented by an extension of the gaze into the social body (Armstrong, 1983). This gaze not only explored the social and political spaces beyond the individual body; however, it also enumerated elements of the individual body. By way of statistics, this new gaze abstracted people and their diseases into numbers;
determined the social as well as the individual norms of disease; compared individual tumours and individual bodies with those norms to identify the elements ‘at risk’ of deviating from societal norms of health; and calculated the risk of developing breast cancer.

Some Foucaultians argue that this extension of the perceptual field into the community and the minutest areas of the body was a function of increasing medical and surgical power (Gastaldo, 1997). It was at this time that doctors were first authorised with their continuing mandate to infiltrate into every particular of daily life, enumerating concerns which were once not considered the territory of medicine at all (Osborne, 1991). Statistics for example made the notion of the norm technical and calculable – they rendered ‘normality’ as the natural state but one which can generally only be achieved with guidance by the surgical experts who were now invested with the power to define what was normal (Rose, 1999b). So it is with breast cancer in the present day, a period when cancer experts calculate cancer risks and advocate various dietary prescriptions and other lifestyle regimens to people who do not even have breast cancer. Judging from the conventional history, statistics are certainly credited as fundamental to establishing modern medicine and surgery as the exact and numerate (and therefore powerful) sciences that they are today (Sebastian, 2000).

While a genealogical discussion of surgical power is beyond the scope of this archaeological thesis, it is worth noting two features of this numerating gaze that make it doubly powerful, and which are relevant to the remainder of this section. The first is that this gaze could predict who in the social body was at risk of developing breast cancer. Like Foucault’s experimental gaze of the empiricist, this gaze was not content to observe what was most obvious. This gaze made it possible to outline chances and risks; it was calculating (Foucault, 1973). The second is that the woman did not need to be present for a prediction of the likelihood of developing breast cancer to be made. The gaze was directed both at the abstract collective woman or those minute portions of tissue separated from the offending breast. The
power of the practitioner’s gaze and the breast cancer he sought were rendered more potent because of this ability to comprehend the abstract and the fundamentally invisible. The next section will explore the relevance of the numerating gaze with regard to the incidence, aetiology, alleged increase and outcome of breast cancer.

Seeking the incidence of breast cancer

One lens of the numerating gaze, the epidemiological lens, seeks evidence that breast cancer is not randomly distributed within the social body. It correlates instances of the disease within certain populations with various agent, host, and environmental factors and calculates the risk of developing breast cancer by way of statistical techniques. As a subject, epidemiology dates from Hippocrates. There were few developments in the field for a further two thousand years, however, beyond descriptive considerations, mainly because the early practitioners maintained an individual rather than a group focus on disease (Petrakis, 1979). The first epidemiologists are variously considered to be de Baillou (1538-1616) Ramazzini (1633-1714), Graunt (c.1622), Sussmilch (1707-77), Rigoni-Stern (b.1810) and Louis (1835) (Mustachi, 1961; Petrakis, 1979; Scotto & Bailar, 1969; Sebastian, 2000).

In 1622 Graunt published one of the first population-based counts specifically addressing cancer mortality, and over the succeeding two centuries it became possible to estimate the extent of overall cancer mortality in communities, although this was compromised by shifting definitions of what cancer actually was (Petrakis, 1979). In 1713, Ramazzini provided the first evidence that certain groups of women had greater susceptibility to breast cancer, noting that nuns appeared to develop it more often than other groups of women (Mustachi, 1961; Petrakis, 1979). This was corroborated by Rigoni-Stern’s study of the death registries of Verona in 1842 that demonstrated not only the higher incidence in nuns, but also the increased frequency of breast cancer with greater chronological age (Scotto & Bailar, 1969).
Consistent with the focus on the corpse in the age of pathological anatomy, Rigoni-Stern used the cause of mortality as the yardstick for measuring the rate of breast cancer, rather than gathering data from other sources (Mustachi, 1961). He justified this by arguing that in view of the almost complete absence of cancer cures in his time, the mortality from breast cancer could reasonably be taken as an index of its occurrence in the living population (Mustachi, 1961). Rigoni-Stern was, however, acutely aware of the importance of epidemiological method in translating information gathered from the passive contemplation of the terminal outcome of cancer to the potential incidence in living populations where the disease was active. As Mustachi noted, Rigoni-Stern believed that to become truly accurate and illuminate useful outcomes, the epidemiological gaze would have to adapt itself to living biological and social bodies:

As one can aim at preventing or arresting cancer only in those who have not yet succumbed to it, constructive hopefulness is implicit only to a study conducted among the living. None can be derived from the analysis of a situation as static as death (Rigoni-Stern, cited in Mustachi, 1961, p. 641).

The most important function of the epidemiological gaze that emerged with Rigoni-Stern and those who followed him in the nineteenth century was the whole-of-population survey, which examined living individuals in the social body relative to each other. It became a surveillance technique through which the bodies of those with (and without) breast cancer could be incorporated into a web of observation of which they were not even aware (Armstrong, 1983). While remaining essentially invisible, this aspect of the gaze could measure, analyse, and, in prescribing conduct for citizens so that they could avoid breast cancer, ultimately set the agenda for the subsequent social control of health that justified surgical power in the twentieth century and beyond. It also helped to further refine the power of surgeons, enabling them to judge their efficacy in terms of rates and numerical comparisons (Rose, 1999b). This type of power is less obtrusive – it is pre-emptive, anticipatory, probabilistic, preventative, and focused on the management of risk – thus lessening
its political and moral repercussions (Rose, 1999b). Moreover, because epidemiology does not actually produce individuals, it minimises the possibility of resistance to surgical power (Rose, 1999b).

**Seeking the aetiology of breast cancer**

One outcome of Rigoni-Stern’s work was that the field of visibility now enabled the surgeon to definitively establish some aetiological factors related to social situation. He had, for example, furnished proof regarding the previously unsubstantiated belief that the incidence of breast cancer increased with age, particularly ten to fifteen years after menopause (Scotto & Bailar, 1969). However, his calculations also made it obvious that the mere cessation of the menstrual period could not account for its occurrence. He noted that in women who had not married, breast cancer was four times more common than uterine cancer, while in married women cancer occurred in the breast only half as frequently as in the uterus. He concluded therefore that pregnancy and lactation decreased the risk of developing breast cancer – redirecting the surgical gaze onto the nulliparous, unmarried woman (Mustachi, 1961).

Another feature of Rigoni-Stern’s work that emphasises the social aspect of the epidemiological lens is that he ascertained the incidence of cancer mortality in relation to such social demographics as gender and place of residence. His calculations demonstrated that cancer generally was less frequent in rural and suburban areas than in urban locations; and that it was much more frequent in females than males (Scotto & Bailar, 1969). These observations redirected the surgical gaze onto the risk factors of socio-economic status and gender that continue to be a focus in the twentieth century.

One aspect of the epidemiological gaze of the statisticians King and Newsholme in Britain toward the end of the nineteenth century appears to reflect social snobberies and national rivalries rather than accurate reporting. They stated that with regard to cancer statistics, there was a need to adjust according to country of diagnosis. The Irish, for example, were poorer and so did not avail themselves of doctors to enable
a diagnosis to be made. Moreover, even where Irish people were financially secure enough to secure a doctor, Irish doctors were not as well trained as English doctors and therefore were considered not capable of recognising cancer correctly. Similarly, they argued that Scottish doctors were better trained than English ones, and that the data indicated that apart from improved diagnosis, “there is some cause in English female life more favourable to cancer than among Scottish women” (King & Newsholme, 1893, p.222).

Numbers also allowed anatomical conclusions to be drawn concerning the aetiology of disease. Based on his statistical data, for example, Virchow argued that certain organs, such as the breast, were most commonly affected by cancer and others hardly at all. He used this fact to justify his belief in the local origin of disease that so influenced subsequent conceptions and treatments of the disease:

That such a result does not support the humoral pathologic interpretation of a primary cancer dyscrasia needs no further comment. If certain organs are so predominantly affected, these being organs which are practically immune to the metastatic development of a tumour, i.e. in cases when the presence of a dyscrasia can hardly play a role, this fact quite decidedly bespeaks the solidary pathological interpretation of the primarily local nature of this affliction. In my paper on the statistics of the city of Wurzburg, I drew attention to the fact that cancer was mainly a primary disease affecting parts of the body located at the surface, and I need not further expand on the fact that surface implies the danger of external damage by mechanical, chemical, thermal or other agencies (Virchow, 1985c, p.582).

The apparent increase in breast cancer
From the earliest development of statistical methods, some practitioners also advocated temporal extension of the numerating gaze, believing that questions about the incidence of breast cancer were best answered by analysing data collected over a long period of time. Rigoni-Stern and King and Newsholme were aware, for
example, that apparent increases in cancer deaths generally in their respective eras might actually be attributable to improved diagnosis and better nomenclature rather than any actual increase in incidence (King & Newsholme, 1893; Scotto & Bailar, 1969). With the decline of infectious diseases as the major cause of death during the nineteenth century and the associated increase in life expectancy, this issue of whether or not cancer rates were rising was increasingly the subject of controversy (Petrakis, 1979). New statistical techniques to accurately determine this issue, which are still in use today, were introduced from around 1840 and were common by the end of the century. These include the standardising technique to adjust for age, which permitted comparison of cancer mortality rates between two populations of differing age compositions. Others included Quetelet’s concept of the average man, Galton’s correlation coefficient and Pearson’s chi-square test (King & Newsholme, 1893; Petrakis, 1979).

By the end of the century, the gaze that sought an increase in breast cancer had certainly found it, with a report to the Registrar-General of Britain in 1889 explicitly stating

That cancer has really increased in this country appears to be now generally assumed in medical circles … in the face of the constant and great growth of mortality under this heading, and the expressed belief of medical practitioners specially engaged in dealing with this class of diseases that they are becoming more and more common, it … appears that a real increase is taking place in the frequency of these malignant affections (King & Newsholme, 1893, pp.209-210).

**Predicting breast cancer outcomes**

The combination of the microscopical and numerating gazes proved extremely powerful, enabling surgeons to correlate the clinical behaviour of a tumour with its histologic type and treatment outcome. For example, Paget demonstrated that the success or otherwise of treatment bore a direct relationship to histologic type of the
tumour (Paget, 1863, 1874). Similarly the surgeon Billroth, who was also an influential German pathologist and early epidemiologist, had an enormous amount of raw statistical data related to breast cancer analysed by his assistant von Winiwarter (von Winiwarter, 1878). This enabled Billroth and von Winiwarter to correlate age with certain types of breast cancer and to also predict its outcome. From these data they postulated that medullary carcinoma had the most rapid course and was more likely to occur in younger women. Carcinoma simplex was the most frequent, but had an unpredictable clinical course. Aggressive neoplasms were more frequent in young women between 30 and 40 in otherwise good health. These fast advancing tumours initially appeared as an infiltrative induration which extended rapidly and, before too long, extended over the greater part of the breast. After six to eight months, there was an enlargement of the axillary nodes, followed by supraclavicular deposits. Neuralgic pains arose in the ipsilateral arm, in which an indurated oedema developed due to compression of the axillary vein. Ulceration then occurred after 12 to 18 months. The woman’s nutritional status remained good for a long while despite her advancing disease. Metastases developed first in the pleura at the diseased side, in the liver, in the long bones, and not infrequently, in the vertebrae. The patient then experienced an overwhelming agony from which death would relieve her after two or three years at most (von Winiwarter, 1878; Billroth, 1880).

The issue of treatment outcome had always been the subject of debate throughout the surgical archive, and, according to the affiliation of the surgeon, the numerating gaze could accommodate positive and negative viewpoints. For example, Gross’s (1880) statistical treatise on breast cancer demonstrated that the risks of surgery far outweighed any benefits (Baum, 1986). Gross utilised the numerating gaze to clearly pinpoint the trajectory of the disease. His study described how infiltration appeared, on average, 14 months after a tumour was first detected, ulceration generally occurred 6 months after that, and fixation to the chest wall after a further 2 months. Invasion of the breast was detectable if the woman lived on average 32 months after the tumour was first detected. 25% of these untreated cases exhibited obvious distant
metastases within 12 months and 25% after 36 months, while 5% of this case series
died 5 years or more after presentation (Baum, 1986). Gross’s paper appeared at a
time when surgeons influenced by the localisation theses of Virchow and Halsted
utilised statistics to prove the exact opposite – that if treated early enough, breast
cancer was curable.

*The precision of the numerating gaze*

Many of the pioneers of epidemiology realised from the outset that such a wide-
ranging perceptual field and its instruments were subject to imprecision, anomalies
and misinterpretation. Rigoni-Stern for example was exemplary in the restraint he
exercised in his application of the epidemiological lens, refusing to jump to
conclusions that his data did not justify (Mustachi, 1961; Scotto & Bailar, 1969). He
realised the error of those who extrapolated what they could see at a given moment,
assuming that their own sample of breast cancer data was representative of every
sample. Virchow was one of the eminent early adopters of the epidemiological gaze.
He believed that grounding the gaze in statistics was extremely valuable, but that
some aspects of it were problematic:

Most of the statistical works on tumours that we possess are based on
material from certain hospitals or clinics, or are derived from individual
anatomists or surgeons. It is clear that these studies are aetiologically and
prognostically very valuable, especially when they are carried out as
carefully as those recently made by Baker … But it is not rarely overlooked
that even the best compilations of this sort have only a relative value, in so
far as they concern only a certain fraction of the population and again, from
this fraction, deal preponderantly or exclusively with certain forms of
tumour. Surgeons will predominantly deal with external tumours, and, if
their experience on the frequency of the tumours of the female breast were
taken as a basis for statistics, our conclusions would obviously be as wide of
the mark as if we so took the findings of a busy specialist for women’s
diseases with respect to the frequency of tumours of the uterus and of the
ovaries. … Such a limited point of view will serve for the history of a single sort of the tumour and of single organs. It is true that hospital and clinic certainly offer the best basis for the study of rare or exceptional cases. But for a study of tumours in general, for a larger survey on their incidence, their causes and their dangers must necessarily be based on the whole population (Virchow, 1985c, p.580).

King and Newsholme also noted that statistics that indicated an apparent increased mortality in cancer rates could be ambiguous:

a more careful investigation, however, shows that the rations prepared in the usual manner from the returns of the Registrar-General at the best only approximately represent the truth, and that, in fact, they may even be misleading. Cancer is, par excellence, a disease of mature life. … Therefore, to take the deaths from cancer at all ages in a community, and to compare them with the total population in order to arrive at the cancer death rate, may introduce an error sufficiently serious to vitiate the results (King & Newsholme, 1893, p.211).

This compelled them to develop methods to moderate the epidemiological lens, standardising death rates for age and gender (King & Newsholme, 1893). Virchow developed another method to make his cancer statistics more reliable: autopsies conducted on an entire population (Virchow, 1985a).

At the end of the nineteenth century, the epidemiological gaze allowed surgeons to draw the following conclusions regarding cancer in general, and helped set the boundaries of the perceptual field of breast cancer for the succeeding century:

1. Males and females suffer equally from cancer in those parts of the body common to man and woman, the greater prevalence of cancer among females being due entirely to cancer of the sexual organs, viz., the mamma, ovaries,
uterus, and vagina. This … may not unreasonably be accepted as a probable general law.

2. The apparent increase in cancer is confined to what we have called ‘inaccessible’ cancer.

3. The increase in cancer is only apparent and not real, and is due to improvement in diagnosis and more careful certification of the causes of death. This is shown by the fact that the whole of the increase has taken place in inaccessible cancer difficult of diagnosis, while accessible cancer easily diagnosed has remained practically stationary (King & Newsholme, 1893, p.228).

