Stethoscapes: listening to hearts in a London Hospital

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I declare that the work presented in this thesis is entirely my own

Abstract

This thesis is about the stethoscope, and its use in the production and reproduction of bodies. It incorporates two ethnographic strands, sited at each end of the stethoscope. Firstly, the thesis engages with medical students as they begin to learn a new kind of listening. The thesis explores the shaping of the senses which medical training brings about, and positions 'auscultation' as productive of a particular kind of (acoustically) perceiving body. The emphasis placed on auscultation in medical training is seen to reflect the historical importance of auditory knowledge in the medical imagination of the anatomical body and in the mapping of its interior. At the same time, students adopt the postures of doctors in this training and so the stethoscope's importance in the generation of the medical 'habitus' is also highlighted. The instrument is seen to be important in producing and reproducing the respective roles of doctors and patients.

The dissertation explores a second major ethnographic strand through examining contexts in which doctors, medical students and, particularly, patients begin to relate to their own interiority through sound. They apprehend the acoustic dimensions, not of abstract or conceptually distant bodies, but of their own immediate, lived and experienced bodies in unexpected and sometimes disturbing ways. The imagination of the body, then, in both formal and more immediately experiential terms, takes on an acoustic dimension within the context of the hospital and the diagnostic procedures encountered there. The thesis argues that the concept of 'acoustemology' may offer a new way of thinking about 'the body', reflecting the importance of sound in the manner in which it is lived, imagined and known.

Contents

List of figures

Acknowledgements

St Thomas' Hospital is a remarkable place, and if I have to die in hospital, I hope I die there. I would like to thank Dr John Coltart for giving me an opportunity to conduct research at St Thomas'. His open-mindedness and sustained enthusiasm toward the project was invaluable. The experience of being at the hospital was made all the more memorable for me by the people I met. I am particularly grateful for the friendship of Rishi Caleyachetty, Tom Simpson, Sue Ann Knight, Dave Tang, Harjit Bhogal, Mary Anandarajah, Diane Sivnort and Alistair Matthews. I hope they feel their thoughts and feelings reverberating through the pages of this thesis. The stethoscope, which links together so many doctors and patients, has also connected many friends.

I would also like to thank my supervisors, Dr Sophie Day and Dr Simon Cohn, for the imagination which they brought to the project and the attentiveness with which they read even the roughest of drafts. Thanks also to my colleagues who, during lively seminars with Dr Keith Hart and Dr Roger Sansi-Roca, also shaped and gave direction to the research. Prior to the invention of the stethoscope doctors found that when they bent over to put an ear to a patient's chest the blood flowed to their head. As a result, they could never be quite sure whether what they were hearing was a sound from inside the patient's chest or one from inside their own skulls. I am grateful to the above who took a pragmatic approach to the thesis, helping me recognize that the project had real substance and was not simply the effect of a rush of blood to the head.

The fieldwork and writing up of *Stethoscapes* was carried out during the term of a European Social Research Council studentship.

Introduction

After finishing my undergraduate degree, I went to Manchester for a postgraduate course. It was there, whilst I was registering with a local GP (General Practitioner), that a doctor listened to my heart with a stethoscope. I remember feeling that he seemed to be listening carefully, and taking a considerable amount of time over it. "Ah yes", he said presently, "You most definitely have a *heart murmur*". I was horrified to learn I had something wrong with my heart, and intrigued to learn that the problem was creating a particular sound which emanated from inside my body in such a way that the doctor could detect and interpret it.

The diagnosis of the heart murmur made me think about studying stethoscopic listening or 'auscultation'. Soon I developed a PhD proposal and enrolled on a course at Goldsmiths College, University of London. My early library research made me aware of the importance of auscultation in a number of specializations within Western medicine. However, because of my previous awakening to the importance of heart sounds, I became particularly interested in the application of auscultation in cardiology and the medical understanding of the workings of the heart. It could be argued, then, that this entire thesis represents a gigantic hypochondriac indulgence.

Fieldwork at St Thomas'

Searching for a fieldwork site, I wrote a letter to Dr John Coltart at St Thomas' Hospital in Waterloo, London explaining my interest in auscultation and inquiring about the possibility of conducting fieldwork there. St Thomas' has a specialist Cardiothoracic Unit, and at the time, Dr Coltart was its Director. He suggested we meet to discuss the idea and a few days later I went to see him in his office on the 6th floor of the building which housed the Cardiothoracic Unit, a floor given over to offices for consultants, surgeons and their secretaries. It had spectacular views overlooking the Thames. Discussing the project, Dr Coltart told me that the research proposal interested him because he had long been conscious of the importance of listening in his everyday practice. He considered his ears to be his most important clinical tool, and, as he had been teaching auscultation for a long time, was interested in the qualities which made students 'good listeners'. Dr Coltart agreed to act as my supervisor within the hospital, and offered to support an application on my behalf for

'Honorary Observer' status within Guy's and St Thomas' hospital. This unpaid position would enable me to observe any clinical interactions which took place at the hospital. I would be authorized to sit in on consultations, ward rounds, and even operations provided I sought permission from patients and the staff in charge of their care. Importantly, I would also be able to participate in classes for medical students, and it was this which ultimately formed the backbone of my research.

The application was successful, and in October 2003 I returned to St Thomas' for a year-long placement as an 'Honorary Observer'. The job title, it turned out, was not one many people at the hospital had come across. Though it in fact gave me less authority even than the medical students with whom I began working, it sounded prestigious, and throughout my year of fieldwork if I asked permission to attend, for instance, a ward round, I was never refused. Dr Coltart allowed me to accompany him to his clinics and the classes he taught, and he introduced me to other doctors, surgeons, medical students, nurses and secretaries – the voices which are present within this thesis.

Dr Coltart, then, was my first point of contact at St Thomas' and acted as my supervisor there. He is one of the main protagonists in my research. I hope I have created a detailed sense of his personality through describing his work as a doctor and a teacher in the pages which follow. In making Dr Coltart a, and perhaps even *the* central protagonist, the thesis follows the examples set by, among others, John Berger (1965) with his account of the life of Dr John Sassall entitled *A Fortunate Man: the story of a country doctor*, and Robert Hahn (1985) with his study of Dr Barry Seigler, 'A World of Internal Medicine: Portrait of an Internist'. The thesis, like these two works, does not represent a hagiography, and neither does each page necessarily ripple with applause for its central character. However, it is certainly flavoured by a deep-seated respect for the work which the doctor does, by gratitude for his support and enthusiasm, and by a straightforward liking of the man himself.

The 'Chest Rotation' and the 'Firm'

It seemed that teaching sessions would be a promising juncture at which to access the particular kind of auditory knowledge which auscultation represents. Teaching would involve senior doctors explaining the skill to medical students. The technique would be in the process of transmission, its subtleties and secrets being made plain for the novice. I could explore the manner in which the students were

influenced by the acquisition of new perceptual and diagnostic powers. In developing research on medical training I was heavily influenced by two key texts. Simon Sinclair's (1997) book *Making Doctors: an institutional apprenticeship*, written by a qualified doctor-turned-anthropologist, is based on fieldwork conducted among medical students at University College Hospital in London. Sinclair describes how key dispositions identifiable within the medical profession are reproduced in students through medical school. Byron Good's (1994) book *Medicine, Rationality and Experience* also concerns itself with medical education, this time at Harvard Medical School in the United States. The book focuses on how particular aspects of medical knowledge are conveyed to and internalized by medical students. My own thesis reflects Good's concern with the students' engagement with the practical application of clinical techniques.

Simon Sinclair gives a thorough explanation of the organization of medical training in Britain, and, though written in 1997, I found it to be remarkably accurate and descriptive of the educational process I encountered during a year of fieldwork between October 2003 and 2004. Standard medical training in Britain takes five years. For the first two years (known as the 'preclinical' years), students receive classes in the form of lectures and tutorials. They study anatomy (involving the dissection of the corpse for which medical school is renowned) and the aspects of chemistry and biology which are required in understanding the constitution, function and treatment of the body in Western medicine. It is not until the third year of medical school that more practical training begins. Students then start three 'clinical years', attending sessions which involve contact with actual patients on hospital wards. It is in the first clinical year that students are introduced to auscultation. I therefore focused my fieldwork on participant observation with groups of third year medical students who were learning to listen for the first time.

St Thomas' Hospital, and Guy's Hospital which is located nearby on the south side of the Thames at London Bridge, are run by a single managing trust, the Guy's and St Thomas' NHS Foundation Trust (NHS stands for National Health Service). The trust funds and administers the two hospital sites as a single entity (for instance, being granted permission to conduct my research at St Thomas' automatically gave me permission to conduct participant observation at Guy's). Patients are frequently transferred between the two sites, and staff and medical students routinely travel between them to work and study. A shuttle bus is in almost constant operation. As of 1998 these two hospitals became linked to a third hospital, King's Hospital at

Denmark Hill in south London. They were not joined under the same hospital trust, but pooled their academic resources to form Guy's, Kings' and St Thomas' Medical School, also known as GKT. Thus, while King's is run by a separate hospital trust, and patients and medical staff are much more seldom transferred, students attending GKT may travel to Kings, as well as between Guy's and St Thomas' for their classes. In late 2005, while I was writing up this thesis, GKT was re-named Kings College London School of Medicine.