Conclusion

A case study described by Beatson at the end of the nineteenth century serves as a fitting conclusion to this chapter. It is representative of the surgeon speaking from the hospital field and invested with the authority of the State. It also demonstrates all of the aspects of the perceptual field that had been developed since the time of Hippocrates, and which would pass as a good description of breast cancer at the present time:

the whole right breast was occupied by a large tumour, which involved the whole organ save its extreme lower margin. The tumour was densely hard, but uniformly so and more or less rounded and smooth. It was adherent to the skin over a large area, this skin being infiltrated and reddened. The mass was somewhat tender. At its upper part there was a distinct cutaneous nodule about half an inch long and one-fifth of an inch broad. The tumour was not fixed below, though there was no great freedom of movement. The skin around the breast, especially at its lower part, showed congested vessels and was apparently hyperaemic. The nipple was retracted and fixed. In the axilla were a number of enlarged hard glands rather deep and hard. The pectoral fold running up to the axilla was slightly thickened and indurated. In the first interspace some small shot-like nodules were felt under the skin. Also over
the clavicle under the skin there were quite a number of them, and they gave a rough feeling to the surface of the bone. In the supra-clavicular space and in the posterior triangle of the neck there was a wide infection of the lymphatic glands – one especially hard and fixed mass lying slightly above the clavicle. Numerous enlarged glands could be traced as high as the lobe of the right ear. On the left side, in the anterior triangle of the neck, just above the inner end of the clavicle, there was a small, hard, enlarged gland. There was no oedema of the arm, but the patient complained of almost constant pain down each side of the arm and of pain in the neck. The left breast and axilla seemed normal. No secondary deposits could be detected in any of the organs of the body. The only suspicious point was that the percussion note over and just below the right clavicle was impaired, while anteriorly and posteriorly, the respiratory murmur was somewhat hard and prolonged at the apex, and a slight creaking and grating could be heard. Otherwise the lungs were normal (Beatson, 1896, p.162).

From his knowledge of the statistical outcomes of the disease, Beatson also noted that the case was futile in terms of surgical intervention aimed at cure. Moreover, his reliance on microscopy was evident in the pathology report he obtained that confirmed the cancerous tissue of the lymph nodes had been replaced by scar tissue (Beatson, 1896). This excerpt – in its attention to detail, its authority, its plurisensuality, the range of its gaze from local to systemic, microscopic to macroscopic, diagnosis to prognosis, and the precision of its language, is a good example of the silent configuration of enunciative modalities that validated the surgeon’s mandate to explain and treat disease.

It should always be kept in mind however that while the place from which the surgeon speaks, the nature of the perceptual field and the focus of the surgical gaze have changed over time, it does not mean that what each episteme has perceived is necessarily ‘true’ – or that the modern surgical gaze cemented in the nineteenth century is the only way breast cancer can be conceived. All that these changes mean
is that the relationship between what is seen and what is not seen changes. Perceptions of breast cancer are modulated by the different perceptual acts emanating from different sites that are given precedence at the time:

At the beginning of the nineteenth century, doctors described what for centuries had remained below the threshold of the visible and the expressible, but this did not mean that, after over-indulging in speculation, they had begun to perceive once again, or that they listened to reason rather than to imagination; it meant that the relation between the visible and the invisible … changed its structure, revealing through gaze and language what had previously been beyond and below their domain (Foucault, 1973, p.xii).
CHAPTER 7. “THE SWORD IN A MADMAN’S HAND”: PRACTICAL MODALITIES AND NORMALISING STRATEGIES

The laws that have produced and sustained breast cancer discourse are not only embodied in the institutions that have legitimised such discourse, or in the ways that surgeons are trained to observe and explain breast cancer. This chapter will explore the idea that the rules underlying surgical discourse are most intelligible in the practical modalities, or surgical practices, of breast cancer. The position taken here is that surgical practices are the technical activity of thought or the conceptual problematisation of breast cancer made visible (Osborne, 1991). They are the critical and enunciative modalities made concrete. Practical modalities will be explored in this section, consistent with Foucault’s belief that the laws that engender and sustain discursive formations such as surgery are most tangible in the ‘specificity of discursive practices’, that is, in the things that surgeons do (Foucault, 1972).

Examination of the archive makes it apparent that underlying every surgical practice related to breast cancer is one inviolable rule. The problematisations that inform oncological surgery consistently frame breast cancer as pathological, that is, abnormal. So my thesis is predicated on the notion that surgical practice is a manifestation of an unquestioned societal truth - that breast cancer is not normal. No doubt this statement appears indisputable and even naive to the reader: evidence of the ubiquity of this truth. But it is useful to examine the assumption that breast cancer is not normal. It is in fact extremely common – one of the generally accepted yardsticks of ‘normal’. Breast cancer has always been considered, in one way or another, the inevitable product of the interplay of factors within an ageing and complex organic system. It is no different today, when breast cancer is regarded as the result of the accumulation of genetic accidents that occur in normal, healthy cells over time. These accidents are now considered the usual by-products of the complex biochemistry needed to sustain human life. Considering the extent of the errors possible in past and present theories of these intricate organic systems, we really should consider cancer a natural part of life. Yet examination of both present-day discourse and the older archive demonstrates that knowledge and action concerning
breast cancer have always been constructed around the pole of abnormality rather than normality. Surgical practices then and now aim to make the woman normal again. It is useful to reflect on how diseases such as breast cancer, which are essentially natural phenomena, come to be considered unnatural and abnormal, before a discussion of the normalising surgical techniques of breast cancer.

**Normality and breast cancer**

The term ‘norm’ originated in pedagogical and hospital contexts, and was used originally to denote a state of organic or intellectual typicality. ‘Normal’, as in average or mean occurrence, first appeared in these discourses around 1759, and the word ‘normalised’ in 1834 (Canguilhem, 1989a). However in the intervening 94 years the concept acquired vastly different meanings from those originally intended (Canguilhem, 1989b).

A study of the work of Canguilhem, who taught and greatly influenced Foucault, is invaluable to understand normalising processes and the meanings that underpin them. Canguilhem’s project traced the evolution of the concept of ‘normal’, attempting to establish its essential meaning by way of a philosophical analysis of life. Ultimately he considered that the ‘normal’ human ideal was the potential and deliberate adaptation of the biological human being to every condition imaginable in the effort to survive (Canguilhem, 1989a). So although Canguilhem conceded that disease and death were biologically normal, he also argued that the normal human struggled with them in order to perpetuate other norms – ‘vital’ norms that idealised the biological processes of life and growth and which resisted death and disease. For him, disease and death were abnormal states in terms of the persistence of life which served as the biological norm (Canguilhem, 1989a).

The usefulness of these ideas resides in their implication that because of their fundamental resistance to death, vital norms based in biological life are never static. They are always dynamic, polemical and always relative to each other within a system (Canguilhem, 1978, 1989b). However, Canguilhem’s ideas are significant in
another way. They also recognise that surgeons, in using terms such as too much, too little, intensification, diminution, exaggeration, disproportion, discordance and so on to describe variations from biologically normal, inevitably and unconsciously ascribe sociocultural value judgements to overtly objective descriptors of life functions. Canguilhem traced how the term ‘normal’ also came to encompass notions within surgical discourse of the ‘normal state’ of an organism being not only biologically usual, but also biologically, socially and morally desirable (Canguilhem, 1989b; Rose, 1999b). In addition, by the mid-nineteenth century, ‘normal’ had also percolated into popular consciousness to reflect aspects of socialisation that were regular, typical or taken for granted (Rose, 1999b). It had naturalised in the lay discourse to denote what is right in a given situation.

Hence Canguilhem recognised and differentiated the notion of vital norms, those organic activities that aimed towards self-restoration and renewal of the organism. Vital norms recognised that disease was also a norm of life, but one to be conquered. From this position we can conceive breast cancer as both a biologically and even statistically normal finding. But it is definitely not normal in terms of the philosophical norms we have constructed around life, which dictate that the organism must fight disease to sustain itself, nor of the social norms we have also constructed that decree we must strive for both organic and moral perfection (Canguilhem, 1989a; Rose, 1999b). A reading of Canguilhem therefore helps us to understand that the language used to describe biological norms has not only organic imperatives, but also technological, moral, legal, social and political imperatives that have greatly influenced the way breast cancer has been conceived and treated. In terms of practical modalities, the normal state is thus a way of identifying what is considered deviant from this ideal state, and therefore the action that must be taken by surgeons to regain that desirable state.

**Surgical power and breast cancer**

While it is not the intention of this archaeological thesis to encompass an extended analysis of power and the surgical technic, which is the province of genealogy,
issues of power are nonetheless implicit in the normalising strategies discussed in Foucault’s earlier archaeological works. Foucault demonstrated that especially since the birth of the clinic (at roughly the same time that the concept of normality arose) norms have been an essential component of disciplinary power and practice. With concurrent developments in statistical method, social and biological norms began to be calculated for both individuals and populations as a whole, giving disciplines such as surgery and the authorities who harnessed their expertise a key technique of government: the ability to identify, categorise, quantify, instil and regulate through the idea of the norm (Rose, 1999b). Thus norms developed into regulatory mechanisms that facilitated the subtle exercise of control through impartial measurement, appraisal, and correction of deviations from what the discipline and the State considered biologically usual or desirable (Rabinow, 1984).

Foucault’s earlier works demonstrated convincingly that since the 1800s, more precise knowledge of individuals, particularly through statistics, had resulted in simultaneously finer, more encompassing and therefore more powerful criteria for normalisation (Rabinow, 1984). Thus it is inevitable now, in light of Foucault’s later work on genealogies, that normalising practices such as surgery are often seen as inseparable from the deliberate organisation of individuals and institutions into functioning networks of power (Rose, 1999a). Foucault later refined this concept and called one aspect of it ‘biopower’ (Foucault, 1984c, 1984e; Rose, 1999a). He demonstrated that by the end of the nineteenth century, many of the normalising practices of medicine and surgery were overtly and covertly aimed at enhancing or disciplining the ‘species body’ – the population as a whole - by integrating individuals into systems of greater productivity, efficiency and economic control (Foucault, 1984b, 1984c, 1984f). Baldly speaking, this alliance between the sciences and the State – biopower - fostered the care of the populace in order to ensure economic productivity (Dreyfus & Rabinow, 1982a; Foucault, 1984a). Another aspect of disciplinary power is the power over individual bodies that resulted from normalisation and the increasingly refined disciplinary knowledge of individuals that it conferred (Foucault, 1984c). Both techniques of power ensured the norms of
surgery infiltrated into everyday life, constructing individuality in terms of diseases or lifestyle choices that could be controlled by medico-surgical care and the State that sanctioned them (Gastaldo, 1997).

With regard to power in this context, it is important to emphasise some related and balancing Foucaultian notions. First, like power, the ‘normal’ state of not-cancer is not apparent unless there is resistance to it, in the form of disease, within the body. Canguilhem emphasised that it is only when biological processes contradict the ideal of health that the ‘norm’ actually becomes apparent. So while a woman may have had cancer for some time without being aware of it, it is not until a lump (that she may not even be able to feel) is detected on mammography that she begins to worry about how abnormal her body has become, and what her normal body should feel like. This notion is derived from the work of Nietzsche and Kant, who argued that well-being is not felt, for it is the simple awareness of living, and only its impediment provokes the force of resistance (Canguilhem, 1989a). Second, the pervasive normalising power of disciplines is not necessarily a negative thing. Normalising power is often affirmative and productive. So while the normalising judgement is indeed a negative assessment, it is a negative assessment of an individual by way of comparison with a favoured and socially acceptable paradigm rather than a negative criticism (Prado, 2000). Third, normalising practices are not necessarily consciously used as methods of control by surgeons, who by and large believe that what they do is in the best interest of their patients, and who are similarly subject to prevailing cultural and State-sanctioned norms in the conduct of their practice. Nor is the imposition of surgical norms inevitably an unwelcome mode of domination, as demonstrated by the willingness of women over many centuries to submit to surgical practices to rid themselves of breast tumours. In fact, Canguilhem argued convincingly that what is considered normal is ultimately dependent on the individual woman rather than the discipline. It is after all the sick individual who has recognised that something is ‘wrong’ and has drawn the attention of her surgeon to it in the first instance (Canguilhem, 1989a; Prado, 2000). It is
principally because individual patients acknowledge something is abnormal and feel something other than the norm of wellness that a surgery exists at all.

As Canguilhem has also noted, although the appearance of the term ‘normal’ is contemporary with the birth of the clinic, normalising strategies did not simply arise because the clinic was suddenly given the right to decree what was normal and what was not (Canguilhem, 1978, 1989a, 1989b). Well before the 1800s, surgical and social norms are evident in the archive. Surgical practices and the social norms that have sustained them have always assigned a value to the breast tumour (for example, it was dangerous or a sign of moral impurity. These notions are further explored in the next chapter). They have also consistently implied the conformity expected of the woman with breast cancer: she must become a docile body whose cancerous breast can be practised upon, and therefore transformed and moved towards the goal of not-cancer. Throughout the surgical archive, the absence of breast cancer is assumed to be the normal state. The woman must work, with the expert guidance of the surgeon, to achieve that goal.

The normalising strategies of surgeons and the women they have served have worked throughout in the archive in three ways:

1. By constituting appropriate and acceptable health care behaviours (Carabine, 2001). The woman’s behaviour must be congruent with the societal values about breast cancer they had internalised. The prevention or revision of a breast cancer diagnosis required the woman to behave according to the norm of wanting to not have cancer. This notion will be explored in this chapter in relation to the practices associated with regimen.

2. By operating in a regulatory capacity through which not only the presence of breast cancer was established, but the breast tumour itself was disciplined and controlled (Carabine, 2001). The establishment of breast cancer has been discussed in detail in critical modalities; its discipline and control in this chapter will be explored by way of corrective surgical techniques.
3. By producing differentiations that had various outcomes in terms of the affirmation and regulation of breast cancer (Carabine, 2001). These will be discussed in terms of the rules of operability and criteria for curability in breast cancer.

Consistent with Foucaultian argument, these normalising techniques of reformation and cure have often been contested by other groups, and even by other surgeons. As demonstrated in the chapters describing the critical modalities of breast cancer, the development of the surgical concepts has been a continual but uneven and ambiguous process. This has resulted in the persistent reassessment and renegotiation of the norms of cancer and non-cancer, and consequently the surgical technic has also been reassessed and renegotiated over time. Moreover, new technologies such as the microscope and the radical mastectomy have intensified inter- and intraprofessional struggles, fashioning an archive that is rife with the politics of expertise, ownership, contradictions in practice, the use of several practices at once, and the use of the same practice with a different rationale.

**Regimen**

The concept of regimen is the most fiercely contested area in the archive in terms of disciplinary ownership. It was an area the surgeon dabbled in – they did not receive any formal training in this area - because for centuries regimen was the undisputed province of the physician. In fact, until the nineteenth century, surgeons did not have the mandate to administer regimen unless under the direct supervision of the physician. However, the interrelationship of aetiological factors, particularly in humoral discourse, meant that one practice on its own, such as surgical removal of the breast tumour, was generally insufficient to effect a cure. Moreover, given the free market that prevailed, many patients chose to consult a surgeon directly and bypass the ministrations of a physician. It was therefore inevitable that the surgeon prescribed and administered some form of regimen, whether he had the physician’s approval or not.
Regimen required the object of surgical breast cancer discourse – the abnormal woman at risk of, or who had developed, breast cancer – to comply with societal expectations mediated by experts with respect to her health care behaviours. Up to 1900 there were several aspects of regimen that the surgeon recommended. These were prescribed either in conjunction with that aspect of his practice that was his undisputed territory – cutting – or, when surgery was not practicable, a combination of regimens was prescribed. All regimens focused upon the promotion of normality and the correction of any inherent abnormality that might precipitate breast cancer or which had already caused it. Following the categories proposed by Wiseman, these are intentions for diet and manner of living, intentions for bodily cleansing, and intentions for restraining or destroying the tumour (Wiseman, 1676).

**Intentions for diet and manner of living**

From the time of the Hippocratic practitioners to that of Bichat, diet was an integral part of breast cancer management and indispensable to the production of the docile, disciplined breast cancer patient. Preventative and corrective diets were low in melancholergic properties, and designed as a supplement to purging and bleeding to prevent the accumulation of black bile (Baum, 1986). Hence Aetios, basing his prescriptions on the Hippocratic and Galenic corpus, advised the avoidance of the coarse and phlegmatic foods that resisted the flow of the menses and which resulted in their accumulation in the breast. Rather he advocated the spicy foods that made the blood more fluid and less inclined to stagnate. On this account he also stressed the avoidance of heavy young wines, and cold, hard waters (Aetios, 1978). Where the atrabiliary humor had already accumulated and coagulated in the breast in the form of a scirrhus, Aetios also explained dietary measures that induced menstruation and so dispersed it. This involved the ingestion of non-acidic foodstuffs, including:

plentiful moist food and drink, such as barley water, potions prepared from grits\(^{20}\) and those drinks which are made from milk. As to vegetables, give

\(^{20}\) Coarse oatmeal
Practical Modalities

lettuce, gourds and others of similar nature. As to meats, give lamb, goat, fresh pork, especially meat of tame and female animals [ie those that aren’t acidic or plethoric]. As to fish, give those which have tender meat. As to birds, give those which have more delicate meat. As to fruits, give fresh figs, ripe grapes, melons and cucumbers. As to drinks, give light, diluted wine which is not old (Aetios, 1978, p.56).

These sentiments were adopted by all Western practitioners, being echoed one thousand years later in the following recommendation from Wiseman, who believed that women with breast cancer or at risk of developing it should be subjected to:

an exact regulation in Diet … advising to abstain from such salt, sharp and gross Meats as may dispose the Bloud to Acrimony, and make choice of the contrary, such as a cooling and moistening, of easie digestion and good nourishment (Wiseman, 1676, p.26).

These principles continued unaltered until the Enlightenment, when they were adapted to the mechanistic notions of bodily function propounded by the Descartian tradition and the related concepts of the iatromechanical school that structured the body as a hydraulic machine. This was an advantage, because machines were far more amenable to control, and diet played an integral part in this (Turner, 1991a). The body was conceived as an input-output system of pipes and pumps, and the surgical regimen of appropriate foods and liquids ensured the body worked effectively and maintained its equilibrium (Turner, 1991a).

Dietetic regimen, like other social contracts, also involved a certain loss of self-will (Turner, 1996). Much of the discourse produced around this time, particularly that of Wiseman and Norford, made it clear that the regimen worked only if the advice of the surgical expert was followed to the letter (Norford, 1753; Wiseman, 1676). It therefore implied an element of choice and a moral responsibility on the part of the patient. It was also a convenient excuse should the breast cancer result in death – it
was the patient’s fault for not adhering to the prescribed regimen. Norford, for example, emphasised the value of regimen and believed that

Health obtained at the easy Rate of restraining the Palate, is worth the Purchasing … To say that few Patients will be subject to the Method prescribed … is nothing to the Purpose: If the Patient will not be ruled, and the Disorder returns, neither the Surgeon or the Physician ought to be blamed (Norford, 1753, pp.112-13).

Also implicit in Norford’s argument is the medico-moral tradition popularised by Cheyne at this time, and later adopted by Wesley, in which control of the body was part of a religious calling and gluttony was viewed as the equivalent of suicide (Turner, 1991a). Dietary regularity and restraint were two of the keys to the control of abnormal and impure illnesses – of which breast cancer, as discussed further in chapter 8) was a paradigm disease (Turner, 1991a). At this time, avoidance of breast cancer became the modern balance between order and chaos, purity and danger, responsibility and immorality. Techniques of biopower ensured that pure food and pure water, along with healthy living conditions, personal cleanliness and a modicum of moral and physical restraint became fundamental to the moral regeneration of society and the moral and physical health of the patient (Turner, 1996).

Finally, in terms of regimen, the manner of living was emphasised throughout the humoral archive to promote normalisation of the melancholic woman disposed to breast cancer. With this in mind, Wiseman and many others recommended that

The Air ought to be clear, and temperately hot and moist … Their Exercise moderate, and also their Sleep: their Mind cheerfull, free from care (Wiseman, 1676, p.26).
**Intentions for bodily cleansing**

Humoral practitioners believed that health depended on the balance between starvation (where the organism had been emptied of everything that is superfluous or detrimental to its needs) and repletion (a plethoric state produced by the absorption of food or drink) (Sotres, 1998). Among the substances it was necessary to evacuate were excess humors, either in the blood itself or in the bodily receptacles they were attracted to: the bladder, the gut, the stomach, the uterus, haemorrhoids, the varicosities and so on. The evacuative function was accomplished through an array of bloodletting techniques, and the administration of emetics and laxatives. This was an undisputed area of the technic in the archive. Only surgeons undertook these cleansing treatments, for they involved noxious bodily fluids and a breaching of bodily boundaries beneath the province of the gentleman physician.

The purpose of bleeding was to remove excess humors by diverting the blood that carried them to an external outlet. The three principle techniques to relieve plethora were venesection (fashioning a large opening in a vein), phlebotomy (opening a smaller vein) and leeching (use of leeches to suck away the blood). The age, gender and constitution of the patient, as well as nature and extent of their disease, influenced the amount, frequency and method of removal:

> I have already told you of Bleeding, which potently checketh Fluxion, and ought to be proportioned to the greatness and violence of the disease. In tender bodies and small Tumours the evacuation needs not be much: but if otherwise, the Fluxion be great, and the body strong, we must take away large quantities (Wiseman, 1676, p. 6).

It was also necessary to find an outlet for any stagnated or suppressed blood, such as that which was believed to accumulate in the uterus of the menopausal woman, or in the woman who had haemorrhoids. It was imperative that menstruation be re-initiated where possible. Self-management of this included plenty of hot baths and vigorous exercise (Aetios, 1978). Besides the bloodletting techniques described
above, the vigorous application of friction, the application of suction cups (cupping) or leeching, and the induction of blisters were commonly used interventions (de Moulin, 1983). These were techniques designed to draw the stagnated humor or scirrhus away from the endangered part, raising a tumour elsewhere in the body and giving nature the opportunity to discharge the humor in a safer manner (Wiseman, 1676).

The inducement of emesis and colonic flux was considered a necessary adjunct to dietary and bloodletting regimens, in order to keep the body soluble and therefore amenable to the other practical modalities (Aetios, 1978; Pouchelle, 1990; Wiseman, 1676). This was most commonly achieved with preparations of aloes, although a decoction of crayfish kept in milk for five days was also considered to have cleansing effects (Aetios, 1978). The early morning was the most appropriate time for purging, which was believed to reflect the natural rhythms of the body (McVaugh, 1998).

**Intentions for tumour restraint and destruction**

The dietary, lifestyle and cleansing regimens discussed so far were largely preventative, and aimed to correct the deranged humors that precipitated tumour development. They were also used however to prepare the woman’s body for the third intention of treatment, which was the specific and rigorous regimen required if she had already developed a breast tumour. The third intention capitalised upon the more soluble and balanced body achieved through the first two intentions of treatment, which was now amenable to the inhibition or destruction of actual tumours.

Actions upon tumours were achieved with the *pharmaka*, another of the disputed territories in the archive that belonged more properly to the physician (who prescribed drugs) and the apothecary (who manufactured them). Despite traditional interprofessional strictures on their practice, surgeons within the archive discussed the *pharmaka* freely and knowledgeably, and appear to have often prescribed and
administered medication autonomously prior to their formal recognition in the early 1800s. The *pharmaka* drew heavily upon the texts of the Hippocratic doctors, who had established a rational foundation for the pharmacology of the time and integrated it elegantly into the nosology. One aspect of this integration was the doctrine of opposites, which posited that medication should be opposed in nature to that of the specific disease process (Touwaide, 1998). There were two principal ways the doctrine of opposites was utilised in the pharmacological discourse: through repulsion of the tumour and dissolution of the tumour. The two main functions of medications based on this principle then were to restrain tumour growth by translating it to a safer part of the body through repulsion, or to destroy it altogether by dissolution.

The concept of repulsion was based on the oppositions inherent in the substances (fire, air, earth and water) component of the qualities and substance model. Many humoral practitioners believed that internal medications worked because they were not assimilated in the body like food. Rather, the drug formed a compact mass within the system that repelled all excess humors before it (Touwaide, 1998). Hence various opposing topical and internal repellent drugs were used to drive the tumour to a safer part of the body, where it would cause less harm (Norford, 1753; Wiseman, 1676). The substance used depended on the nature of the humoral imbalance that had caused the tumour. Hence opposing astringent preparations such as mandrake, poppy, urine-soaked compresses, pastes of lead, sloes, vinegar, and topically applied oil of frogs that had been baked with butter in their mouths were used for breast tumours caused by an excess of acid acrimony. Caustic preparations such as sublimated arsenic and copper vitriol on the other hand had an effect comparable to fire, repelling tumours that were caused by a melancholic disposition (de Moulin, 1983; Haddow, 1936; Wiseman, 1676). Heavy metals were also used as topical and internal repellents, in the belief that their bulk and weight literally forced the tumour elsewhere (Norford, 1753). A later conception of the substances model was utilised by members of the iatrochemical school, who prescribed alkaline drugs to counteract the acidity of the lymph that congealed in breast tumours. Hence
arsenic continued to be used, but to fit a new theory (de Moulin, 1983; Hunter, 1835-1837).

Dissolution was a related, but slightly different pharmacological approach based upon the oppositions built in to the qualities (hot, cold, wet and dry) component of the qualities and substance model. The principle underpinning dissolution was that the therapeutic action of the drug worked by way of an opposing quality that neutralised the tumour. Hence the heat of certain drugs facilitated the dissolution of a melancholic humor; an ‘excitable’ resolvent substance was used to dissolve a congealed tumour, and so on (Norford, 1753; Touwaide, 1998; Wiseman, 1676). Like the spices prescribed in the dietetic regimen for cold humors, these medicines dissolved the breast tumour so it was dispersed in the blood, thereby facilitating its evacuation through bleeding and other techniques. Attenuant preparations applied topically or taken internally were also believed to thin the stagnant juices by increasing the energy and speed of the blood flow, and thereby reduce their corrosive potential – mercury was one of the most popular of these (Norford, 1753). Mercury also had the advantage of inducing a ‘high salivation’ thus it not only dissolved the tumour, it drew out the stagnant juices from the tumour to be expelled orally (Norford, 1753).

Wiseman noted that the ‘milder’ treatments outlined above were more likely to be administered to women and effeminate men than to those who lived a more active life (Wiseman, 1676). These treatments were also more useful for early scirrhi and those arising in the flesher parts of the body than those that were more entrenched or in harder to reach areas. Surgeons also utilised pharmacological regimens that aimed to destroy the indurated and stubborn breast tumours that could not be removed by gentler methods. This was often achieved with medicaments grounded in the doctrine of signatures, which posited that a feature in the appearance or qualities of a natural object, or even its name, indicated its therapeutic uses (de Moulin, 1983). Hence like would call to like, and cancer the crab would cure cancer the tumour. Consequently, crabs burnt to ashes and applied topically, crayfish
prepared in milk and taken internally, and rags soaked in the water in which crabs had been boiled and then placed on the tumour were used for this purpose (Aetios, 1978; de Moulin, 1983). Another crab remedy involved the use of the gastroliths or ‘crab’s eyes’ that formed in crab stomachs: this was calcined, powdered and mixed with honey, the milk of ass and various herbs (Haddow, 1936). Alternately, a live crab was bound over the tumour itself – a practice which persisted in Iceland until at least 1924 (Haddow, 1936).

A related doctrine drew on the enactment of a metaphor of the imaginary animal (the crab) neutralised by another animal: hence throughout Europe, many eminent surgeons in the archive halved live pigeons, kittens and puppies, and placed them while still warm on the tumour (de Moulin, 1983; Haddow, 1936). Similarly, live toads were used into the nineteenth century – they are described as instantly laying hold of the foulest part of the tumour and ‘sucking with greediness’ until they dropped off dead (Haddow, 1936). Minced raw lizard applied topically was another favoured treatment (Haddow, 1936).

Destruction of the tumour also involved destruction of the poison associated with the tumour, which could also be destroyed by a like material or neutralised by its complete opposite. The belief that poison counteracts poison resulted in the use of tisanes, topical applications and tinctures of hemlock, lead, mercury, arsenic and strychnine derived from nightshade to neutralise the cancer poison in the blood (Haddow, 1936). The concept of neutralisation by an opposite is apparent in the use of theriaca, which was used into the nineteenth century as a general antidote for many conditions. The basic composition of this compound was variable, but its therapeutic utility as a general antidote that neutralised snake venom and other toxins such as cancer poison was unquestioned (Aetios, 1978).

**Operative surgery**
The surgical technic that cut and cauterised, ligated and sutured, and altered or removed troublesome parts of the organism was the most valorised of the
normalising strategies that disciplined breast cancer well into the late twentieth century. Surgeons came to dominate the breast cancer discourse, simply because they had mastered the one element of the health care technic that restored normality by removing the troublesome tumour and in many cases, by providing some measure of relief from the disease. From ancient times, no other discipline within the health care system has been formally accorded the right to invade the body in this way. Only the surgeon was armed with the requisite skills and knowledge to open and reconfigure the human body, and this right was fiercely protected in the archive. Hence from Hippocratic times the discourse is littered with caveats regarding the danger of consulting the non-surgical practitioner; or as Norford expressed it:

the Danger of trusting to the Unskilful in the Cure of Diseases: for, sometimes, the most simple Remedy, in the Hands of the Ignorant, becomes like a Sword in a Madman’s Hand (Norford, 1753, p.20).

The blade of the expert surgeon, however, was guided by a scientific rationality that was sure and true. Above all, the surgeon’s knives, ligatures, suturing materials and cauteries were socially authorised instruments, manoeuvred according to certain sociocultural beliefs about breast cancer. The next section discusses the usual procedures for operative removal of breast cancer undertaken prior to 1900, followed by an interpretation of how sociocultural norms may have influenced these painful and perilous undertakings.