The students with whom I began studying in 2003 were all GKT students. As I have explained, they were just beginning their third year of medicine. The third year's practical teaching was subdivided into three 'rotations', each of which focuses on one particular area of the body. The first clinical year at GKT comprised rotations for the abdomen, head and chest. The 'abdomen' rotation (not a dance move) involved an introduction to abdominal medicine and surgery, the 'head' rotation contained elements of psychiatry, neurology and ophthalmology, and the 'chest' rotation included cardio-vascular and respiratory medicine (including some teaching on 'ear nose and throat' or 'upper respiratory tract' medicine). Each rotation lasted for three months, with several tuition sessions each week. Students were expected to complete all three rotations in the course of their third year before being allowed to sit their end of year exams. Results permitting, they would then progress to fourth year.

The group of between five and ten students assigned to each rotation is called a 'firm'. Together for the twelve weeks of a rotation, the students are afterwards split up by the medical school administration and organized into new firms for the next rotation. I joined a firm of students at the beginning of their first rotation, which for them was the 'chest rotation'. In the course of my research I became close to this first firm, and we remained in contact throughout the year. Indeed, we are still in contact at the time of writing, and have met for tennis and football matches, birthday celebrations and the like regularly since. Although I worked through the chest rotation with two other firms, I felt happier and better integrated with this first firm of students than with the subsequent ones. The members of the first firm, who are often quoted in the pages which follow, were Tom, Sue-Ann, Dave, Diane, Harjit, Alistair, Rishi and Mary. They were all between the ages of twenty and twenty three during the research period. Importantly, of these eight, six became qualified doctors in June 2006. Two failed their examinations at the end of third year, and were obliged to repeat it. However, they are on track to qualify in June 2007.

It would be misleading to suggest that the entire chest rotation is occupied with auscultation. The technique is important in both cardiovascular and respiratory medicine, and is a vital element of the examinations which students are taught to conduct during the chest rotation. However, the students also attended, for instance, special classes on asbestosis and asthma, and seminars on heart failure and myocardial infarction or 'heart attack'. Not all Dr Coltart's classes, either, were taken up with auscultation. He also taught on, for example, ischaemic heart disease, the use of a defibrillator and mouth-to-mouth resuscitation. However, auscultation was a definite focus of Dr Coltart's classes. At his consultations, outpatients would present themselves, generally having been referred to him by their GP's or other doctors within the hospital. We were required to observe the way in which he handled these patients, and to practice auscultation on those who exhibited interesting heart sounds. We would also have lessons with Dr Coltart on the hospital wards in which we would practice our observation and examination skills on patients with interesting clinical signs. On occasion we would be given extra tuition sessions in the cardio-respiratory examination by doctors working alongside or under Dr Coltart.

Of course, auscultation is not a skill which can ever be perfected. While students are required to auscultate throughout their training and must demonstrate their ability in order to qualify, they continue to practice the skill throughout their careers. Those who enter areas of medicine in which auscultation is particularly important will be required to draw on and improve their auditory knowledge of the body in their day to day work. Education in auscultation is continuous.

The anthropology of the senses

The conceptual framework of this thesis is drawn from the 'anthropology of the senses' The fundamental premise underpinning the anthropology of the senses is that sensory perception is a cultural as well as a physical act. That is, the senses are not only ways of apprehending physical phenomena, but are also channels for the transmission of cultural values (Classen 1997: 401). The values accorded to aspects of sensory perception vary cross-culturally, meaning that sensory engagement with the world differs from culture to culture. Experience varies as cultures vary. The senses are mediators of social values rather than simply mechanistic receptors of information. The task of the anthropologist is to examine the ways in which a given society invests the different sensory domains with social value.

Anthropologists working on the senses, then, argue that cultures use and value the senses in different ways. Howes (1988, 1991) and Classen (1993, 1997), two of the chief instigators of 'sensory anthropology', venture that in every society one sense is accorded priority over the others and so comes to be privileged as a sensory mode. Howes' (1988) work on olfactory classification in Western Melanesia, for instance, led him to identify a complex olfactory register which was integral to local cosmology, and which also created a variety of terms for the description of people and social behaviours. This led him to conclude that for Melanesians, the sense of smell is privileged in the sensory interplay through which reality is experienced (ibid: 109).

A number of Papua New Guinean societies are regarded by anthropologists as 'auditory cultures' (Gell 1995: 236). The Foi (Weiner 1991), Umeda (Gell 1995) and Reite (Leach 2003) are all described as demonstrating an acute awareness of their sonic environment, using highly developed acoustic vocabularies to reference the sounds they hear. Stephen Feld's ethnography of the Kaluli of Bosavi, Papua New Guinea is a further example of an 'auditory culture' study. Feld suggests that the Kaluli draw on the complex soundscape of their stream-latticed rainforest surroundings in creating songs and poetry linking poignant memories to the landscape.

Anthropologists have repeatedly characterized Western society as a visual society (Classen 1998, Howes 1991, Fabian 1983, Tyler 1984, Jay 1993). Sight is held to be the sensory foundation of the Western knowledge system, as exemplified by the prominence of practices of visual examination and observation in scientific research. The centrality of seeing to knowing has pervaded Western ideology to such an extent that, Classen argues: '[m]odern Western culture is a culture of the eye' (1998:1). Western biomedicine in particular, following (among others) Foucault (1973) is considered to be dominated by a system of visualizing the body and its anatomy through the application of the clinical gaze.

In this thesis, I explore an alternative 'vision' of Western medical culture, emphasizing the important role which sound and listening have played and continue to play in the production of medical knowledge. At the same time, I attempt to distance myself from the tendency within anthropology to examine the senses as discrete comparative categories, allowing cultures to be contrasted on the basis of generalized sensory stereotypes (for instance a 'visualist' West versus ~~a~~ an auditory or olfactory non-West). As Stoller (1989) and Serematakis (1994) suggest, it seems nonsensical to work within any structure which overlooks the fact that the members of

any society use all of their senses in overlapping and integrated ways, although there may be contexts in which a particular type of sensory knowledge acquires special significance. This thesis does not seek to establish listening as a 'pure' sensory category, but explores the manner in which, often in interplay with the other senses, hearing has been and continues to be used in the accumulation of medical knowledge.

Sound and the body

Stephen Feld urges that the Kaluli use the sounds which dominate their rainforest environment to structure their concepts of place and space. He suggests that they employ an 'acoustemology', a system in which 'sonic presence and awareness [are] central to making sense, to knowing' in their concept of emplacement (1996: 97). Taking up this idea, I examine auscultation as an acoustemology, a means through which doctors and the medical students they train use sound in accumulating knowledge of the patient. Listening with the stethoscope represents a practice in which physicians become acutely sensitive to the acoustic qualities of the body. Sound is essential to their generating knowledge of its interior. Auscultation, then, might be understood as creating an 'acoustemology of the body'.

The acoustic construction of the body which I argue is created through auscultation has important implications for the manner in which both the body and sound are conceptualized. Through auscultation, sounds, widely perceived in the West to be the subjective impressions made by nebulous and wisps of air, become objective, empirically verifiable clinical signs. They indicate the physiological condition of the heart valves and the haemodynamics of the blood as it flows through them. Sounds may be used to examine the materiality of the living body, describing its forms and textures to the physician.

Following Foucault, however, I suggest that objective knowledge is constitutive of, and becomes integrated within subjectivity (1973: 198). Sounds as clinical signs can also become a distinctive feature of a patient's experience of his or her own body. I demonstrate the manner in which, for some patients, auscultation is perceived to indicate the permeability of their bodily boundaries, allowing the interior to seep out and mingle with the external world. The sounds of the body are understood to constitute a disturbing and unsettling challenge to the integrity of the self. In other cases, patients become disturbed by the noises which they hear emanating from inside their own bodies, and which they understand to indicate

underlying medical problems. I point to contexts in which listening becomes part of the way in which patients experience themselves as sick or ill. Sounds may have an important role to play in illness experience, and in the suffering and anxiety of patients, as well as in diagnosis.

In his book *The World is Sound*, Joachim Berendt poses the seemingly absurd question: 'Are we ourselves sound?' (1985: 18). The example of auscultation throws an interesting light on this question. It suggests that sound has become important both in the way in which doctors gather information about 'the body' in a generalized sense, and the way they draw conclusions about a 'the body of a specific patient'. At the same time, by providing examples of contexts of 'auto-auscultation', in which sounds become implicated in self-perception, I argue that listening is also an important way of generating knowledge of one's own body, the '*my* body'. Through my analysis, Berendt's apparently ridiculous question takes on sudden relevance.