**The operative technic: Amazonian surgery**

Operative removal of the tumour within the humoral paradigm was not considered safe unless the balance of the woman’s body had first been restored through the appropriate regimen (Norford, 1753). The rationale for this was that the tumour was an expression of unbalanced humors: if the imbalance was not corrected, and the tumour was removed, the inherent derangement would ensure that the tumour would simply appear elsewhere. All expert surgeons knew that ‘appearing elsewhere’ – metastasis – was a dire prognostic sign.
While the Hippocratic practitioners left operative surgery relatively untouched, it appears to have developed considerably by the time of Celsus (Haddow, 1936; McVaugh, 1998). The standard operation from then until the lumpectomy-versus-mastectomy debates initiated in the nineteenth century was unquestionably total mastectomy, or amputation of the entire breast, with or without removal of the associated pectoral muscles and axillary lymph nodes. Lumpectomy was rarely, if ever, undertaken. From the texts of Celsus, Rufus, Heliodorus, Archigenes, Aetius and Leonides it is apparent that cautery, or burning of the diseased part and any haemorrhaging vessels, was also practised in association with amputation from the earliest times (Aetios, 1978; Haddow, 1936). Some surgeons used red-hot knives that allowed them to cut and burn simultaneously (de Moulin, 1983). In addition, torsion and ligation of spurting arteries were widespread surgical methods for controlling excess operative haemorrhage in ancient times, with the ends of the ligature carried out at the wound to await their spontaneous expulsion. Premature ligation to arrest bleeding, however, was believed to result in reimplantation of the tumour. Galen for example argued that

> When the breast tumour is cut all around, there is danger of haemorrhage, which if restrained by ligatures, might occasion a recurrence of the disease in the adjoining parts (Galen, cited in Haddow, 1936, p.28).

The rationale underpinning Galen’s remark is the humoral thesis that preferred the blood to run freely after removal and prior to cautery or ligation, in an attempt to drain the last vestige of the deranged humor and tumour from the breast (Aetios, 1978; Wiseman, 1676).

Wiseman gave a comprehensive account of the equipment and procedure involved in radical mastectomy, which is quoted here in full:
you ought to have good Rowlers, Compresses, restrictive Powders and Desensatives, as in other Amputations. The use of Chalcanthum or other Escaroticks I do not approve: for you cannot apply them so to the mouths of the Arteries but they will corrode the adjacent Parts, and cause pain, which ought not to be, especially in a Cancer. Besides, they require a strict Bandage, which is very troublesome on the Breasts. To avoid which inconvenience, I propose the stopping of the Blood by a small Button-cauterie; which I acknowledge is not done without some pain, but that is momentary, and serves to correct the indisposition of the Part: whereas the other lieth gnawing so long as it is upon the Part, and rendereth it crude and ill-disposed. There ought to be actual Cauteries of different sorts ready heated in some corner of the Chamber, lest in the Extirpation there happen to be left some reliques of a cancerous Gland behind. All things being ready, the Patient must be placed in a Chair to the light, and held steady. It is then at the Operatour’s choice, whether he will make a ligature about the basis of the cancerous Tumour, or pull it to him with one hand while he cuts it [the breast] off with the other. For the cutting into the Breast, and pulling out the cancerated Knot, rarely succeeds well: nor indeed is every Breast so capable of being freed of the Cancer when it is cut off by making a Ligature. If the Cancer be cut off clear, your business is then to stop the Blood as you please; but if any Scirrhosity remain, you shall doe well to consume it by actual Cauterie. The Ancients used in these Operations to permit them to bleed freely, nay provoked them to it by crushing the Blood out; after which the actual Cautery was applied all over, then they dressed the Wound as a Burn; but according to my method *pulv. Galeni* is most proper. Then place the Patient in bed, and give her an Anodyne\(^2\) draught that night, to quiet the Ferment. The second or third day after you may dress her with some Digestive … If there be pain you may apply this Anodyne over it … After Digestion proceed with Detergents, and incarn and cicatrize … remembering

\(^2\) Pain relieving preparation
to keep the Body soluble the while by Clysters, and purge or bleed as you see occasion. And if they had no Fontanels\textsuperscript{22} before, make them some now: for though the Cure may seem successful, yet if there be any evil quality in the Humors remaining the Ulcer will scarce cicatrize (Wiseman, 1676, pp.103-104).

Ablation by way of minimal and rapid strokes of a razor had became a common practice by the anatomo-clinical period, with some surgeons reporting that it took them anywhere between two and four minutes to amputate a breast (de Moulin, 1983). Straightforward ablation without closure of the wound was a method particularly favoured by John Hunter (Dobson, 1959) who at the same time argued that close inspection of the excised part was as essential as inspection of the remaining material in the excised area itself to ensure that no part of the tumour had been left behind. Thermocautery was no longer used in the anatomo-clinical and early cellular period, as it had come to be considered barbaric (de Moulin, 1983).

Until late in the 19th century, hospitals were intended only for paupers, so the majority of procedures and subsequent convalescent periods in the surgical archive usually occurred in the patient’s own bedroom (de Moulin, 1983). Standard operative aftercare involved the application of dressings to induce suppuration. This technique led to the formation of laudable pus, which was considered a sign the deranged humor was discharging appropriately. The wound itself, which was enormous, was treated with salves to prevent dressings from adhering to its surface. Secondary haemorrhage up to a week after treatment was the most dreaded postoperative complication, and extremely likely in the absence of sutures to close the wound. Sutures to close operative incisions were developed in 1698 in Berlin but not widely accepted until the nineteenth century (de Moulin, 1983). Haemorrhage could therefore only be treated with a compression bandage, sometimes with an inverted soup plate bound over it to prevent the seepage of blood.

\textsuperscript{22} Opening at the wound
There was also a justifiable fear of postoperative infection in the days before aseptic technique and antibiotics. If the woman did not succumb to post-operative infection or haemorrhage, her wound healed by granulation within a few months (de Moulin, 1983; Norford, 1753). She was also subjected to a combination of rehabilitative regimens during this period. She was prescribed a ‘spitting course’, that is, given mercury to induce a high salivation to drive out any remaining malign humors (Norford, 1753). The woman was kept in a warm house, for cold was considered dangerous to these patients. For the remainder of her life she had to abstain from wine, spirits, cold drinks, indigestible food such as pickled and smoked meats, and undertake a course of moderate exercise to strengthen her constitution (Aetios, 1978; Norford, 1753). In addition, the patient was advised to continue her course of bleeding and purgatives at regular intervals, especially in the spring and autumn (Norford, 1753).

As described in chapters 4 and 5, the critical modalities underlying the anatomo-clinical and cellular periods were ambiguous as to the aetiology of breast cancer. As a consequence, both paradigms witnessed persistent debates about local versus systemic causes; and the ensuing confusion fed into the operative approaches of the time. For example, one consequence of the localisation thesis during the anatomo-clinical period was the introduction of less disfiguring and less dangerous operative techniques aimed at preserving the breast: the lumpectomy and associated methods for preserving sound breast tissue. The rationale underlying lumpectomy during the anatomo-clinical period was that if the tumour arose spontaneously from a local cause, such as a trauma to the breast, local excision should suffice to cure a problem that was not systemic in nature. Some aspects of the later cellular thesis supported this; namely that the tumour arose from the derangement of a single cell, and that confining the excision to the diseased portion and its adjacent tissue was safe provided the operation was performed in a timely manner. Hence we find authorities such as Bell advocating the removal of as little breast tissue as possible; and Cheselden advocating simple excision of the lump (Bell, 1791; de Moulin, 1983).
In England and the US in particular, however, once the cellular paradigm had been accepted, lumpectomy was abandoned for over a century in favour of radical interventions. Adherents of total and radical mastectomies were similarly buttressed by anatomo-clinical and cellular theories, depending on the aspect of these theories they found convincing. For example, some anatomo-clinical surgeons such as Petit (1774) advocated extensive mastectomy with excision of the pectoral fascia and removal of axillary nodes; others such as Peyrilhe (1776) recommended extensive mastectomy plus the removal of the pectoralis major muscle. Followers of Bichat might argue that the tumour arose simultaneously in similar tissues throughout the body. As a result, some believed that bilateral total mastectomy was warranted in even the smallest unilateral breast tumours, to check the growth before it appeared in the other breast. Halsted (1895; 1907) and his followers, influenced by aspects of the cellular thesis, assumed that breast cancer cells marched in a columnar fashion from the primary tumour along the lymphatic channels and thence to the axillary and regional lymph nodes, which were thought to act as filter traps. These filter traps then acted as a nidus for further spread to more distant lymph nodes and fascial planes to the skeleton and the vital organs. Yet other surgeons, such as Moore, were influenced by microscopy in a different way. Moore argued that diffuse cellular extensions that were not visible to the naked eye reached the adjacent and distant structures (Moore, 1867). If either of these aspects of the cellular thesis influenced a surgeon, radical en bloc surgery, which removed all structures such as muscle, bone and lymph glands that were adjacent or regional to the breast but not overtly affected, also appeared reasonable. In fact, it appeared so reasonable to some surgeons that by the 1920s some seriously advocated forequarter amputation in addition to mastectomy for more advanced cases (Baum, 1986).

There were, however, two continuities in the technic in this period, which persist to this day. First, to achieve a cure, it was essential to avoid cutting into the tumour at all, or contaminating sound parts of the breast with cancerous material (Moore, 1867; Pancoast, 1844). Moore explained the technique thus:
In the performance of the operation … no actually morbid texture should be exposed, lest the active microscopic elements in it be set free and lodge in the wound. Diseased axillary glands should be taken away by the same dissection as the breast itself, without dividing the intervening lymphatics; and the practice of first roughly excising the central mass of the breast, and afterwards removing successive portions which may be of doubtful soundness, should be abandoned. Only by deliberately reflecting the flaps from the whole mamma, and detaching it first at its edge, can the various undetected prolongations of the tumour and outlying nodules be included in the operation. To parts suspected of disease but not capable of removal it is desirable to apply the chloride of zinc. An edge of skin may be touched with the solid caustic; a paste of it may be laid on portions of the open wound; and, however healthy in appearance, the whole remaining surface may be washed with a solution of the chloride (Moore, 1867, pp.278-79).

Second, it was necessary to remove the tumour in its entirety for the operation to be judged a success. Until the adoption of intra-operative microscopy, there were limited criteria by which to judge this, with gross visual and palpable inspection the usual methods. So in the anatomo-clinical period, to ensure complete extirpation practitioners Norford argued that the operative margin around the tumour should be an inch or more beyond the area where the colour of the skin was no longer erythematous (Norford, 1753). Gross visual inspection should also note that the greater the erythema of the surrounding areas, the more likely they were to be affected by cancer. Moreover:

Suppose even that the whole Skin should appear in its natural Colour, we must not be contented with extirpating the Tumor only, but also take off a Part of that which is sound. As the Skin yields sufficiently to make Room for a Suture, it is better to sacrifice a small Part of the Lip on each Side of the...
Tumour, than to leave any obstructed Glands behind, which may form another hereafter (Norford, 1753, p.146).

A refinement of the technic was introduced during the cellular period that has never been abandoned. Intra-operative microscopic examination of the excised tumour now helped the surgeon determine the adequacy of his excision:

when the microscopic minuteness of these cells is considered, this view acquires a fearful interest for the operator; for, although after the removal of a tumour, large numbers of them should be left behind, they necessarily remain unseen, so that the surgeon has no means of knowing whether the extirpation be complete, a consideration which singularly enhances the recognised importance of cutting as wide as possible of the growth, as giving the best and only chance of securing this. … It seems to the writer that this point may, in part, be determined by microscopic examination of the portion removed. If the characteristic cells were found on the cut surface of this portion, it would be morally certain that others have been left behind, and that the extirpation is incomplete; although, on the other hand, the absence of these cells would be by no means so sure a guarantee of their entire removal (Budd, 1841-1842, p.269).

The increasing acceptance of Amazonian surgery (often called ‘heroic’ by the surgeons who advocated it) was facilitated by the introduction of surgical anaesthesia in 1846, and the adoption of antiseptic principles in 1864 (Sebastian, 2000). Antiseptic management of surgical wounds was so widespread by 1877 that it had decreased the operative mortality of mastectomies with axillary node clearance by 10.8%; and the overall mortality from the operation by 9.9% (de Moulin, 1983).

**Normalising strategies: differentiation**

The third and final way that normalising strategies such as surgery work is through the production of differentiations that help the surgeon decide whether the woman
can be normalised, and whether or not he will attempt do so (Carabine, 2001). In the surgical archive to 1900, the most common differentiations essentially determined whether the breast cancer was curable; that is, whether it was operable or not.

Criteria for curability

Any discussion of ‘cure’ in relation to the surgical archive, particularly before the late 1800s, should be undertaken with extreme caution. Cure may be a completely different concept in other historical contexts. The present notion of cure as the complete eradication of the disease, which is comparatively rare in the discourses of breast cancer even today, did not appear in the medical literature until some time around the turn of the 18\textsuperscript{th} century. Its original Latin root ‘cura’ meant to care for, and it was not associated with medicine or surgery at all. It was only in late medieval times that it began to gradually appear in the medico-surgical discourse, and even then, it meant only the treatment of a disease or of a patient, or the action or process of restoring to health – not the sense of the eradication of the disease that it has today (Oxford English Dictionary 2nd Edition, 1989). Analysis of the case studies of Wiseman and Norford, for example, demonstrates that the breast cancer patient in the 1600s and 1700s was considered ‘cured’ as soon as her mastectomy wound had healed, regardless of whether she in fact died six weeks later. Hunter stated explicitly with regard to breast cancer that he regarded a cure as an alteration of the cancer rather than the actual destruction of the cancerous parts, and a return to reasonable health rather than certain removal of the cancer by surgery (Hunter, 1835-1837). Even today the word cure is used cautiously. This is not only in keeping with the relatively recent narrowing of the broader sense of ‘care’. It is consistent with the first very guarded statement on survival rates by Volkmann in the mid-nineteenth century that proposed that if careful examination failed to detect local or regional recurrence after one year post-surgery, hope of survival might be entertained (de Moulin, 1983). Reports of successful breast cancer outcomes in contemporary medical discourse remain characteristically prudent, tempered by the need for constant follow-up surveillance on the part of the practitioner and lifelong vigilance by the patient. Hence rather than confident pronouncements regarding
conquest of the disease, outcomes even now are reported in terms of favourable response to therapeutic campaigns or in terms of five year survival rates.

So ‘cure’ in relation to the technic in the archival discourse did not mean long-term survival. It was an assessment of whether the tumour was amenable to excision and the woman had a chance of surviving the operation itself. The patient was considered cured of her breast cancer as soon as her wound had healed, regardless of whether she died a few weeks or months later of the disease. It was not common practice until the nineteenth century to follow up cases and report on later results, so it is difficult to determine how many women actually benefited from operative removal before the early cellular period (de Moulin, 1983). However, if the surgeon determined that cure of the breast cancer was not possible, relief could be still be provided. Norford notes that according to the surgeon Cheselden, in these desperate cases imitation of nature was the best resort. Hence the palliation comprised plentiful bleeding, gentle but constant evacuation by stool, and a vegetable diet (Norford, 1753).

**Rules of operability**

The Hippocratic corpus did not advocate surgery at all, arguing it hastened death rather than prolonged life, and well into the twentieth century there have been adherents of this view (de Moulin, 1983). However even in ancient Greece there were many exceptions to this opinion, and despite subsequent debates about aetiology, there have been reasonably consistent rules about whether a breast tumour warranted excision or not. Throughout the humoral period generally, if the tumour did not respond to lifestyle and pharmacological regimens, many physicians and surgeons believed that surgery was in fact the only option to provide a degree of relief from the burden of disease. A reading of Wiseman gives a good summary of the rules of operability and non-operability until the turn of the eighteenth century, based on humoral critical modalities.