An ethnographic ear

As I have suggested, my perspective on auscultation is created partly through learning to listen myself. Listening was an important methodological strategy within my fieldwork. In his introduction to *Writing Culture*, James Clifford points out that: '[m]uch has been said, in criticism and praise, of the ethnographic gaze. But', he asks, 'what of the ethnographic ear?' (1986: 12). In posing this question, Clifford draws attention to a perceived need for ethnographers to engage with issues of poly-vocality, becoming aware of the multiple 'voices' which are present within their texts. These voices are too often claimed or drowned out by a single authorial voice. The 'ethnographic ear' to which Clifford refers, then, is a textual one; it should be honed, alert to those many vocal strands which in concert make up an ethnography. But other anthropologists have considered the 'ethnographic ear' on a far more pragmatic level, underscoring the importance of listening in anthropological fieldwork. For instance, Cohen and Rapport point out that:

> Clifford Geertz's famous answer to the question, 'What does the anthropologist do? He writes', is a curiously thin description of what actually happens. Before they write, they do all those things which we gloss in the cliché of participant observation. Above all, they listen…we may not listen with sufficient care…we may listen somewhat selectively. Notwithstanding

> these failings, we try to listen, and to make sense of what we hear; and until we have and can show good reason for doing otherwise, we take what we hear as the expression of the speaker's consciousness (1995: 12).

For Cohen and Rapport, then, the 'ethnographic ear' is a lynchpin of anthropological methodology and a reliable channel of knowledge. For them, the ethnographic ear is a 'verbal ear'. It is alert to the resonances of words and verbal communication. In characterizing the ethnographic ear in this way, Cohen and Rapport consider speech as the key to understanding the most intimate world of other people. Indeed, they consider speech to be 'the expression of the speaker's consciousness' (ibid). What a person says is in some sense a direct translation of his or her lived experience.

This piece of research might be considered to be 'verbally-eared' to an extent. Interviews, both structured and unstructured, were conducted with doctors, patients and medical students alike in order to attempt to understand the meanings which auscultation held for them. However, I remain skeptical of the position seemingly espoused by Cohen and Rapport (1995) and also by advocates of discourse analysis, that words can act as complete signifiers of social and personal experience, or at least, that they present the richest and most versatile means of access to that experience. I anchor my fieldwork in the 'apprenticeship' of student, and his practical acquisition of listening skills.

In his article 'Fieldwork and the Perception of Everyday Life', Jenkins (1994) questions the validity of language as an expression of the totality of cultural action. Jenkins holds that social life must be accessed through lived, rather than simply spoken or related experience. In order to learn about the reality of his or her subject, the ethnographer must attempt to learn 'not by word of mouth but by example and through experience' (ibid: 436). My research moves away from Clifford's 'textual ear' and Cohen and Rapport's 'verbal ear', exploring the possibilities of an 'embodied ethnographic ear', a possibility which is consistent with Jenkin's epistemological position. Participant observation in 'learning the ear' enabled me to understand how auditory knowledge was applied, reproduced and disseminated in the medical setting through gaining a grasp on the embodied nature of medical skill. This approach to research into medical knowledge is similar to that undertaken by Byron Good (1994), who accompanied a cohort of medical students through their first year at Harvard medical school. He felt the method helped him understand the world which the medic

must come to inhabit, and granted him an insight into how medical practice is enacted.

Teaching and Learning

During my fieldwork, I worked closely with groups of students who were learning auscultation as part of their medical training. In the thesis I document the difficulties which learning to listen through the stethoscope presents, and discuss the nature of the auditory focus which it requires. But while my research is organized around concepts of the senses within anthropology, and situates auscultation as a kind of 'auditory knowledge', I argue that the acquisition of that knowledge is integrated within a wider project of learning.

The students had been obliged to learn a great deal in 'formal' contexts such as lectures and seminars in the first and second years of medical school. They would be required to learn in some formal contexts for the rest of their training and even beyond qualification. In the third year, however, as I have explained, learning for the students generally took place within a more participatory structure. They were required to absorb knowledge through practice, performing examinations and minor procedures. Training involved a form of apprenticeship, taking on the new skills and techniques which the students would use in their medical practice in years to come. They learned by watching ~~an~~ imitating, as well as following the explicit guidance of the teaching doctors.

The students were implicated in what Lave and Wenger refer to as 'peripheral participation', learning by being at the edge of a particular community of practice, participating in minor procedures and rehearsing the techniques which they would one day use in making diagnostic decisions and in organizing treatment (1991: 53). At the same time, in participating in medical practice and mastering its defining skills, they were moving ever closer to, or establishing an evolving form of membership within, the medical profession. As Lave and Wenger suggest, learning involves the construction of identities (ibid). Through their training the students were being inculcated with the patterns of thought and behaviour which the medical profession has created and through which it perpetuates itself. The students were engaged in what Bourdieu terms the acquisition of the 'dispositions' which structure the way in which members of the medical profession think and act (1980: 53).

Auscultation serves to instill in students a sense of how to behave in the presence of patients, and of how to interact with them. Medical students developed a tacit understanding that in listening to a patient they were expressing their knowledge, experience and expertise relative to the patient, and that patient was (albeit unconsciously) giving his or her assent to being examined and to becoming the subject of the students' attention. Auscultation created a context in which the 'habitus' of the doctor, and that of the patient with which it is intertwined, could be learned and refined by the students, often implicitly, through instruction and demonstration by the teaching doctors (ibid).

Auscultation, then, is heavily implicated in the production and reproduction of the relationships between participants in a medical interaction. It creates a firmly-entrenched, practical understanding of the dynamics of the doctor-patient relationship. Auscultation is thus shown to play an important role in expressing and maintaining social structure on the wards of St Thomas' Hospital, and by implication, medical institutions more generally. The thesis therefore underscores the importance of listening in the organization of social life.

Doors of time

'Open doors of time, open hospital doors' writes Walt Whitman ([1900] 2003: 117). Throughout my fieldwork at the Edinburgh Royal Infirmary in 2000 I was speaking to patients who had been and would be in hospital for long periods. Many of them were bored, and were looking for distractions and ways to pass the time. They were waiting – for tests, procedures, developments, for improvements in their health which would allow them to go home, and so they were happy to talk to me, often for hours when they had no visitors. Also, I could reasonably expect that the patients would be found in the same beds on the same wards the following day. Conversations could be left and picked up, paused and continued. But I experienced time differently at St Thomas'. It was a bigger, busier hospital. I still encountered patients who had been in hospital a long time, and who were waiting for tests and operations, or waiting for the doctors to fix dates for tests and operations so that they could begin waiting. For some of them, time was moving slowly. But even so they did not tend to stay in the cardiology wards for long. A patient I spoke to one morning might be gone, either home or moved to a different ward, the same afternoon. Others, brought to St Thomas' from regional hospitals, might stay for one night and then be transferred

back to their local hospital until their operation date. It seemed to be unclear to everyone, particularly the patients themselves, exactly how long they would stay in one place. For me as a fieldworker there was a semblance of chaos which, I came to realize, was in fact a complex network of schedules and timeframes negotiated between different authorities within the hospital.

I also found that the doctors' work at St Thomas' was heavily time-structured, and that as a consequence there was a near constant need to move forward, to keep up, to hurry. The medical students were under less pressure, and I was able to do a good deal of 'hanging around' with them both in and outside the hospital. But, along with the firm, following the consultant down the corridor like hungry geese behind a farmer, I almost had to run to keep up. The corridors echoed with the sound of quick footsteps beating a lively andante. Bleepers went off and doctors would hurry away to answer them. The pace was quick.

The consultations which I observed also tended to gather surprising momentum. Doctors were able to deal with some patients in a matter of a few minutes, though of course others required longer. At one clinic I attended the registrar showed me the stack of folders full of notes, each one representing a patient she would have to see in the next two hours. It was obvious that she would have to work at speed. During teaching sessions, too, we would often visit patients to examine particular signs or practice examinations, but we would tend to be introduced to the patient, do the examination and move on.

Though I spent a considerable amount of time with some doctors, and though, for instance, several patients might be late for a consultation creating a space for a long conversation, I felt I should create scope for more relaxed interactions, allowing, as it were, time for the tape to spool. But while happy for me to accompany them on ward rounds, or attend consultations, due to time pressures doctors were unwilling to schedule thirty minute meetings for interviews. While enjoying a chat before a lecture or while grabbing a coffee afterwards, they were reluctant to actually make space to let me know their thoughts on such-and-such. I began to realize that working against the pace I encountered would be like trying to paddle against a strong current, and that my methods would have to fit into the working patterns of the doctors.

While hurrying up and down the corridors as I often did, I noticed that the linoleum was covered with scuff marks, short patches and streaks of black, brown and grey, layered and patterned like an impressionistic painting. It occurred to me that these had been formed by tiny moments of contact and friction between people's

shoes and the floor as they walked to and fro with their own particular directions and purposes. These little incidents of rubbing, of frottage, had combined to produce an impression, a representation of sorts. It occurred to me that my fieldwork method would have to be constructed along similar lines (or patches), not through long periods of sustained interaction, but rather through repeated or incidental meetings, moments of contact – like the scuff marks on the floor – these were what the fast-moving corridor world created. Perhaps this approach is suitable to many modern western working environments where the anthropologist is trying to engage with people whose work puts them under considerable time pressure. Scuff marks on the corridor floor provide the map, the template for fieldwork.

My research methodology, then, was adapted to suit the specific environment which the hospital represents. In considering fieldwork as a collection of brief, if focused, moments of contact, I was once again struck by the analogy of auscultation. At consultations, the use of the stethoscope invariably created short spells of intense concentration, of careful listening. My fieldwork among doctors was conducted in a similar manner.

Synopsis of chapters

While anthropologists have tended to engage with the medical visualization of the body, I argue in chapter one that, in fact, doctors have for millennia been resourceful in drawing on body sounds as well in order to assess the condition of the bodily interior and ultimately, make diagnoses. In the early nineteenth century, however, the stethoscope and auscultation became part of a wider medical enthusiasm for anatomy. Sounds were used in investigating the effects of disease on the physiology of the body such that the patient's illness narrative, previously the focus of diagnostic efforts, could be bypassed. The doctor went from listening to the words of the patient to listening to his or her sounds. This emphasis on clinical signs and the physiological changes brought on by disease has become a definitive characteristic of Western medicine. I go on to argue, however, that historical perspectives on auscultation are incapable of accessing the manner in which auditory knowledge is generated. Auditory knowledge can only be acquired and exercised practically and experientially. Critiquing historical accounts, I set up the thesis as providing an exploration of the lived dynamics of auscultation.

In chapter two I show that as well as defining the relationship between doctors and patients, the stethoscope is also used in the mediation of relationships between doctors themselves. Drawing on the work of Clifford (1985) and Hoskins (1998) and adopting an 'anthropology of objects' or a 'material culture' perspective, I examine the manner in which the exhibition of stethoscopes is used in the articulation of seniority among doctors. Learning the social hierarchy of stethoscope ownership is also an important dimension, for the students, of learning their place within the hospital. But the stethoscope is displayed for the most part through its usage, application and movement. The stethoscope, in being handled by the doctor, allows for the articulation of his skill and expertise which is impressed not only upon students and other doctors but also upon patients. Auscultation therefore articulates the relative knowledge, experience, and status of the doctor vis-à-vis the patient. I argue that the stethoscope allows for the production and reproduction of the bodily dispositions or 'habitus' of all participants in the clinical interactions which I observed, articulating the positions of doctors, patients and medical students respectively (Bourdieu 1980).

The third chapter details the medical students' introduction to auscultation and the difficulties which using the stethoscope initially presents. They struggle to hear the heart sounds which they are told to listen for, and are obliged to practice, honing their auditory attention and focus. Eventually, however, students begin to acquire an understanding of the heart's acoustic anatomy. Stephen Feld creates the concept of 'acoustemology' to refer to the Kaluli's system of acoustic engagement with their environment. In this chapter, however, I argue that auscultation creates an acoustemological engagement with *the body*, introducing sound as a dynamic of corporeality. An 'acoustemology of the body' allows for the possibility that the body may be constructed through listening and sound. Importantly, this acoustemology is realized in turn through the development of a new embodied acoustic knowledge for the students.

In chapter four I seek to contextualize what until this point has arguably been a somewhat rarified vision of auscultation. I describe auscultation's place in relation to the medical examination more widely, allowing the practice to be seen, not as a kind of isolated auditory phenomenon, but as a technique which is enabled through sensory interplay and the cross-referencing of different types of medical knowledge. But I move on to explore the perspective of a deaf medical student named Nirit. She gives her insight into the importance of listening in the sensory economy of medicine.

Being deaf severely restricts her ability to participate in many medical interactions, including, perhaps surprisingly, x-ray meetings and surgery. Also, although she learns to auscultate, she lacks the necessary confidence in her hearing to specialize as a cardiologist. Moreover, Nirit feels her use of hearing aids will create a lack of trust among her patients, jeopardizing her relationships with them. Evidently, the chapter argues, it is not enough to position acoustic knowledge as simply a product of a fusion or synthesis of other types of sensory knowledge. Nirit's situation highlights interesting experiential specificities of hearing which emerge in a medical context. In particular, it illustrates the importance of listening for the doctor in the creation and maintenance of relationships with patients.

Chapter five examines the role which patients are obliged to play in medical education. Drawing on Foucault (1973) and Richardson (1987) I explore how historically, in return for their treatment, patients would be required to make themselves available for teaching sessions. This subtly violent 'tyranny of the gift' still applies at St Thomas' today. Patients with good clinical signs are most often chosen to become the focus of teaching. In classes for auscultation, patients with interesting heart sounds in particular become 'celebrity patients' on the wards, being listened-to as often as thirty times in a day. Although many enjoy the attention, they are conscious that they are objectified through auscultation, and have become simply 'things to be listened to'. Students also feel conscious that they are 'reducing patients to their heart sounds'. Introducing analysis through the anthropology of the senses, I point out that objectification has tended to be regarded as an intrinsic, negative consequence of *visual* perception. However, through the instance of repeated auscultation, the imputation of inherent properties to particular senses is shown to be misguided. In this context, objectification takes place as the consequence of auditory practice.

In order to learn auscultation, students are encouraged to listen to as many different people as possible, including friends and relatives. In doing so, they become conscious of the sounds which are inside *everyone*, not just hospital patients. Importantly, the students also begin to listen to themselves (a phenomenon known as auto-auscultation) meaning that they start to relate to their own interiority, as well as patient interiority, in terms of sound. In this sixth chapter I introduce other instances of auto-auscultation, this time in which *patients* begin to be able to hear their own body sounds, either through the doctors allowing them to listen to themselves using stethoscopes, or through rarer instances in which those with serious heart problems

become conscious of their own heart sounds during normal life. I argue that auto-auscultation brings about the acoustic imagination not of 'the body', but the lived body, 'ones own body' or 'my body'. I suggest that sound may therefore be understood to be an important aspect of embodied experience, creating, for some patients, an acoustic engagement with their illness.

Chapter seven examines some of the perceptual problems created by auscultation. Despite its capacity to provide objective clinical signs, for example, listening essentially takes place in isolation, and because there is little vocabulary allowing for the effective analysis of sounds it is difficult to generate consensus over what has been heard. At the same time, auscultation rarely provides proof or evidence of a particular finding. I contrast these aspects of auscultation with the increasingly popular diagnostic technique of echocardiography or cardiac ultrasound, a powerful technology which allows for the heart and its functioning to be seen in great detail and permits the flow of blood across the valves to be quantified. I suggest that the use of echocardiography threatens to render auscultation obsolete, or reduce it to merely a cursory examination, a type of 'triage'. The authority of the echocardiogram is naturalized as embodying medicine's cultural preoccupation with gazing as a route to knowledge. Importantly, though, the authority of auscultation and auditory knowledge was also naturalized prior to the introduction of echocardiography. The sensory dynamics of authority, being culturally determined, are subject to change. In Western medical culture, however, I argue that the validity of the auditory knowledge represented by auscultation is currently under threat from diagnostic techniques which fulfil the ideal of medicine's visual culture.

In chapter eight I explore the discourse surrounding the death of the stethoscope. I suggest that stories of the demise of the stethoscope circulated within medicine are a fable, a way of warning about three potentially negative developments. Firstly, they refer to a decline in listening skills and clinical skills more generally due to an increasing dependence on 'hi-~~tec~~ tech' diagnostic technologies, in particular, echocardiography. Secondly, the 'death of the stethoscope' warns of a decline in the bedside manner, and the skills of doctors in relating to their patients as human beings rather than cases of a particular disease, again due to the use of technologies which are perceived to create clinical detachment and distance between doctor and patient. Thirdly, the discourse of death of the stethoscope refers to a wider anxiety over deskilling among doctors. The stethoscope, then, has come to stand for the doctor as a skilled, attentive and valued practitioner. While the instrument itself may ultimately

be rendered obsolete by changing patterns of disease and diagnosis, then, often repeated stories of the stethoscope's demise serve to warn of the disappearance of valued qualities which the doctor is imagined to bring to interactions with the patient. The stethoscope is shown to stand for an ideal of the doctor held by the medical profession itself.