Surgery in general was indicated if:
• The tumour was loose, that is, it did not adhere to the chest wall
• The tumour was situated in a part of the breast where it could be safely removed
• The tumour was in the very earliest stage of growth, and preferably did not involve more than half the breast. Ideally, it should be a scirrhus (precancerous tumour) rather than a truly cancerous (malignant) tumour
• The patient was of strong constitution, preferably young, and in otherwise good health
• The original cause of the tumour was trauma to the breast, that is, a result of local rather than systemic processes
• The pain from an ulcerated cancer was desperate, in which case palliative debulking of the breast was recommended
• The surgery could be performed in the spring or autumn “lest through the great heat of Summer the Spirits be resolved, or by reason of the extreme cold in the Winter the native Heat should be choaked” (Wiseman, 1676).

Conversely, surgery was definitely contraindicated when:
• The tumour looked likely to ulcerate, as this was a poor prognostic sign indicating malignancy
• The entire breast was indurated and annexed to the chest wall
• The woman had entered menopause, that is, the prognosis was guarded because of intractable humoral derangement that would generate tumours elsewhere
• Axillary nodes were present.

The plunge into the body during the anatomo-clinical period re-ignited long-standing debates about the cause of breast cancer, and subsequently marked differences in treatment approaches. There remained some, like Monro and Norford, who believed that unless it had a traumatic origin, surgical incision was useless as the breast cancer invariably returned, either adjacent to the original tumour, or even some distance away (Monro, 1781; Norford, 1753). Again, there was general consensus
that any operative treatment should aim to remove the entire diseased process within the breast, or only be attempted with the intention of palliating odour and pain (Howard, 1811; Hunter, 1835-1837; Norford, 1753; Pearson, 1793). John Hunter, for example, warned that if a surgeon thought he might be able to remove lymph glands in the axilla, he should be aware that frequently a chain of affected glands would be found to run far beyond the reach of the knife, and that such an operation was generally futile (Dobson, 1959). There remained, however, many contraindications for surgical removal. These included the inability to resolve the internal factors contributing to the tumour, deranged bodily juices, poor physical condition, a melancholic constitution, involvement of the lymph glands, adherence to the chest wall, or palpable nodes in the neck.

The rules of operability in this period introduced a new differentiation that considered the temporal aspects of the disease in relation to outcome. The timing of surgical intervention was not considered an accurate indication of cure at this time, because

the comparative security from, or danger of a relapse, can by no means be estimated from the duration of a cancerous complaint. The early extirpation of a Cancer, confers no peculiar security against the return of the complaint; on the contrary, if the removal of the morbid part were equally complete in two patients, one of whom had been afflicted seven months, and the other seven years, with a Cancer, I should esteem the latter patient in less danger of a relapse than the former (Pearson, 1793, pp.31-32).

An interesting aspect of temporal differentiation was discussed by Norford, who theorised that nature selected certain glands to collect and remove vitiated juices from the system in the form of breast tumours. It followed that if these tumours were removed, they would simply reappear in the same spot or in other parts of the body, so the body could continue in its intention of removing the vitiated juices. According to this distinction, excision should not be performed until the body had completed
the deposition of the substances it wished to eject and had, through other regimens, been restored to a balanced and healthy state. Norford quoted the authority of Boerhaave in this matter, who insisted that surgery was futile unless the surgeon waited until the cause of the tumour was remedied before extirpation of the tumour itself (Norford, 1753).

While many humoral practitioners followed Boerhaave’s practice, a contrasting temporal aspect of breast cancer surgery that persists today is the extreme urgency of removal as soon as diagnosis is made. Particularly after the humoral thesis was abandoned, the majority of surgeons concurred with Henry Fearon that the early period of the complaint is beyond all doubt, the most favourable period for extirpating it [although] patients can seldom be convinced that there is any necessity for an operation while the disease continues in a mild state (Fearon, 1784, cited in Dobson, 1959, p. 181).

Moore (1867), for example, was extremely critical of his “surgical ancestors” who either postponed the operation until bodily balance had been restored or performed a lumpectomy in the mistaken belief that the cancer had not yet spread to the entire breast. Consequently, the skin became brawny and covered with tubercules, and the deeper textures were involved without limit, they failed too often, with even such extensive cutting as they adopted, to comprehend the entire disease. It was mistaken kindness which led to a change of this mode of operating … [due to] a prevailing horror at such Amazonian surgery, the practice was changed to an incision in the integument, which was reflected in flaps and brought together again after removal of the cancerous tumour. There could have been no diminution of suffering by this prolongation of the operation, and what was gained by it in neatness was lost in life. With the remains of the breast … the flaps enfolded
Practical Modalities

fragments of diseased substance, and Cancer soon reappeared (Moore, 1867, p. 249).

Conclusion
While dietary regimen and other lifestyle choices maintained an important place in the surgical archive for over two millennia, they were abruptly abandoned for a time with the advent of cellular theory and the focus on individual cells as the bodily unit requiring normalisation. It has only been in the last thirty or so years that lifestyle regimen – in the form of high fibre, low fat diets; regular exercise; regular breast self examination; and early and frequent childbearing - has resurfaced as an important component of normalisation strategies for breast cancer. Similarly, the notion of restoring the innate balance of the woman with breast cancer through cleansing and neutralising regimens is as old as the archive itself. But again, these specific techniques did not survive the adoption of the cellular paradigm and have never been formally resurrected within the breast cancer technic. However current therapies such as the contraceptive pill, which inhibits the production of oestrogen and is therefore believed to decrease the risk of developing breast cancer; preventative Tamoxifen, which nullifies the carcinogenic potential of oestrogen; and the bisphosphonates, which neutralise the excess calcium generated by the bony metastases of breast cancer, could loosely be interpreted as neutralising agents. The pharmaka also changed dramatically with the advent of cellular theory. In fact, for a century it disappeared entirely as surgery was considered at this stage the only viable option for tumour removal or neutralisation. The pharmaka reappeared, however, in the vastly different form of cancer chemotherapy after World War I. Interestingly, while much of the old pharmaka was discarded, the opium used since ancient times maintains its premier position in the relief of the pain associated with breast cancer, and arsenic has recently been revived as a chemotherapeutic agent for some cancers.

With regard to operative practices, whether the surgeon in this archive advocated less disfiguring surgery, or utilised exemplary procedural anaesthesia and aseptic technique to spare the trauma and lessen the danger to the woman, it should be noted
that patriarchal values remained uppermost. At no point in the archive do women appear to have been consulted as to their preference for treatment; nor do their feelings in relation to diagnosis and experimental surgical treatment appear to have been considered. The voice of the woman is effectively silenced in this archive, with the exception of those recalcitrant women who refused to adhere to their prescribed regimen, and therefore, were considered responsible for subsequent relapse. The after effects of the operation, whether the woman happened to be anaesthetised during the procedure or not, were rarely considered. Postoperative pain is infrequently considered; and only one surgeon in the entire archive discussed the most common side effect of the operative removal of axillary lymph nodes: lymphoedema (Moore, 1867). This painful and disfiguring condition is a result of the damming of the lymph flow in the arm because it can no longer be filtered through the appropriate nodes. It results in significant swelling of the affected arm post-operatively, causing severe pain and immobility. It is an inevitable result of mastectomy, and considering the number of women who survived the operation in the archive, it is remarkable that the consequences of lymphoedema were never discussed or addressed. Similarly, the voicelessness of women made them ideal uncomplaining candidates for experimental treatments. Beatson, for example, did not believe he could cure breast cancer by removal of the woman’s ovaries, nor could he propose why he believed such a procedure might provide a measure of relief from the disease. Nonetheless, he appeared to have no problem persuading several patients to submit to salpingo-oophorectomy in preference to breast amputation in one of his experiments for breast cancer.

I have attempted to demonstrate in this dissertation so far that the enunciative and critical modalities of surgeons constructed cancerous breasts in certain conceptual ways according to certain truths. This particular chapter has also demonstrated that practical modalities are tangible demonstrations of the enunciative and critical functions because they deconstructed actual breast tumours according to the elusive truths that underpin them. I have also shown that the aim of surgical therapeutics was to re-establish the habitual state of the organs as well as to reinforce the social
ideals associated with health and life. In essence, because the surgical technic that removed the cancer did so according to certain ideological rules and concepts; it therefore provides insight as to what those rules and concepts – and therefore the ‘truth’ about breast cancer - might be.

There can be no doubt that surgery is linked to the whole of culture, and that every shift in the surgical conception of the truth of breast cancer is conditioned by shifts in the dominant idea of the epoch from which it arose. There are numerous analyses that demonstrate, for example, that surgeons and physicians have been so heavily influenced by the moral traditions of their times that they invariably equated health with salvation and illness with sin (Moore, 1867; Turner, 1996). The truth about breast cancer is that descriptions and definitions of it do not just frame it as a biological fact, these constructions of the disease display an attachment of patients and surgeons to unconscious but discernible values. It is with surgery as it is with all other technologies: activity grounded in the individual’s attempts to dominate their environment and organise it according to their values (Turner, 1996).

It has also been demonstrated in this chapter that surgical practices and language were normalising strategies that revealed the truth of breast cancer – that it was deviant, abnormal, and a reflection of certain values on the part of the woman who developed it and the surgeon who treated it. In the surgical archive, there is no doubt that however unconscious the surgeon was of its influence, the dominant paradigm equated normality and morality with masculinity. The normalising judgements of surgeons were unconscious assessments of breast cancer that were negative in comparison with the favoured and socially acceptable belief that one shouldn’t have cancer and one shouldn’t be a woman. Moreover, as Canguilhem argued, an ideal of perfection hovers over every definition of an abnormal state like breast cancer. We can locate that perfection and describe the values and rules underpinning it by examining the imagery that erupts when perfection is resisted. This resistance is particularly evident in the analytic modalities contained in the surgical breast cancer discourse, which will be discussed in the final chapter.
CHAPTER 8. ANALYTIC MODALITIES: DOMINATION AND DISCIPLINE

Introduction
My thesis so far is that dominant discourses help establish and sustain what societies have understood to be the truths of breast cancer. The critical, enunciative and practical modalities of disciplinary discourses, such as surgery, articulate these truths. Critical modalities tell us, for example, what we should speak about breast cancer. They establish its presence, define it, describe it and provide theoretical markers of the problem that it poses. Critical modalities are the public expression of the surgical consciousness of breast cancer. Enunciative modalities – the institutional site from which the surgeon speaks, and the perceptual field that directs ways of looking at breast cancer - focus this consciousness. They direct the way that surgeons look at the disease. Practical modalities are the technical activities associated with breast cancer; they tell surgeons what to do about the problem. Most importantly for this thesis, they are also tangible demonstrations of not only the overt laws sustaining breast cancer discourse; but also of the covert truths that underlie the problem.

Some of these covert truths, with their sociocultural imperatives, were touched upon in describing the practices of surgeons in the previous chapter. This was achieved by establishing that practical modalities were predicated on the notion of the objective norm. So although what we know as breast cancer at any given time is historically, culturally and socially situated and always subject to redefinition and transformation, not having breast cancer was naturalised as the benchmark of normal and natural throughout the archive. Furthermore, it was also argued that the technic of breast cancer entailed normative activities. That is, the disease was associated with unavoidable, generally covert, moral and cultural truths; for inherent in any use of the word ‘normality’ is the normative ideal of the human as perfect, unsullied, and free of suffering (Canguilhem, 1989a). My final task is to explore more fully the covert truths about breast cancer implicit in this normative ideal.
The aim of this chapter is to dig more deeply into the archive for the analytic modalities of surgical discourse. Analytic modalities are defined here as the unseen, but socioculturally compelling truths that influence surgical consciousness. Underlying this definition is the premise that truths about breast cancer are most apparent in the language and imagery used to describe it. The position I take is that the metaphors associated with breast cancer and the way they are expressed best illuminate sociocultural imperatives, and therefore enhance our understanding of the problems posed by breast cancer in its time. Analysis of the surgical archive to 1900 reveals two significant imperatives: the need to fight breast cancer and dominate the disease; and the need to maintain corporeal order through discipline.

**Domination: martial imagery and the battle with breast cancer**

Similar to contemporary metaphors, a reading of the surgical archive gives the impression that breast cancer has been the physiological equivalent of the holocaust (Porter, 1997). Overtly martial constructions of breast cancer dominate. For example, Wiseman characterised cancer as “rebellious” in the 17th century (Wiseman, 1676); and one hundred years on Norford discussed breast cancer in the following terms:

Cancer is one of those Diseases, which, unless a seasonable Stop is put to its Violence and Progress, by the prudent Conduct of the Physician and Surgeon, increases and propagates itself, to the Destruction of the Human Machine. [Regardless of efforts to cure it, cancer remains] *Opprobrium Medicorum & Chirurgicum* … a rebellious distemper … not to be conquered (Norford, 1753, p.83).

A century later, Budd continued in much the same vein, couching his descriptions of the disease in belligerent terminology reminiscent of modern biological warfare. So for Budd, breast cancer was a
loathsome breach of structure … [which has] an irresistible tendency to invade and destroy all structures within its immediate reach … It is a fearful enemy, that must be overthrown (Budd, 1841-1842, p.267).

**Therapeutic pessimism**

There are other stances on breast cancer treatment that resemble warfare. The first is the pessimism of many of the war-weary health professionals at the front line – those actually fighting the battles, but who cannot see any cure in sight (Sontag, 1977). This attitude is one of the most striking continuities in the medical archive, present in the earliest known Egyptian writings on breast cancer:

> If you examine a man presenting prominent swellings on his breast, and you find that they have spread over his breast, if you place your hand upon his breast tumours and find them to be cool, there being no fever at all therein when your hand feels him; they have no granulations, contain no fluid, nor give rise to liquid discharges, yet they feel protuberant to your touch, you should say concerning him: ‘This is a case of protuberant tumours I have to contend with. There is no treatment’ (Edwin Smith Papyrus, cited in Haddow, 1936, p.1016).

The Hippocratic corpus was also nihilistic concerning deep-seated breast cancers, arguing that it was better to give no treatment in cases of occult cancer. Hippocrates believed that treatment caused speedy death, and that to omit treatment would actually prolong life (Hippocrates, c.400B.C.-a). Porter argues that, besides genuinely believing the outcome was hopeless, this open rejection of the possibility of cure was also a function of the high regard Greek society accorded accurate prognostic skills (Porter, 1997). The ability to correctly predict the course and outcome of a breast cancer diagnosis not only instilled confidence that the practitioner possessed a good knowledge base; it had a social function in separating the surgeon from the quack healer.
Hippocratic pessimism regarding outcomes, couched in the most emotive terms, persisted amongst highly regarded surgical authorities in intervening centuries and endures in a much more guarded fashion to the present day. The following chronologically ordered selection illustrates this point:

It is an obstinate disease, defies treatment … know that cancers of the breast must invariably be abandoned (Aetios, 1978, p.50).


Of all the Diseases which afflict mankind the Cancer is the most grievous and rebellious, and is generally incurable, by reason of its corrosive and malign venom fermenting in the Humors, which, so far as we can yet find, yields neither to Purging, Bleeding, Repellents, Discutients, Suppuratives, nor any other Medicine inward or outward (Wiseman, 1676, p.102).

There are many instances of cancers, in which it would be fruitless to attempt the cure, the physician is then the true friend, who advises the patient to do little or nothing and submits the case chiefly to nature (Rowley, 1779, p.18).

Terrible in its consequences, it yields not to medical assistance; but must, under the best management, become ultimately fatal (Sherwin, 1788, p.31).