Chapter One: Inventing the Stethoscope

This chapter introduces the manner in which listening has become important within biomedical practice. It examines a drive observed among doctors in the past to develop a means of listening to and understanding the sounds of the body, aiming to incorporate them in diagnosis. Medicine, it is argued, has long recognized the acoustic qualities of the human body. The invention of the stethoscope represented a 'resounding' success in the endeavour to harness these. But the stethoscope also represented part of a more general movement within medicine towards the anatomization of the human body. The auditory perspective which the stethoscope granted the doctor meant the interior of the body could be anatomized through its sounds. At the same time, the doctor was no longer dependent on verbal accounts of illness and descriptions of symptoms from the patient. He could make judgments on the basis of his own perceptions alone. As a consequence, the stethoscope became integral to an important social re-organization within medicine. The doctor acquired the perceptual distance of objectivity, and was able to approach the patient as a diseased body, a site of medical interest. The patient became the object of, rather than a collaborator in, diagnosis. This anatomical approach to disease, neatly symbolized by the stethoscope, has become a defining dynamic of doctor/patient interactions within modern medicine.

History lessons

When I first arrived at St Thomas' and walked around the building through the long corridors which connected its various areas and departments, I encountered it as a 'whitescape', a seamless, continuous, empty and uninterrupted expanse of white (Batchelor 2000: 9). It would be more accurate to say that the white seemed uninterruptible rather than uninterrupted. As Batchelor writes, 'uninterrupted might mean overlooked, passed-by, inconspicuous, insignificant. Uninterruptible passes by you, renders you inconspicuous and insignificant' (ibid). I certainly did feel both these

things as I walked along those blank corridors through which a huge volume of humanity passes every day.

As time went by I began to grow more familiar with the hospital. Attending teaching sessions and clinics helped me to find my bearings and I began to develop a better idea of where I was going. The students showed me new places. There was a library attached to the hospital, and a pub. I also began to recognize other people, faces in the crowd who became minor characters in my day-to-day life at the hospital. There was a man I would see on most days who wore a yellow high-visibility jacket with 'FIFTY YEARS OF SMOKING PLEASURE' written on the back in felt-tip pen. There was a lady who worked at the hospital as a nurse and who spent her lunch time and an hour when she came off shift collecting money for the hospital's Lupus unit, rattling tins and selling cards. There was a pair of identical twins in wheelchairs who would ride up the corridors a little too quickly, slightly frightening the passers-by and forcing them to dodge out of the way. Often, at the main entrance to the hospital, there would be a man dressed as a scrotum collecting money for research into male cancers. As I frequently had to go to Dr Coltart's office to do bits of administration, for instance obtaining the signatures necessary to get a password to be able to use the medical school computers, I came to know Dr Coltart's secretary quite well. She was in her sixties, and told me a lot of stories about her childhood in Australia. She had a mug with 'It's Just a Job' written on it. The hospital then, began to become familiar, and came to be peopled by characters I knew; it began to acquire a personal history for me.

Dr Coltart always seemed keen to create a sense of the history of the hospital for the students in his classes. For instance, he told them that there had been *a* St Thomas' hospital at London Bridge, where Guy's Hospital is now, for centuries, it having first been mentioned in literature in 1215. The area had become known as St Thomas' because it had been the point at which pilgrims gathered each year to begin the pilgrimage to Canterbury and the Cathedral where St Thomas Becket had been murdered on the altar steps. Centuries later, St Thomas' had been moved to its present site in Lambeth after a railway company expressed interest in building on the site in Southwark. One of those advocating the move was Florence Nightingale. A short stay, general surgery ward at St Thomas' is now named after her.

One cardiothoracic ward we often went to was called the Doulton ward. Dr Coltart explained that Sir Henry Doulton had been a famous manufacturer of pottery, and had owned a factory in Lambeth. Indeed, Royal Doulton remains a familiar brand

name. Sir Henry Doulton's son had been successfully treated at St Thomas' and as a gesture of gratitude Doulton endowed the hospital with land and money. He also gave the hospital several large and beautiful china illustrations of popular children's stories such as Little Red Riding-hood and Snow White which still adorn the walls. We were told that these pieces were valuable, and that several attempts had been made to steal them over the years.

Dr Coltart also enjoyed telling us about the famous literary figures who could be linked to the hospital. A blue plaque at Guy's campus states that the poet John Keats trained as an apothecary at Guy's Hospital, joining in 1815. The writer Somerset Maugham studied medicine for six years at St Thomas', though he gave up practising medicine following the success of his novels. Arthur Conan Doyle, creator of Sherlock Holmes, had been a medical student at Edinburgh rather than St Thomas', but he had later lived in London. Dr Coltart pointed out that, in order to develop the character of Sherlock Holmes, Conan Doyle must have had a remarkable eye for detail and a love of problem-solving, and that these were important qualities in any doctor.

During teaching sessions Dr Coltart would also ask us: "Who was the first female medical student?" or "Who carried out the first heart transplant?" When we didn't know the answers we would be required to find out and give a short presentation at the next class. He told us about important and groundbreaking medical innovators, Alexander Fleming, for instance, who discovered penicillin at St Mary's Hospital in London, Frederick Banting and Charles Best, who discovered insulin and its potential for use in the treatment of diabetes; Best, Dr Coltart reminded us, was a student at the time he became involved in this important work. He was later awarded the Nobel Prize for medicine.

I felt that Dr Coltart intended these stories to instil in the students a sense of medicine's immensely rich heritage. The litany of famous names seemed to add to the prestige of being a medical student. I felt the stories encouraged us to feel a sense of kinship with these historical figures. They also seemed to be inspiring stories, suggesting that students were capable of achieving great feats *as students*, like Best or Keats, who produced work which has entered the canon of English literature while still a trainee apothecary. Another quality of these stories was that they referred to people credited with acts of remarkable creativity, vision or discovery. The stories suggest that medicine is a creative discipline, and that the students themselves should aspire to great acts of creation or discovery.

One day, while playing cards during a break between classes, the firm began discussing the reasons for Dr Coltart's enthusiasm for historical nuggets. Tom speculated that when Dr Coltart had been a medical student (at St Bartholomew's, also known as Bart's Medical School in London), the history of medicine was an integral part of the curriculum. However, huge advances had been made since then (for instance in genetics and molecular medicine), and there was now much more medicine for students to learn, so that Dr Coltart felt that the history of medicine had taken a back seat in the curriculum. Sue Ann pointed out that the characters in his stories were, with the exception of Florence Nightingale, stories of Great Men. Agreeing with her, Diane and Mary said how conscious they both felt that "medicine had been a man's world". There had not even been female students when Dr Coltart was at medical school. Diane suggested that the future of medicine would not be so clearly gendered. In her own cohort, females made up more than half the medical student population.

The Invention

During one of our first classes Dr Coltart asked "Who invented the stethoscope? I'll give you a clue, it wasn't Steth". None of us knew the answer. Dr Coltart went on to tell us the story of how one day in 1816, a young doctor named Rene Theophile Hyacinth Laennec was walking through the gardens of the Louvre in Paris. The case of one of his patients, an obese young woman who was suffering from a heart condition, was playing on his mind. He had been unable to learn anything about her problem from the accounts she gave. In those days doctors used the patient's account of his or her sickness as a basis for a diagnosis, so Laennec's inability to glean anything from the young woman's account represented a serious problem. He had wanted to use a practice known as 'immediate auscultation', which involved pressing an ear onto the patient's chest, in an attempt to hear the sounds of the heart, but this patient was overweight and Laennec knew that the layers of fat around her chest would make immediate auscultation useless. While he was wondering how he could examine his patient, Laennec saw a group of children playing around a log which was sitting on top of a pile of rubbish. The children at one end of the log were pressing their ears to the wood. They seemed to be able to hear the knocks and scratches made by the children at the other end. The children reminded Laennec that sound could travel through wood. He returned immediately to his patient

at the Necker Hospital and rolled a book into a tight cylinder so that it resembled a log. Pressing it to the patient's heart, he found he could hear her heartbeat and breathing clearly.

Like Dr Coltart's stories, this account of the invention of the stethoscope depicts a man responding to a flash of inspiration, and in doing so establishing himself as a medical pioneer, creating a new and powerful technology. There is a sense in which Laennec is imagined breaking into previously unknown, uncharted territory with his stethoscope. He moves into a new diagnostic frontier which incorporates the sounds of the body, drawing them into medical practice as a diagnostic resource.

I heard Dr Coltart repeat this story of Laennec's invention of the stethoscope to other groups of students, and indeed it is well-established in medical literature. A version appears in Marks' (1972) *The Story of the Stethoscope*, complete with illustrations. In their contribution to the *Postgraduate Medical Journal* entitled 'The Stethoscope: some preliminary investigations', Welsby, Parry and Smith refer to the manner in which Laennec 'had observed two children sending signals to each other by scraping one end of a long piece of solid wood with a pin, and listening with an ear pressed to the other end' (2003: 695). Others writing on the invention of the stethoscope are less specific as to what took place. Reiser states that Laennec simply 'recalled the well-known acoustic phenomenon: that sound was augmented when it traveled through solid bodies, as when a scratch noise made at one end of a piece of wood can be heard at the other end' (1997: 828). He does not specify what it was that caused Laennec to make this recollection. Fleming goes as far as to declare that '[t]here is… no documentary evidence to support the attractive traditional story that it was the sight of children at play, scratching one end of log of wood and listening at the other in the courtyard of the Louvre, which first gave Laennec the idea of mediate auscultation' (1997: 88). However, while Fleming aims to discredit the myth, he in fact only reproduces and propagates the same 'attractive traditional story' by referring to it in such detail.

The story of Laennec's invention of the stethoscope, then, is firmly established in medical tradition. Although, as Fleming suggests, there may not be any real documentary evidence to support it, the story is circulated and regarded as a realistic account of what took place. It has become a kind of creation myth for an everyday piece of medical equipment. There is, however, a counter-story of the stethoscope's invention. It was suggested to me by one doctor that the stethoscope was in fact invented and first used in ancient Egypt. Researching this, I learned from the internet

that Dr R. A. Umar Shabazz Bey, who describes himself as 'a Muurish American descendant of the Ancient Ones' and is creator of the World Renown Black Inventions Museum, claims the stethoscope on behalf of indigenous African people as an Egyptian invention (2006: 2). Another website produced by *Black Collegian Online* also features the stethoscope on its list of 'black inventors and inventions' (2006: 16). The inventor's name is given as Imhotep, chief minister to Djoser who ruled Egypt from 2630–2611 BC. Imhotep seems to have been a talented man, famous as priest, sage, poet and astrologer as well as doctor.

In an article entitled 'Laennec, re-inventor of the stethoscope?' Martinet *et al* point out that '[a]ccording to our common medical culture, some facts are simply unquestionable, for instance Laennec invented the stethoscope. But', they ask, 'was he the first one?' (1998: 1534). They document a visit to the Egyptian temple of Kom Ombo, a renowned medical care centre in the pre-Roman era. Observing hieroglyphics and basreliefs detailing medical advances, they noted the presence of two instruments, one resembling the monaural stethoscope invented by Laennec. The other, to the amazement of the visitors, resembling the modern stethoscope with flexible tubes which the writers speculate were made from woven papyrus, and which led to ear pieces. They describe the manner in which their guide stated unequivocally that the stethoscope was invented in Egypt, and suggest that Laennec's discovery was a separate rediscovery of a much older instrument. Martinet *et al* use this idea to ask what current medical documents stored on CDs and video tapes might say to touring doctors in the distant future.

I am not suggesting that Martinet *et al* reveal 'the truth' about the origins of the stethoscope. In any case, the authors seem to be suggesting that the same instrument might have begun being used at two different points in time in two different places. There is not, as far as I can see, any suggestion that Laennec came across this Eygptian technique one day and then passed it off as his own invention. The account does not disprove the story of Laennec, but exists alongside the traditional story, adding mystery and intrigue to the origin of the stethoscope. The Egyptian story allows medics to imagine auscultation as a practice established and practised by visionary figures thousands of years ago.

In his book *Science in Action*, Bruno Latour (1987) introduces his concept of a 'black box'. A black box is a finished final product, not necessarily a tangible object (though some black boxes are: Latour uses the Eagle computer and the Diesel engine as examples) but also an idea or theory which has been accepted as fact, for instance,

that strands of DNA form the structure of the double helix or that neutrinos are produced by the sun. Models, for instance of the economy or the cosmos, which have gained widespread acceptance might also be described as black boxes. Latour is interested in how boxes are formed, closed, and eventually become 'black' through people confirming them, incorporating them in everyday usage, thought and belief. In short, Latour seeks to examine the manner in which scientific facts are produced and reproduced *by people* – he examines their social construction. For Latour, scientific ideas only become facts when they are accepted and used. He writes: '[b]uying a machine without question or believing a fact without question has the same consequence: it strengthens the case of whatever is bought or believed, it makes it more or less of a black box. To disbelieve or, so to speak, 'dis-buy' either a machine or a fact is to weaken its case, interrupt its spread, transform it into a dead end, reopen the black box, break it apart and reallocate its components elsewhere. By themselves, a statement, a piece of machinery, a process, are lost' (ibid: 29). Of course, Latour recognizes that he is dependent on his reader to believe or 'buy' this statement of his, and he accepts that its fate (whether or not it becomes a black box) is in the hands of his readers.

In the context of Latour's argument, the stethoscope certainly constitutes a 'black box'. It is a piece of equipment which has been accepted to the extent that it is now a 'given' of medicine. The stethoscope has been reproduced, 'bought' and sold on a large scale. Latour explores some other inventions or discoveries which have now become black boxes. He describes, for instance, the telephone, smallpox vaccine and the chemical element Polonium. He notes that these inventions or discoveries are each credited to individuals, Bell, Pasteur and the Curies respectively. But Latour argues that a complex network of people was in fact involved in the development and realization of these black boxes. He notes the roles of colleagues, funding agencies, sponsors and powerful allies, and emphasizes the importance of those who consume objects and ideas in ensuring that they are accepted and confirmed. 'The initiators', he writes, 'are only a few elements in a crowd' (ibid: 134).

Latour opposes himself to 'diffusionist' visions of the spread of objects and ideas. Diffusionists, he argues, envisage ideas and objects moving almost of their own volition from the starting point of their discovery by a single person. For Latour, diffusionists neglect the role which networks of people play in establishing and popularizing things and ideas. He writes:

Diesel, as we saw, did not make everything of the engine that bears his name. Pasteur is not the one that made asepsis a workable practice, or stopped millions from spitting, or distributed the doses of vaccine. Even the most fanatic diffusionists have to grant that. However, this does not bother them. Going further into their fantasies, they invent geniuses who did it all, but only

> 'in the abstract', only 'seminally', only 'in theory'. Sweeping away the crowds of actors, they now picture geniuses that *have ideas*. The rest, they argue, is mere development, a simple unfolding of the 'original principles' that really count. Thousands of people are at work, hundreds of thousands of new actors are mobilized in these works, but only a few are designated as the motors that move the whole thing (ibid: 134-5 original emphasis).

In the diffusionist vision, society is not a network of social actors, but 'a medium of different resistances *through which* ideas and machines travel' (ibid: 136 original emphasis).

The history of the invention of the stethoscope as recorded in medical literature is written in this diffusionist vein. Laennec is widely heralded as the inventor, and the device itself is imagined as having spread, apparently on its own, throughout the world of Western medicine. Historians have provided what Latour refers to as the 'genealogies and coats of arms' which he views as a secondary mechanism of accounting for an object's movement through society (ibid: 134). Writing at the present time, it is difficult to construct a realistic sense of how the stethoscope might have been created, accepted and circulated by a large network of people. I hope to show below, however, the manner in which Laennec was part of a much wider effort on the part of doctors and medical men to draw on the sounds of the body in order to make diagnoses. Laennec, credited with having produced the definitive instrument for listening to the body, seems to have picked up the cause rather than fathered it. He built upon the work of others. However, the history of efforts to listen to the body is, like the story of the invention of the stethoscope, carefully delineated in medical history, and so is defined and reproduced by medics themselves in a way which, once again, connects supposedly single originators and innovators with other 'men of genius'. I hope, however, that the thesis more generally will show how the stethoscope and the knowledge of its application are conveyed from one actor to another through a social network which here consists of Dr Coltart, his students, and the other teaching doctors involved in their education. As it is

circulated in St Thomas' today, however, the story of the invention of the stethoscope constitutes a hagiography of Laennec. It frames an ideal, a vision of intelligence and resourcefulness which Laennec exemplifies in his approach to diagnosis. By telling the invention story, Dr Coltart connects his students to a spirit of pioneering and discovery which is imagined to underpin medical practice.

Immediate auscultation

The story of Laennec's invention of the stethoscope refers to his decision that pressing his head to the patient's chest in order to hear her heart would be pointless. The girl in question was overweight and the sounds would be muffled by fat. But for Laennec to have been familiar with the technique known as 'immediate auscultation' it must have been well-established at the time in which he was practising. Others must have been listening to the body long before Laennec thought to use an object to conduct the sounds of the heart.