**Appraising the odds**

The second martial stance within the surgical discourse is a carefully considered reappraisal of this therapeutic nihilism. There are many examples in the archive of a prudent evaluation of the likely odds of winning the battle against breast cancer, where the practitioner reviews his troops, weapons and strategies prior to his engagement with the enemy and his prediction of the outcome. Any chance of
victory is related to several soldierly factors – the vigilance of the patient in scanning the territory and locating the intruder; the extent of patient compliance with disciplinary regimen, the resourcefulness and skill of the practitioner, the topographical spread of the enemy alien on the breast, and whether the enemy has an external origin or is a faulty construction within the individual. Consistent with their generally heroic demeanour and their willingness to engage with the unpalatable aspects of practice in the quest for cure, surgeons were hopeful that some of their engagements would be successful. Aetios of Amida, for example, allowed that when the entire breast was hardened and the tumour indurated or fixed to the chest wall, no surgery should be attempted. However he also believed that those tumours that developed on the top of the nipple were curable because the diseased part could be easily excised (Aetios, 1978). Similarly, Wiseman believed that breast tumours that were either readily accessible for excision, or were not due to an inherent constitutional imbalance, were curable:

Those which lie superficially under the Skin may be attempted by the Chirurgeon’s hand; or if they rise from an external cause, as bruise, &c. though they lie deeper, they may be cut off, or otherwise extirpated [with hope of cure]. But those that arise from a corrosive quality of the Humors, though they may be cut off or otherwise extirpated, yet the success is most doubtfull (Wiseman, 1676, p.102).

A century later Norford, discussing the general hopelessness of the battle, nonetheless notes that breast cancer

is now almost universally allowed incurable, except where the Tumour can be entirely extirpated by chirurgical Operation (Norford, 1753, p.1).

A hundred year further on, some surgeons still maintained that cancer was curable by surgery performed as early as possible (Bennett, 1849; Budd, 1841-1842).
Some surgeons insisted that poor outcomes were solely due to tactical error on the part of the operator, who either failed to completely remove the infiltration of the tumour into the surrounding skin, fat and muscle; accidentally penetrated into the tumour itself (which was believed to disperse the noxious material into the surrounding healthy tissue); or failed to identify and remove the sentinel lymph nodes that indicated entrenched enemy infiltration (Moore, 1867). Hesitant hopes of cure continued to be voiced with newer weapons in the surgical arsenal. Seven months after Beatson had employed the recently developed pre-emptive technique of salpingo-oophorectomy to treat breast cancers otherwise considered inoperable, he wrote that

Altogether, I am inclined to think the disease is in a more quiescent stage, and gives some indications of a possible cure (Beatson, 1896, p.163).

The debate concerning therapeutic nihilism continued in related fields. Both optimists and pessimists armed themselves with statistics to justify their arguments concerning the efficacy or otherwise of surgical intervention in the battle against breast cancer. Epidemiology as a subject actually dates from the time of Hippocrates, but interest in its possibilities with regard to cancer outcomes was not revived until at least 1622 (Petrakis, 1979). So it was not until 1844 that d’Etoiles obtained data that demonstrated that 18 of 1192 patients who did not receive breast cancer surgery actually survived beyond 30 years without intervention, while the remainder of this group survived between 2 and 25 years. In contrast, of 804 breast cancer patients who had received surgical treatment, only 4 were still alive after 30 years, 15 had survived after intervention for more than 20 years, and 88 had survived between 6 and 20 years – which led d’Etoiles to the conclusion that surgery for breast cancer was in fact more harmful than beneficial (d’Etoiles in (de Moulin, 1983). James Paget argued similarly, citing his analysis of cases that concluded that women who received surgical intervention died on average 13 months earlier than those who had not (Paget, 1863).
On the other hand, Winiwarter published a study in 1878, based on data obtained from Billroth’s follow up of breast cancer surgery, which was used to justify surgical intervention with the aim of cure. It demonstrated that 4.7% of 170 cancer patients who had their tumours excised were in fact alive after three years (Haddow, 1936). In the United States, Gross argued that breast cancer was curable if a radical mastectomy was performed extremely early in its development, and claimed a three-year survival rate of 19.44% with the use of such methods (Gross, 1887). Echoing arguments about the application of such statistics that continue to this day, a meta-analysis of the available operative survival data was undertaken in 1889, and concluded these data were in fact not mutually comparable; mainly due to differences in operative technique and the fact that the data also incorporated cases that had been undertaken prior to the introduction of antisepsis, which therefore reported a higher mortality rate (de Moulin, 1983). Similar arguments for and against timely surgical attack, whether local or systemic, persisted until at least the 1950s, when MacDonald first suggested that the ultimate outcome of treatment is determined by the biological nature of the disease rather than the timing or nature of surgical intervention (MacDonald, 1951).

The imminent victory over breast cancer

The third stance assumed in the surgical battle against breast cancer is consistent with the official post-modern position that a victory over cancer is imminent. The archive is peopled with surgeons lionised as daring and heroic practitioners in the mould of Halsted, who popularised the radical approach to mastectomy in the very late nineteenth century (Cantor, 1993; Haagensen, 1933; Haddow, 1936; Halsted, 1895). But it is not just modern and post-modern practitioners who believe breast cancer is curable. There is evidence in the archive that this view has had credence with some surgeons over a period of at least 1800 years. Leonides of Alexandria (c.180A.D.) was lauded by contemporary optimists as the outstanding and most resourceful practitioner of his time because he rejected the nihilistic view of breast cancer surgery and developed an aggressive surgical procedure that aimed to cure the disease (Haagensen, 1933). The detailed case studies of Wiseman, Norford,
Rowley and Pearson offer concrete evidence that nihilism was not consistently incorporated into the imagery associated with breast cancer, at least among those who published their cured cases (Norford, 1753; Pearson, 1793; Rowley, 1779; Wiseman, 1676). The following example is typical:

A Lady, near 40 years of age, had for a considerable time a large hardened swelling in the right breast, supposed originally to have arisen from an accidental blow; it had not been much noticed for some years, as it had not occasioned pain. About the time the menses were partially suppressed, a pain was felt, the swelling gradually increased, and soon occupied and hardened the whole breast: the nipple was drawn in, and an ulcer formed, with a large excrescence like a mulberry near it. This case was cured by the *pilul.rub.* and *pulv.mineralis* in less than four months. The breast became soft, the excrescence dropped off, and the ulcer healed; the external application used was the *ung.saturninum* to the fore, and the *oleum camphoratum*, where the skin was not broken. This lady has remained perfectly well since the cure, which is now about five years, and has been advised to take the remedies one month, or six weeks in spring and autumn by way of prevention, because there has been an hereditary cancerous and schrophulous complaint in the family (Rowley, 1779, p.10).

Regardless of the specific outcome for the battle against breast cancer over time, a consistent outcome of this martial conception has been the pressure on the patient to maintain hope during the fight. A subtext of the archive since surgical treatments for breast cancer were developed is that a focus on hope, however unfavourable the odds, is to be maintained. To lose hope leads to despair: this is not beneficial for the patient. So throughout the history of the disease, the breast cancer patient is praised for her compliance with heroic regimen, for her courage, for willing herself to health despite the odds (Sontag, 1977). A failure to be positive about the fight is equated with a failure of will – so patients are armed with tactics for positive thinking in addition to their punishing therapies (Levin, 1999). The advantage of this for the
medical practitioner is that if the treatment fails, the patient is then held culpable for a lack of moral fibre in battle. Note Wiseman in dealing with a treatment failure – which places the blame squarely on the patient due to her non-compliance with his treatment regime:

Some years since, a Clergy-man dwelling in the City brought his Wife to me with a painful hard Swelling in one of the Glands of her left Breast. I advised them to forbear the use of all Cataplasms and Emplasters that might heat her Breast … and to dress it with \textit{valentia strammonii}: but she was otherwise persuaded, and thereby increased her misery … she died miserably (Wiseman, 1676, pp.100-01).

**Discipline: breast cancer and the maintenance of social order**

In Western thought, social order has long been a significant concern and the healthy human body has long been a metaphor for a politically healthy society, a robust image to represent the structure and function of society as a whole (Otis, 1999; Turner, 1991b). So if it is reasonable to compare society to an organism, then it follows that bodily disorder is analogous to civil disorder (Sontag, 1977). Witness Virchow, one of the contributors to the study of cellular pathology, on this point:

Every widespread disease in the nation, be it mental or physical, therefore shows us the life of the population under abnormal conditions, and all we need to do is recognise this abnormality and signal it to the statesman so he can dispose of it … Do we not always find the diseases of the populace traceable to defects in society? (Virchow, cited in Otis, 1999, p.8).

This analogy is certainly evident in relation to breast cancer, which has frequently been couched in imagery evocative of social disruption. Hence, embedded within the surgical breast cancer archive are images of two major threats to social order – filthy beasts and perverted women - which threaten chaos, corruption, moral degeneration and social disorder.
Regulating the female within

Historically, the female body has been a significant threat to both itself and to the moral and social fabric of societies; hence it has been the consistent target of disciplinary practices which restrain women, control their reproductive capacity and contain their innate pollution (Turner, 1987b). Furthermore, women have always received mixed messages regarding the relationship of their health, their gender, and breast cancer. Throughout the surgical archive it is apparent that they are dangerous to themselves and vulnerable to breast cancer for three reasons – they have functioning ovaries, they have functioning breasts, and paradoxically, these feminine structures are also dangerous when they cease to have any function and women enter menopause.

For example, many breast cancer prevention strategies today remain grounded in the notion that producing oestrogen, that quintessentially female activity grounded in the ovaries, is inherently dangerous – and that women should therefore strive to have bodies that do not produce oestrogen. So girls are advised to undertake vigorous physical exercise to delay the onset of ovarian function and menstruation; women are advised to prevent menstruation either through early and extensive childbearing or consumption of the contraceptive pill; and older women are advised to shed post-menopausal weight gain and abstain from alcohol because fat produces oestrogen and alcohol is believed to mimic oestrogen (Press et al., 2000). According to Mustachi (1961), the beginnings of this modern conception of the dangers lurking in the ovaries are discernable by the late 1600s. Ramazzini, for example, noticed the apparent preponderance of breast cancer in nulliparous women – who, although he did not know it then, are consistently exposed to higher levels of oestrogen than other women - nearly 300 years ago; and 150 years later Rigoni-Stern quantified this for the first time (Mustachi, 1961). By the end of the 19th century, it was reasonable to argue that:
We must look in the female to the ovaries as the seat of the exciting cause of carcinoma, certainly of the mamma, in all probability of the female generative organs generally, and possibly of the rest of the body (Beatson, 1896, p.163).

Imagery associated with the other dangers, milk production and the menopause, has existed since Galen, arising as it does from humoral theory. Depending on the precise affiliation of the practitioner, breast cancer was attributed either to the female abundance of soft, spongy and super-absorbent glandular tissue – an inherent feminine flaw which resulted in the absorption of excess or unhealthy humors, or to the curdling and retention of milk in the breast. None of this accounts for the 1-2% of men who develop breast cancer, who are without exception neglected within the medical archive.

Female gender is not just dangerous with regard to breast cancer, but with other cancers as well (Forbes, 1986; McGrew & McGrew, 1985). Aetios stated quite clearly that cancerous tumours occurred more often in women than men (Aetios, 1978). This statement is encountered often in the archive, and still held true at the end of the 19th century:

Males and females suffer equally from cancer in those parts of the body common to man and woman, the greater prevalence of cancer among females being due entirely to cancer of the sexual organs, viz., the mamma, ovaries, uterus, and vagina. This … may not unreasonably be accepted as a probable general law (King & Newsholme, 1893, p.228).

**Regulating the beast within**

The medieval surgeon Henri de Mondeville described
the stench of cancer [as] the most indescribably horrible there is … the stink of a putrid ulcer is, by contrast, fairly ordinary and tolerable (Pouchelle, 1990, p.72).

This language of corruption – whether physical, moral or social – has always been associated with breast cancer, and also has its origin in humoral theory. For over two thousand years it was believed that ill-digested or perverted humors generated vermin such as crabs and wolves – evil, creatures which literally swarmed all over the body of the sick person (Pouchelle, 1990).

There were two approaches to these metaphorical fauna apparent in the archive. The first was to feed the hungry animal involved the meat that it preferred so it would abstain from eating the body. Fifty years after the publication of de Mondeville’s treatise, de Chauliac described a malignant ulcer as a
devourer … whose malice increases until it consumes the limb and turns to herpes and cancer … Some people appease its treachery and wolfish fury with a piece of scarlet cloth, or with hen’s flesh. And for that reason, the people say that it is called wolf, because it eats chicken every day, and if it did not get it would eat the person (Pouchelle, 1990, p.168).

The surgeon Wiseman also accessed this bestial tradition to explain his treatment of breast cancer. He described how he dressed a cancerous breast ulcer with white lead, lint, and a thinly scraped piece of boiled tripe; or placed a swatch of blue flannel over the tumour to lure the wolf of cancer (Wiseman, 1676). Well into the 19th century, some medical practitioners advised the use of kittens, puppies, lizards, chickens and pigeons, killed and quickly halved and placed over the tumour while still warm to feed the hungry beast of breast cancer; as well as the use of live toads bandaged to the tumour to suck out its corrosive venom (Haagensen, 1933). Folk treatments of the time mined similar imagery: De Moulin quoted the physician Richerand (1809), who reported that
A peasant woman came to consult me about a cancer of the breast. After removing the bandages which covered the ulcer, she took from her breast an enormous piece of veal, which she had applied directly over the place so as to appease the hunger of the monster which was devouring her. This poor woman saw her ulcer as an animal like a crab, and gave it a piece of meat to eat every day to stop it from turning its malign activity on her; it cost her more to feed than the whole of her little family (de Moulin, 1983).

Although they are now considered an alternate or a subjugated discourse, bestial analogies persist in the breast cancer discourse. As recently as 1996, for example, I cared for a mastectomy patient from an isolated rural area of Queensland who had routinely applied a large steak to her affected breast with the aim of ‘feeding the cancer’.

The second approach enlisted since at least the period of Hippocrates was an early form of homeopathy. This approach, based on the perceived resemblance of cancerous tumours to crabs, aimed to neutralise like with like by applying crabs to the tumour (Pouchelle, 1990). Cancers were originally called *karkinoi* in the Greek; in Latin the word cancer means crab, and there are numerous instances of ancient writers drawing on this imagery in their descriptions and treatment of the disease. Witness Aetios:

The old physicians called the cancerous ulcer malignant and bestial, a name derived from the crayfish, for these animals are rough and hard and if they take hold of an object by their claws it can be removed only with extreme difficulty. And to this animal a cancerous tumour is similar. Thus it stands out and resists touching and can be handled only with difficulty. A cancerous ulcer is called malicious, wicked and wild from the wild and vicious animals (Aetios, 1978, p.49).
De Mondeville also mined this imagery in his descriptions of cancer:

Most often, the cancer is round in shape, like the sea fish called cancer, commonly known as the crab. Wherever it may be, it clings firmly. It is surrounded by many long, bent veins, like the legs of the fish called cancer. It normally gnaws away in all directions, and moves as it gnaws like the said fish cancer, which can walk sideways and backwards as well as forwards (Pouchelle, 1990, p.168).

While it is generally accepted that the analogy derives from the resemblance of breast tumours to the crab, with its spreading filaments, swollen veins like claws, and the painful tenacity of its presence, there is another equally plausible explanation (McGrew & McGrew, 1985). In his discussion of the collection of tumour-related manuscripts and artefacts collected by the archaeologist Sambon, Haddow suggested that the ancient Greeks could not have failed to notice the frequent association between crabs and the common marine parasite sacculina, which penetrates the underside of the crab host by throwing out tortuous branches in the search for nourishment (Haddow, 1936). As the parasite grows, it protrudes through the host’s shell, markedly resembling a cancerous tumour.