It has become another medical 'black box' that Hippocrates, who is widely held to be the 'Father of Medicine', was the first to discover that by pressing his ear against a patient's side he could tell from the sound he heard whether or not the patient's lungs were healthy (Marks 1972: 19-20). Hippocrates is also thought to have practised a technique known as 'succussion' when attempting to assess the condition of the lungs. This involved shaking the patient and listening for the splash of fluid, a sound now known as the 'Hippocratic succussion splash' (Fleming 1997: 87). Succussion seems to have received little use as a medical technique in later years, perhaps because it seems counter-intuitive to vigorously shake anyone feeling fragile because he or she is unwell! Some 'splashing' sounds are still recognized, however. The sloshing normally heard when the stomach moves immediately after a large liquid meal, for instance, is known by doctors today as an 'abdominal succussion splash'. It is taken as a sign of gastric retention or obstruction if heard at times other than after meals. Contemporary medical students also learn that when a hernia allows water to leak into the thorax it is possible to hear a 'succussion splash' when the patient's torso moves.

Hippocrates, then, is credited with being 'the first' to recognize, though immediate auscultation and succussion, that the sounds produced by the body might offer clues as to the health of its interior. He established a relationship between sounds and the anatomy of the body. For Fleming, however, it was Robert Hooke, writing in

the early 1700's, who first truly appreciated the huge scope of auscultation's diagnostic potential when he wrote: 'Who knows, I say, but that it may be possible to discover the Motions of the Internal Parts or Bodies…by the sound they make' (Hooke cited ibid). The idea that the 'Motions of the Internal parts or Bodies' might be discerned by their sounds has huge implications. It suggests that each part of the body, its actions and movements, might be signified by particular sounds, that each constituent organ and structure might make characteristic noises which would render it intelligible to the ear. In *The Story of the Stethoscope*, Marks demonstrates the excitement produced by this idea: 'Different things make different sounds. The air going in and out of the lungs makes one sound. Blood pumping through the heart makes still another sound. Liquid passing through the kidneys makes still another sound' (1972: 16).

The timing of Laennec's invention of the stethoscope suggests that immediate auscultation was still being used by French physicians to listen to the heart in the early nineteenth century. Fleming argues that the practice was not completely abandoned until long after this time (1997: 87). Indeed, the image below from 1953 of blind doctor Dr Albert Andre-Nast listening to a baby using his ear rather than a stethoscope suggests that immediate auscultation was still found useful in particular contexts and had not completely disappeared from medical practice, more than a hundred years after the invention of the stethoscope, in the mid-twentieth century.

Figure 2: Blind Doctor Albert-Andre Nast using his ear instead of a stethoscope, Chelles, France, 1953. Photograph by Thomas MacAvoy.

But a further technique for using sounds in diagnosis emerged in 1761, when a doctor named Leopold Auenbrugger 'hit upon' the idea of percussion. He was evidently an innkeeper's son, and as a child had learned to test the fullness of barrels by thumping them (Porter 1997: 256). Switching kegs for rib-cages, he observed that if struck with a finger, healthy and unhealthy chests produced different sounds. More specifically: 'a healthy chest sounded like a cloth-covered drum', while 'a muffled sound or one of high pitch indicated pulmonary disease' (ibid). Auenbrugger experimented by injecting water into the chests of corpses, observing that the sound became deadened up to the height reached by the injected liquid. Porter writes that Auenbrugger's work attracted little attention when it first appeared. It was not until after 'physician to Napoleon' Jean Corvisart published a translation of it, and began to apply percussion himself, that the technique gained acceptance. Thereafter it began to be used routinely in the examination of the lungs (ibid: 308).

Percussion remains an important element of the clinical examination, particularly of the chest, in modern medicine. The students with whom I studied were taught that, as Auenbrugger had attempted to demonstrate, percussive sounds are resonant over healthy aerated lungs, and dull over solid organs such as the liver and the heart. Where, for instance, the lung is collapsed the sound is duller, and, in cases where there is fluid on the lung, the sound becomes duller still. During my fieldwork, the students were taught to percuss the lungs by tapping at an upper, middle and lower point on each side of the patient's back and on top of the shoulder. They practised getting a good sound by tapping on walls and other surfaces, as well as their own bodies. Sinclair describes the way in which the students he studied at University College Hospital would practise finding where the supports of tables were by 'percussing out' their tops (1997: 209).

One case in fieldwork demonstrated clearly the way in which percussion can show up a particular problem. During a morning of consultations, an elderly man entered the room accompanied by a woman who introduced herself as his daughter. The daughter explained that she was very worried about her father. He lived in a home for the elderly and she was only able to see him monthly. Over recent visits, however, she thought she had seen a rapid decline in his health. Although he said he did not feel too bad, she felt he was saying this so as not to worry her. The man himself did not offer any comment. Dr Coltart asked him to remove his top things and lie on the couch and said he would examine him. It was easy to see as he undressed that he was thin, and his daughter was visibly upset by this. Dr Coltart conducted a

thorough examination. When he had finished he asked the patient if he would mind if we took turns to percuss his back as he sat forward. The man said he didn't and added jokingly that he "liked an audience". Clearly worried that asking us to percuss meant Dr Coltart had found something serious, the daughter's eyes filled with tears, and I noticed that she looked closely at each of our faces as we percussed the patient's back, searching for any signs that might give away the seriousness of what we heard. When my turn came I pressed the middle finger of my left hand flat against the man's back, knocking on it with the middle finger of my right hand. I percussed at six points down the patient's back. On the left side, a resonant sound was produced, suggesting that the lung was clear and healthy. On the right side the upper percussions were also resonant. The lower percussions on the right side, however, were definitely dull. The contrast with the left side and the upper right was striking, and suggested there was fluid in the right lung. When the man was dressed, Dr Coltart explained to him and his daughter what he had found. The daughter began to cry when Dr Coltart explained that he thought it would be best to admit her father to hospital straight away to remove the fluid and find out what was causing it to accumulate. After they left the consultation room carrying the forms Dr Coltart had given them, he explained to us that he was sure the man had cancer.

Laennec's own writing suggests that he knew of and admired Auenbrugger's work on percussion. He evidently considered Auenbrugger to be an 'ingenious observer' (1846: 2). Percussion was, he felt, 'one of the most valuable discoveries with which medicine has ever been enriched. It has submitted to the immediate judgment of the senses several diseases, previously recognisable only by some general and equivocal symptoms' (ibid). However, he felt it to be limited in terms of its accuracy and reliability: 'we frequently stand in need of a more constant and certain sign than that furnished by percussion' (ibid: 3).

Laennec, as has been established, was also familiar with immediate auscultation, and had tried using it, though with limited success. Because the technique involved such direct contact between the ear and the patient's chest, its best use in his own experience was as a tactile means of discerning the pulsations of the heart. Little could actually be heard with any clarity. Laennec also had other objections to immediate auscultation. He felt it to be 'alike inconvenient to the physician and the patient; its disagreeableness alone often renders it almost impracticable in hospitals' (ibid: 2). It is easy to imagine that in 1816, at a time when public standards of hygiene were low and patients would often have arrived at the

Necker hospital where Laennec practised in the advanced stages of tuberculosis, pressing one's ear to the chest of a sick patient may have been a less than pleasant experience. But Laennec also wrote of immediate auscultation that: 'it can hardly be proposed to females in general, and in some the large size of the mammae presents an insuperable obstacle to its adoption' (ibid). This technique of listening could not be practiced on women because, for a Frenchman in the early nineteenth century, it required an unacceptable level of intimacy.

For Salomon '[t]he stethoscope was born out a desire...to separate the physician from the patient' (2001: 56). She adds: 'many a doctor still wishes for a nice, long stethoscope so as to be as far away from the patient as possible' (ibid: 56-7). Foucault, too, describes the stethoscope as 'solidified distance' (1973: 164). The instrument 'authorizes a withdrawal' (ibid). It allows the physician to adopt a position of removal from the patient. The stethoscope constitutes a material step back in revulsion. It might be argued, though, that while the stethoscope distances doctor from patient, it also holds them in relative proximity. The physician must be within a certain distance of the patient in order to use a stethoscope, and can only be as far away from the patient as the instrument allows. The stethoscope ties doctor and patient together whilst allowing them to move apart. It acts like a tether, the length of which is determined by the length of the stethoscope itself.

For Jonathan Sterne, the significance of the distance which the stethoscope permits between the doctor and patients is perceptual rather than spatial. The instrument makes 'distance between knower and known' (2003: 196). It reflects the doctor's disengagement from all but the body sounds of the patient. The listener can obtain an objective, detached, carefully focused auditory concentration. The stethoscope creates a distinct perceptual space, allowing the doctor to hear better, to operate in 'the quiet rhythmic, sonorous clarity of rationality' (ibid: 215). It is to a more detailed consideration of this perceptual change that I now turn.