Although overtly bestial images tended to inform only subjugated breast cancer discourses (such as folk medicine) by the 19th century, the theme of tumour as parasite is common in the surgical archive well into the 20th century (de Moulin, 1983). In this conception, the breast tumour invades the body, depending only on the host for its nutritional supply; otherwise it is a completely alien entity:

Nourishing themselves at the expense of the organism in which they are implanted, but in other respects independent of it, they may be fitly styled parasitic growths. Of their independent vitality they give sufficient proof, not merely in their power of indefinite development by successive generation of new cells, but in the retention of this power when detached, and in the
character of isolated beings they are separated from the parent growth, and transported to remote parts of the system (de Morgan, 1874, p.298).

In a similar vein, Beatson described

the irresistible tendency [of cancer] to invade and destroy all structures within its immediate reach, and its singular power of self-dissemination by means of germs from the parent growth (Beatson, 1901, p.1146).

**Analytic modalities and surgical truth**

In Foucaultian terms surgery is a corpus of knowledges, techniques, training, instruments, laws, individuals, systems of judgement, buildings and spaces underpinned by certain presuppositions about, and objectives for, breast cancer patients. Foucault argued that practices such as operative surgery are unconscious reflections of ways of thinking and acting that shape the discipline (Florence, 1994). Surgical techniques, for example, imply that there are a set of objective standards that specify the truth about breast cancer and how it should be dealt with; that what surgeons say about it makes sense because it expresses an undeniable truth; and that the surgeon has at his expert disposal the technologies for a mutually desired goal: the removal of the cancerous breast. Analysis of the imagery informing these practices yields valuable insights into what surgeons and wider society believed were the inviolable truths with regard to breast tumours and the woman who had them (Florence, 1994). While it is not disputed here that surgery was and is underpinned by altruistic motives, undoubtedly these often-brutal normalising technologies are in many respects also a reflection of the social truths of the female and her breast cancer throughout time. Two theorists influenced by Foucault, Bryan Turner and Arthur Frank, have provided some insight into these social truths.

According to one interpretation, women’s bodies have always mediated the relationship between their wider social identity and their individual self-identity (Shilling, 1993). For example, the internalised social meanings that have been
attached to particular body forms such as the female breast have had an enormous influence on women’s sense of self, their individual attitudes towards their cancer and the way that male surgeons have approached their treatment. Feminist discourse has demonstrated that consistent notions of socially authorised and individually internalised patriarchy with regard to feminine complaints are implicit in any discussion of female patients up to 1900. Historically, women’s bodies were conceived as threats to the male-determined moral and social stability of society and subject to taboos and notions of pollution, danger, irrationality and chaos (Turner, 1987b). As a result surgical discourses, because they have undeniably been informed by these dominant patriarchal norms, have tended to unconsciously express these ideas and reinforce existing hierarchies of social control over women in order to normalise them (Turner, 1987b). The surgical treatment of breast cancer in the archive could therefore be seen as a reflection of women’s lack of power and the social need to control their rampant and perilous femininity. It explains why, despite the obvious pain, disfigurement and peril involved for the woman, that surgeons in the archive had no compunction in removing breasts and other bodily parts in the quest for the normalisation and neutralisation of the dangerous woman polluted by breast cancer (Beatson, 1896).

Arthur Frank has offered a slightly different, self-governing model of socially mediated efforts to control breast cancer. Frank’s is a useful analytic tool that examines the body ‘problems’ that have confronted diseased individuals within Western social contexts, and the thinking and strategies they have used to overcome these problems to avoid stigma within social interactions (Frank, 1995). According to the schema Frank developed to explain individual and social responses to conditions that threaten the integrity of the body, breast cancer is problematic because the body is no longer what it was. It becomes unfamiliar and terrifying, resulting in a need to make the body predictable and familiar again. This is essential, because successful social and personal interactions by any individual means they have be able to control their body and to predict exactly how it will function during social interactions. For example, breast cancer and its treatments have often resulted
in contingency; meaning that women with breast cancer in the archive could also be incontinent, smell offensively, or suffer pain, nausea, cachexia and other failures of the sick body. In someone who may have had perfect control of their body and its appearance prior to developing breast cancer or undergoing cancer treatments, particularly the upper class women who feature in the surgical archive, this lack of control resulted in a spoiled social and personal identity (Frank, 1995). A reading of Frank’s schema would therefore propose that as the individual woman responded to these problems, distinct styles of socially sanctioned body usage, such as surgical excision of the problematic part, were developed to restore the body to something more familiar and more docile (Frank, 1995).

Both of these conceptions of the societal pressures informing analytic modalities give some insight into why numerous women in the archive willingly harnessed the power of surgery and submitted to radical mastectomy, particularly before the advent of anaesthesia and asepsis, in their efforts to normalise their breast cancer.

Conclusion
The imagery associated with breast cancer in the surgical archive casts more light than any other modality on the hidden truth of breast cancer for surgeons, the society that mandates their practice, and on the social problems it subsequently posed. It demonstrates that with regard to the metaphorical underpinnings of breast cancer outlined in the Introduction, we have come full circle. While it is always acknowledged that regimes of truth can be multiple and relative, and often unstable, some regimes of truth in the archive are continuous and notable for their stability. Many of the problems the disease poses for the modern breast cancer patient are identical to those it posed for the patient, her surgeon, and her society in the archive. Analytic modalities establish that one valid reading of the archive is that, similar to today, the disease was considered a form of anarchy of the body, a body overrun and not in control of itself. This dimension of the surgical consciousness illuminates the implicit disciplinary and social truths informing the breast cancer discourse and the reason it has always been problematised: compelling sociocultural truths about
breast cancer are that it is ferocious, polluting, anarchic and female. The traditional
task of the surgical regimen over time has been to restore the norm of order through
varying modes of domination and discipline. Given the sociocultural imperatives
associated with the disease, the frequently brutal treatment modalities employed by
surgeons and submitted to by women seem entirely justified.
CHAPTER 9. CONCLUSION

Restatement of the problem

The purpose of this dissertation was to:
1. Describe the historical conditions that contributed to our present understanding and treatment of breast cancer; that is, to articulate a history of the present.
2. Unsettle the current truth claims concerning the understanding and treatment of breast cancer
3. Test the fit of Foucault’s ideas to the breast cancer discourse.

I undertook this dissertation because I hoped to answer a set of questions concerned with the present state of things in breast cancer care. I wanted to know how it became possible to speak what we now regard as the only truth about breast cancer. I wanted to understand how this truth was determined; who determined it, and who or what gave them the right to assert that their truth was the only truth. I wanted to gain insight into the reasons that the ways of thinking about and managing breast cancer based on this truth came to dominate the post-modern consciousness rather than other, perhaps equally valid ways. As it turned out, these questions were distinctively Foucaultian in nature, and I did not need to stray very far from the set of analytic tools he provided to explore them.

The history of the present

Chapter 1 introduced the notion of the Foucaultian history of the present. It introduced the contemporary truths associated with breast cancer, as well as the possibility that these truths could be unsettled to open up other ways of thinking about the disease. The breadth and depth of the breast cancer archive was an indication of how the disease has resonated across individuals, groups, epochs and cultural contexts. Given that the interests of so many elements have contributed to the breast cancer discourse, my first task in Chapter 1 was to locate the discourse that best represented, or contributed the most, to Western societal beliefs about the
disease, and which had been invested by society with the greatest authority in its conception and management. Chapter 1 proposed that surgical discourse up to 1900 had the greatest influence on current conceptions of breast cancer, and that this influence could be usefully explored according to a grid of analysis suggested by the work of Foucault – that of modes of surgical consciousness. Modes of consciousness were subsequently used to structure the dissertation in terms of
1. Critical modalities, or the theoretical problems posed by breast cancer that the surgeon must solve
2. Enunciative modalities, or the rules that informed what could be said about breast cancer and the lens through which it was filtered
3. Practical modalities, or the surgical techniques that restored the cancerous woman to normality
4. Analytic modalities, or the images in the surgical archive that reinforced the horror of the disease and revealed its essential truth in Western contexts.

Chapter 2 explored the work of Foucault and the variety of analytic tools he developed that might be utilised in the excavation of the surgical archive. The consistencies of his approach – the unsettling of taken-for-granted truths; the concentration on how things happened rather than why; the importance of bracketing the object in question; the emphasis on description rather than interpretation; and the search for discontinuities – were established, as were some of the inconsistencies and difficulties presented by his ideas. The Foucaultian tool that best fit the initial management of the surgical archive was the notion of discontinuity, which enabled the analysis to be separated at a first pass into manageable sections based on three apparent disjunctions in the archive: namely humoral, tissue and cell theories. Other Foucaultian tools explored in this chapter and applied throughout the thesis included the concepts of
1. The discipline, which was posited as not only a field of professional study, but a sophisticated system of social control of breast cancer
2. The normalising judgement, which controlled the entry of members into the surgical discipline; ensured the surgeon’s actions were consistent with the values
of the discipline; established the state of non-breast cancer as the norm; measured and categorised the woman with breast cancer; and coerced her to comply with surgical norms

3. The perceptual field, which provided the surgeon with a frame of reference and reflected the ways that surgeons had been socialised to view their subjects

4. The archaeology, or the excavation of sociohistorical contexts in which truth and knowledge are produced by disciplines. The aim of this present archaeology was to understand the conditions that held at a particular time for saying what was true about breast cancer.

5. The genealogy, elements of which augmented this archaeology by briefly mapping the surgeon’s power within specific institutions and the surgeon’s relationship with other system of power within the breast cancer archive, such as physicians and patrons

6. The ethics of the self, which briefly explored how women with breast cancer became participants in their own control.

In the next three chapters (3 to 5) an analysis of the critical modes of surgical consciousness excavated those territories where breast cancer was conceived as a disciplinary problem and where the surgical rationality underlying the problem was made clear. These chapters as a whole demonstrated that surgical discourse had not addressed breast cancer in a way that had been, or ever will be, defined for all time. While there were some continuities in the way breast cancer had been conceived, there were always ruptures, renewals and replacements. It became apparent that one theory never quite superseded another: explanatory systems that were once dominant were often examined in a different light and rearranged, with some elements censored and others subsumed.

Chapter 3 explored humoral theory. Humoral theory was an explanatory system based upon the idea of the consanguinity of man and his universe, and of bodily equilibrium in the context of a micro- and macro-cosmos in a state of constant flux. It predicated health as the balance, and ill health as the imbalance, of vital forces.
The internal consistency and elegance of humoral theory ensured that it was the most enduring of the critical modalities. It is in humoral explanations of disease that we see the beginnings of 21st century ideas about breast cancer, particularly in humoral discussions of breast cancer in relation to female gender, female passions, derangement of bodily elements, heredity, pollution, and the fear associated with the disease.

Chapter 4 explored surgical consciousness in relation to breast cancer by way of theories derived from the study of gross anatomy. These theories, which were increasingly accepted from the middle of the 16th century, were contingent to a large degree upon the modification of the social norms attached to the dissection of corpses. By 1801, exploration of the dead body had resulted in the valorisation of gross tissue theories at considerable expense to the humoral paradigm, and an increasing emphasis on reductionism rather than holism in the quest for explanations of disease. Like the humoralists, however, tissue theorists still emphasised the dangers of the feminine condition, and the risks associated with passions, deranged bodily fluids, corruption, inheritance, and deviation from the norm.

Chapter 5 charted the sudden emergence of the cell as the explanatory basis of breast cancer, and the subsequent cementing of present rationalities of the disease. This chapter emphasised the contingent nature of the cellular revolution and discussed the way that contemporary social discourses influenced its ascendancy. Derangement of bodily components, abnormality, diathesis and the perils of femininity remained constant themes. It also became apparent in this chapter that abnormal cells were not necessarily the ultimate truth about breast cancer. It was merely that the forms of visibility and the statements that could be made about the disease had changed. It was emphasised in this discussion that cellular theories were simply another set of rules with which to explain breast cancer, and that these are likely to change again in the future.
These rules were explored by way of the enunciative modalities of surgical consciousness in Chapter 6. This chapter described the conditions of possibility that established the authority of surgeons with regard to breast cancer, particularly the social structures that enabled and sustained surgical knowledge and power. It also explored the primary way that breast cancer was given form by surgeons: the perceptual field that guided the senses of the surgeon when he contemplated a woman with the disease. The gaze of the surgeon was filtered through three distinct lenses in the archive:

1. The lens of botanical taxonomies, which constructed a gardener’s gaze. This was primarily a visual and imaginative instrument that accommodated the dimensions of height and width. This lens sought resemblances between breast tumours in order to fix a diagnosis, and posited the cancer as a species of life with an independent existence.

2. The anatomo-clinical lens, a plurisensual instrument which added the dimension of depth through the practice of dissection. This new lens, which localised the disease within the body, constructed the body and disease as one for the first time. The number of cases aggregated in the hospital at this time also provided a larger frame of reference that firmly established what was normal and not normal with regard to breast cancer. In addition, the new emphasis on the notion of abnormality and the exactness of the language that fixed the eye of the surgeon, so essential to modern truths, ensured that the notion of the differences within the cancerous breast was also introduced.

3. The multidimensional lens, which constructed an intricate and wide ranging perceptual field, and made possible the modern surgical gaze. The perceptual act of the cellular surgeon simultaneously abstracted, isolated, differentiated, generalised and predicted breast cancer. It allowed him to operate in the individual and the social body at the same time. Moreover, the woman did not even have to be present for the examination to take place: the gaze could be directed at the abstract collective woman, or detached portions of the minutest samples of her body.
The analysis of these conditions of possibility made it clear that the standing of the surgeon, the focus of his gaze and what he was authorised to say had changed over time – meaning that truths about breast cancer were also mutable. The relationship between what was seen and not seen, and what could be said and what could not be said, changed. Hence what could be articulated about breast cancer, the way it was given form and, therefore, its truth, were modulated by the surgeon’s time and context.

Chapter 7 explored the notion that the practical mode of surgical consciousness was the concrete manifestation of the critical and enunciative modalities of breast cancer. The chapter reiterated the idea that breast cancer had always been regarded as the product of the interplay of factors in an intricate organic system, and there had always been acknowledgement of the extent and likelihood of the errors that could cause it. So breast cancer, in essence, should have been considered normal. It has always, however, been viewed as abnormal in vital and sociocultural terms. Chapter 7 explored the notion that surgical practices are normative activities aimed at reinforcing a desired, if not biologically usual, state. Normalising strategies in the archive to 1900, which persist to the present day, operated in three ways:

1. By constructing the woman’s health care behaviours and ensuring her behaviour was consistent with societal values about breast cancer (that is, that it was abnormal). This was primarily achieved through regimen
2. By disciplining and controlling the breast cancer through corrective surgical techniques
3. By formulating differentiations that determined whether the cancer was operable, curable or otherwise; thereby directing surgical action.

Chapter 8 explored the analytic mode of surgical consciousness; that is, the implicit surgical truths that informed the surgical discourse to 1900. I argued in this chapter that breast cancer was associated with compelling, covert and unpalatable cultural truths, and that these were most apparent in the language and imagery used to describe it. The continuities with the modern imagery outlined in Chapter 1 were
striking. It became clear that belligerent modern metaphors associated with breast cancer have always existed in the written discourse, and probably always will. Breast cancer has always been a battle, it has always been an enemy to be feared and loathed. There has always been a tension between nihilism and optimism when the disease develops. Similarly, the female with breast cancer has always required discipline. As she does today, she represented her society in microcosm: therefore her anarchic cancerous body was equivalent to social disorder. This woman was required to willingly submit to regulation, cleansing, ungendering, and taming in order to attain the normative ideal the surgeon was authorised to offer her.

What have I learned from undertaking this history of the present? First, ideas in any episteme can appear convoluted and often contradictory to the historian excavating the archive from ‘above’. I had to work hard to remain open to the presuppositions of other ways of thinking, their ways of looking and what they excluded, without imposing my own vision on them. The temptation to apply my own interpretation to this confusion of interpretations was very strong, for it is more comfortable to work from a teleological perspective and the assurance that the steady amassing of knowledge means we are progressing to some ultimate truth about breast cancer. Real life however, and real breast cancer, are ambiguous, and even where one relatively unambiguous discourse like surgery clearly dominates, it will always encounter confusion and resistance from alternate discourses. I came to realise in this project that Foucault was right in arguing that this resistance is ultimately the thing that fully illuminates the discourse and dispels the confusion, for it forced the surgeon to clearly articulate his worldview and the unambiguous unity he believed underlay it. Hence it is extremely useful when analysing dominant discourses to also pay close attention to subjugated concepts, as they throw into relief the inherent unities that direct disciplinary thinking at a given time.

Second, I have learnt that there are never any certainties in breast cancer: the way it has been conceived in the past is as bewildering and as rife with disciplinary politics as it is in the present. In the past, however, there appears to have been less
dissonance between surgical and sociocultural worldviews. In comparison with the present confusion, the humoral doctrine in particular was ingenious, elegant and perfectly in keeping with the tenor of its time. It offered explanations that were not only internally consistent, but which were also congruent with the holistic values of the epoch. It is not inconceivable that now that many diseases are attributed to deficiencies, excesses or imbalances of certain vital components, and treated as such, and that the value of holism is increasingly recognised, that some elements of humoral theory might similarly experience a resurgence in breast cancer care.

Third, as Foucault predicted, there were continuities as well as discontinuities in the archive, that were instrumental in cementing the conditions of possibility for breast cancer discourse our own time. The most significant of these was a reflection of complex cultural concerns, that is, the notion of breast cancer as abnormal. It appears that breast cancer always was, and always will be, abnormal. It is and was abnormal not only in the vital sense, where it should objectively be conceived as natural, but in the normative sense. This is because it is inevitably tied to judgements of a moral and social nature. Every surgical text is imbued with the sense of its time; in this archive, as in our own, breast cancer is always implicitly or explicitly associated with moral or social impurities and dangers that must be controlled. It is as Canguilhem suggested: thinking and doing breast cancer are all aimed at dominating the woman’s circumstances and organising them according to core social values.

Another continuity is the wisdom that breast cancer arises from a combination of external initiators, inherent disposition, and an ultimate, cohesive cause. It has been, and probably always will be, framed as a result of often natural, but malefic, processes that result in discordance within the body. It was, and still is considered the unfortunate consequence of the consanguinity of heredity, environment, temperament, lifestyle, age and accident. It is paradoxical, given this persistently cohesive view of the disease, that another continuity is the focus upon ever more minute elements of the body in the quest for breast cancer genesis and treatment.
Conclusion

Where once a body, its world, and its breast tumour were an indivisible unity, the gaze and the technic increasingly target more and more diminutive elements – we have moved from the cosmos, to the tissues of the body, to the cells, onto the genes and even molecules. At present, the received view seeks answers in the genetic coding of molecular DNA. This reductionist tendency is at odds with discourse currently produced by the wider health care system, of which surgery is a part, that is reframing itself as holistic and pluralistic (Little, 2003). This, along with the current emphasis on statistical prediction and outcome, ignores the essentially moral grounding of all health care disciplines, as well as the experience of having breast cancer from the perspective of the woman. It tends to undervalue individual experience of the disease and produce the fantasy that every patient can be slotted into a predetermined category for whom a particular type of treatment can be prescribed (Little, 2003).

Unsettling truth claims in the understanding and treatment of breast cancer

With respect to the second research issue, I have learnt that surgical truths have specific historical contexts, and that current rationalities informing breast cancer treatments may not necessarily hold in the future. Truths are unstable: breast cancer has not remained an objective fact across periods, nor has it meant the same thing across cultures. Theories about breast cancer have been continually examined in a different light and rearranged, with some elements censored and others subsumed, according to the tenor of the time. The physiological fact of the breast tumour might not change, but its forms of visibility and the statements that can be made about it will. Moreover, there has always been breast cancer, but the breast cancer patient, as a specific type of post-modern subject, was produced, and could only make her appearance, after more than two millennia of surgical discourse had codified her. This present codification, as Foucault predicted, is entirely contingent. If a variety of other, unrelated events had not occurred, the way we think about and treat breast cancer today might be very different. It was contingency that resulted in the abandonment of some ideas about breast cancer and the uptake of others, not their inherent lack of truth. This project has not only demonstrated that every paradigm
assumes that it has articulated the one truth, it has also demonstrated that such
complacency is unwarranted; we need to be vigilant with regard to the potential of
alternate discourses. Our way is not timeless, natural and unquestionable: a new way
of conceiving breast cancer could arise at any time in the future, producing, in its
turn, new practices and new powers to regulate social norms. Rose expressed this
nicely when he proposed that it is a matter of introducing a kind of awkwardness
into the framework of our experience, of interrupting the fluency of the narratives
that fix that experience and making them stutter (Rose, 1999b).

**When breast cancer meets Foucault**

What happens when the question of breast cancer meets the ideas of Foucault? The
complex and wide ranging nature of Foucault’s own project has made it evident that
there are many more aspects of cancer care to explore before I can understand all
there is to know about breast cancer. For example, surgery has been a dominant
mode of consciousness with regard to breast cancer, but it is not the only one, nor
does it dominate today. It would be useful to also explore the myriad other
discourses that have contributed to the archive: internal medicine, radiation
oncology, and the lay, religious and political discourses. It would be instructive to
explore them from a genealogical perspective – to test the tensions between them,
the manner in which power courses through them and binds them together. It is also
essential that the voice of the subject of the discourse – the woman with breast
cancer – be thoroughly explored. I have only been able to touch briefly on her
subjectification, but what I learnt from Foucault is that she has many choices with
respect to her disease. She can choose to become the passive object of the dominant
health discourse, or she can choose to harness the productive power intrinsic to that
discourse to improve her own situation. In the future, I would like to explore all of
these aspects of breast cancer care.

Although the value of Foucault’s methods is now recognised by many in the health
disciplines, his work continues to attract censure. This is one of the reasons it is not
commonly utilised in oncology care, which can be a deeply conservative milieu. I
believe it is important to deal with these criticisms, many of which are valid components of health philosophical debate, because they demonstrate how well suited Foucault’s project has been to the question in hand. As Foucault maintained, it is only resistance that sheds light on a subject.

Generally, censure arises because his ideas do not meet the disciplinary expectations of other historians and philosophers of the sciences in terms of methodology (paradigm) and method (tools). In Foucault’s defence, when one offers an entirely new vision as he did, prevailing standards and practices must necessarily be flouted. Disordering entrenched ways of thinking is in fact exactly what he intended to do: one of his aims was to generate other ways of thinking about disciplinary problems that might be more suited to the needs of the people disciplines serve. However, even though the different ways of looking at things he developed meant the familiar was successfully disrupted, the new approaches to analysis offered were not easily assessable by the standards and vocabularies of the other paradigms he challenged. New vocabularies and worldviews have had to be assembled and located, and this requires an energy and commitment that it is not in the best interests of many in positions of dominance in the older regime to pursue.

The difficulty many critics find with Foucault’s work is that it was never his intention to formulate a coherent theoretical framework or to impose a priori theories upon the object of analysis. In essence, he discounted any attempt at grand theory to explain either progress or truth and his approach to his work was not teleological. He would, for example, have rejected such notions as surgical ‘progress’ and denied that there is any universal truth about breast cancer, such as its inherent abnormality, that practitioners employ to justify their practices. Rather, Foucault historicized universal truths and the theories disciplines produced to explain their truths. He placed them firmly within their time, examining them for their social function and for their influence on the practices and power of scientific disciplines. He did not question the falsity or otherwise of the claims to truth that disciplines made; rather he looked at how they were used to justify a particular
worldview, the social functions they have served and the context in which they were formed (Rabinow 1984).

Most critics of Foucault, who typically believe that his approach did not take account of gender, religion, class or whatever else the critic thought important, completely miss the point of his project. Foucault’s work shows that it is not possible to reach general conclusions about our existence, one can only hope to know the specifics of a certain problem (Kendall & Wickham, 1999). His histories were not intended to reveal the inherent meaning of life but to map how certain life problems have been managed. Foucault’s project encompassed specific histories of specific problems. In his short life he could neither be expected to cover everything that everyone thought important, nor was he a polymath who had a grasp of all of these things. He aimed to provide certain tools that others could use to apply to their area of interest.

In a similar vein, he was also criticised for methodological inconsistency. He rarely referred to his earlier work and his perspective is characterised by obscurities and gaps, shifts in approach, inconsistencies over time and a lack of clarity (Lupton, 1997). He tended to define himself in terms of his concern of the moment, and thereby frustrated attempts to situation him in absolute terms as the grand theorist of history (Rabinow, 1994). In his defence, his inconsistencies and revisions of previous statements were deliberately provocative and entirely consistent with Foucault’s stated aim of providing alternative accounts of events. Unlike many historians, Foucault was entirely comfortable with the paradoxes that characterise real life rather than the certainties and unities of grand theory. Perhaps unfortunately, Foucault invited scholars to do whatever they pleased with the tools he developed, so methodological consistency within this approach can be difficult to assess. So while Foucault was prolific in producing ideas or tools for analysis, he was often reticent concerning the exact application of such tools. Regardless of how consistent this evasiveness may be with his overall approach, it can be frustrating for the novice analyst attracted to Foucault’s ideas, as it is often difficult to know how to
investigate a problem of government once it has been identified as such. The unfinished nature of his project, in addition to this intentional theoretical vagueness, means there is a subsequent need to explore the interpretations of others regarding the concrete application of the analytical tools he introduced.

In addition, Foucault is often discounted as a nihilist who offers no hope for the future. His critics interpret his argument that there is no escape from power relations as an insistence that the struggle against domination is futile because it simply results in other forms of domination. This criticism results from an incomplete reading of Foucault. It assumes that power is never in the best interests of those concerned, nor can it be freely chosen or discarded by its subjects (Lupton, 1994). What these critics also ignore is that Foucault consistently emphasised the productive nature of power over the repressive – this thesis has demonstrated in a small way, for example, that not all power relations in breast cancer are a result of female repression.

Allied to the accusations of nihilism are claims that he challenged power with no political intent. Foucault’s ideological opponents argue that he made it difficult to conceive how an improvement in the current situation could occur without some guiding vision of what ought to happen (Manias & Street, 2000). He would not endorse one political alternative as better than any other in his writing (as opposed to his obvious endorsement of issues such as prison reform in his personal life) and is therefore accused of lacking political and theoretical vigour (Nettleton, 1992). Because he believed that philosophical thought was influenced by events of the time – that truth, rationality and knowledge are what our particular time and culture deemed them to be and nothing more – he argued that philosophical claims to ultimate truths and unitary visions to guide progress were merely consensus statements on the part of dominant social groups. Consequently, he maintained that meanings change over time with different dominant groups, so there simply cannot be one universal, objective truth or meaning underlying events. His apparent nihilism, therefore, is in fact pluralism. Foucault recognised more than any other
philosopher of history that there are many truths, dependent on context. In not developing any definitive answer to the current condition, Foucault was entirely consistent with his argument that such generalisations are dangerous. Once one is aware, by way of a Foucaultian analysis of a certain problem, of the pervasiveness, contingency and intricacy of our disciplinary practices, it becomes obvious that to sum them up in one theoretical stance is a distortion.

Foucault claimed in his writings to be impartial, yet was often taken to task by his critics regarding the political motivation behind his work and for not being objective enough. In particular, his personal political activism is cited as contradiction of his claims to philosophical detachment. While Foucault may have sincerely believed his examinations of power were not coloured by personal concerns, familiarity with his personal history does in fact reveal these issues mirrored in his professional work. Most historians of the present influenced by Foucault recognise this, and similar to more conventional qualitative methods, it has become a common practice to state these personal biases from the outset and make clear that the analysis is one perspective among myriad other possibilities.

It is his friend and colleague Gilles Deleuze who justified the inconsistencies evident in a detailed reading of the corpus of Foucault; in particular, the dichotomy between what Foucault wrote with regard to the aims of his project and the completely different issues he elaborated in his verbal presentations and vigorous political commitment to certain issues (Deleuze, 1992). Deleuze explained that Foucault’s written works deal only with the lines of sedimentation and layering that are exposed in an examination of history. It was his interviews and acts of political commitment that dealt with the creation, from those layers, of possible alternatives – where he questioned more fully what new things could be said about crime, madness, sexuality, or breast cancer. According to this interpretation, using the array of tools developed in both the written and oral Foucaultian discourse, the limitations of the current approach to breast cancer care that are the impetus for this dissertation can be teased out from their historical basis. Using the tools Foucault has provided
facilitates the development of a more sophisticated sociocultural understanding of breast cancer practice. Such awareness acknowledges the experience of those at the margins of the health care system as well as the macro- and micropower structures that have shaped our view of breast cancer, and which might assist in the formulation of alternatives to current practice.

**Future directions**
This project has laid the groundwork for a great deal of further exploration in the cancer discourse, particularly in the areas of power, governmentality and the ethics of the self. As Rose has suggested, from this position, I intend to investigate more fully the creation and construction of the social apparatuses that distribute and exercise power in cancer care (Rose, 1999b). Understanding power in this context is vital. It is generally acknowledged that those working at the coalface of health care, especially nurses, generally have little power to change local hospital and broader health policy, regardless of their level of expertise or their depth of knowledge. One reason for this is that nursing values historically focus upon the individual nurse-patient relationship to the exclusion of the economic and political context in which we practice. To truly influence the language used about breast cancer, nurses must move from the clinical milieu and the specific patient, where they are unable to change the system, to a political milieu where they can function at an advanced policy level. Regardless of the present political oppression of the profession, Foucault has shown me that we do have the power to expose and alter knowledge and power complexes, and therefore, motivate subsequent political change agendas within the wider health care system that might better suit our and our patient’s needs.

This modest study has formed a connection between a contemporary question and certain historical events. It has already established connections that resonate for me, a clinician working with breast cancer patients; hence it has already made a difference. As Rose argued, to do this is to already change things (Rose, 1999b). The
most important thing I have learned from this exploration is that there is more than one truth about breast cancer. We simply have not thought of them all yet.
REFERENCES


Halsted, W. S. (1895). The results of operations for the cure of cancer of the breast performed at The Johns Hopkins Hospital from June, 1889 to January, 1894. *Johns Hopkins Hospital Record, 4*, 297-350.


References

Proceedings of the Sixth British Congress on the History of Medicine, University of Sussex.


Pott, P. (1775). *Chirurgical Observations Relative to the Cataract, the Polypus of the Nose, the Cancer of the Scrotum, the Different Kinds of Ruptures, and the Mortification of the Toes and Feet*. London: T.J.Carnegy.