Bodies of sound

As has been established above, it is unclear exactly what sequence of thoughts or events actually led to the invention of the stethoscope credited to Laennec. But the discovery of the stethoscope, like other important medical discoveries such as X-rays and penicillin, seems to have been the result of chance event and prescient observation rather than conscientious search and experiment. Nonetheless, in his own

writing Laennec states that he was pleasantly surprised to find how well the first impromptu 'paper' stethoscope actually worked:

> I rolled a square of paper into a sort of cylinder and applied one end of it to the region of the heart and the other to my ear, and was not a little surprised and pleased, to find that I could thereby perceive the action of the heart in a manner much more clear and distinct than I had ever been able to do by the immediate application of the ear (Laennec cited Reiser 1997: 828-9).

Laennec, familiar with immediate auscultation, realized the cylinder offered the prospect of a vastly superior technique. With the benefit of the stethoscope, the sounds of the body would give information as direct as 'the indications furnished to a surgeon' when placing a finger or probe into the body (ibid: 829). The technique of listening with the stethoscope became known as *'l'auscultation mediate'*, auscultation mediated by an instrument.

A number of historians of medicine have observed that the introduction of the stethoscope occurred during a time of change in the profession (Porter 1997, Reiser 1997, Fleming 1997). The fundamental orientation of medical knowledge was shifting, and so, as a consequence, was the relationship between the doctor and the patient. Techniques for investigating illness were beginning to move away from a concern with symptoms as reported by patients, a situation in which 'the doctor was a biographer, the patient a narrator', towards an interest in anatomy and pathology (Reiser 1997: 829). The patient was increasingly a passive object of medical attention while the doctor was an active interrogator of the 'body'. The stethoscope might be considered to represent or crystallize this re-organization of the most fundamental dynamics of medicine.

The new ideology held that doctors should take a more active and practical role in diagnosis, becoming involved in the dissection of dead patients in order to gain a competent grasp of anatomy (Reiser 1997: 828). Richardson (1987) observes a huge demand in the early nineteenth century for corpses to be made available for the purposes of dissection. That Laennec thought of the stethoscope as offering 'indications like those furnished to a surgeon' suggests that he considered the route to true medical knowledge to be through opening up the body, rendering its mysteries intelligible to the senses. The same enthusiasm is implied in the notion of the

stethoscope's providing 'a window in the breast'. The organs become apparent, their previous opacity evaporating to reveal 'the footprints of disease' (Porter 1997: 263).

Laennec's method in developing auscultation was entirely in keeping with the new enthusiasm for anatomy. He would listen to the chests of patients admitted to his hospital, carefully noting what he heard. He would continue to listen as the disease progressed; then, as and when the patient died, would conduct a dissection, noting the physiological effects which the disease had brought about. He correlated his clinical findings with observations made after death. For example, in his '*Case 29: Metallic tinkling in a vast Tuberculous Excavation half converted into Fistula'* – Laennec explains that a fifty-year-old washerwoman, Marianne Levas, was admitted to the Necker Hospital having experienced an acute worsening of the cough from which she had suffered for many years:

> On applying the stethoscope to the antero-superior part of the right side of the chest, as well as under the right armpit, a distinct pectoriloquy was heard. There was likewise observed when the patient coughed or spoke, and especially when she respired, a tinkling similar to that of a small bell just ceasing to ring, or of a fly buzzing in a china vase (1846: 320).

Laennec diagnosed a 'vast tuberculous excavation occupying the whole superior lobe of the right lung, and containing a small quantity of fluid tubercles, especially in the summit of the left lung, and at the root of the right' (ibid). He was obliged to send the patient home four days after her admission on account of her disruptive behaviour, but she was re-admitted a month later and Laennec writes that he detected exactly the same signs with the stethoscope. She died after a further two weeks, and Laennec conducted a post-mortem twenty-four hours after her death (ibid). Laennec's diagnosis was confirmed when, on cutting open the right lung, he noted: 'the superior half of this lung was occupied by an extremely large excavation, containing about two spoonfuls only of a liquid, yellow, puriform matter' (ibid: 321). This cavity was sufficiently large to 'have received the fist of the stoutest man' (ibid). Through repeated observations of this nature, Laennec was able to generate a significant body of work detailing the audible signs which were produced by patients with 'phthisis' or tuberculosis, and showing how these signs reflected physiological changes in the lungs. Ironically, but perhaps unsurprisingly, Laennec himself would eventually

contract the 'white plague', dying from it in 1826. Evidently his stethoscope did not give him enough distance from the patient to prevent his eventual infection.

Reiser points out that what occurs in Laennec's work is that details of the patient such as age and the history of the illness are mentioned only cursorily, and that he quickly moves 'into the cavity of the chest', making and recording observations (Reiser 1997: 830). The patient suffering from the disease has been banished, replaced instead by pleural cavities and tubercles, serum and cicatrix. 'The sick person has become a thing' (Volz cited Porter 1997: 311). The situation of the patient, then, has undergone a radical revision. He or she is present to the doctor as a body, rather than as a person.

The sounds of the living

Importantly, following his systematic listening and equally systematic referencing of sounds to organic changes found following dissection, Laennec was able to identify sounds characteristic, and as a consequence, diagnostic of, a particular illness. For instance, upon auscultating a woman who had been complaining of a cough, Laennec describes how he was surprised to be able to detect a very specific area in which her voice seemed to sound directly in his ear (Laennec 1961: 302-3). He found this particular acoustic phenomenon (which he called pectoriloquism and which he also detected in the case of Marrianne Levas described above), in around twenty other patients, most of whom were known or suspected of being in the advanced stages of tuberculosis, but some of whom seemed healthy. Laennec later autopsied patients in whom he had detected the pectoriloquism and found the lesions of tuberculosis in all of them. He was thus able to deduce that, even in those who were apparently healthy, a pectoriloquism was a sign that tuberculosis was progressing. As Laennec wrote: 'I think we are entitled to conclude that pectoriloquism is a true pathognomic sign of phthisis, and that it announces the presence of this disease sometimes in an unequivocal manner, long before any other symptom leads us to suspect its existence. I may add that it is the only sign that can be regarded as certain' (ibid).

So significant was this development in Laennec's exploration of auscultation that Reiser considers it to have begun 'a new age in diagnosis' (1997: 831). Crucially, the technique of mediate auscultation meant the physician could interrogate the body of the patient while he or she was *still alive*. The stethoscope allowed Laennec to

access a set of signs which informed him of the condition of the organs and it was no longer necessary for patients to die (though clearly they very frequently did) in order for that anatomization to take place. Auscultation created scope for an 'autopsy of the living', using the sounds produced by the animate body (Sterne 2003: 191). It could be used to make informed predictions about the presence, absence, or the progress, of disease in the living patient. Indeed, auscultation *depended* on the body being animate in order for it to produce the sounds necessary to diagnosis. Like Reiser, Jonathan Sterne is in no doubt as to the importance of the medical advance represented by auscultation: 'its practice would continue to require visual verification through autopsy at the experimental level', he writes, 'but at the level of clinical practice, it was the technique of listening that did more than any other single technique to render the body as a dynamic field of action' (2003: 207).

The doctor as listener

Prior to the anatomical turn, medical practice had been based on the doctor's listening to a patient relate his or her symptoms, forming a diagnosis from what he had understood. But like Auenbrugger, said to be the originator of percussion, Laennec wanted to be able to make diagnoses by recourse to his own senses. The two men shared a belief that disease should be assessed through the rational consideration of empirically valid signs. For Laennec, the sounds of the body were precisely these, voices which did not lie, which could not deceive. The doctor could listen to them and form an independent opinion of their significance. But it is clear that the stethoscope, as much as *allowing* physicians to hear sounds from inside the body, also *produced* a particular 'body' of sounds. The stethoscope created a new acoustic lexicon.

Auscultation permitted sounds to be heard in such a way that they could be encountered as discrete acoustic objects. Individual noises could be isolated, separated and objectified as diagnostic signs. Heard through the stethoscope, the body sounds could also be closely referenced to specific areas of the organs in which they had their origin. But at the same time, the sounds produced through the stethoscope were those of a body in motion. They were caused by flows of air or fluid, by the widening or narrowing of openings, the hardening or softening of tissue. They described the spaces of the living body. Auscultation created its own acoustic hermeneutic of the body.

Laennec worked hard to map the sounds he heard in the chest in order to explain the physiological changes produced by diseases of the lungs, in particular tuberculosis. He identified the 'pectriloquy', but went on to propose an entire set of pathological sounds, such as the moist crepitous rattle, the mucous or gurgling rattle, the dry sibilous rattle, the dry crepitous rattle, utricular buzzing and amphoric resonance. He attempted to develop an entire vocabulary of diagnostic signs, a point to which I return in chapter seven. Later, Laennec produced work on the heart. He identified, for instance, the *bruit de soufflé*, though it is thought he misunderstood the relationship of the sounds of the heart to the cardiac cycle. Others would later go on to define and classify the heart sounds, constructing an acoustic map of its functioning; the success of their attempts will become evident in the chapters which follow. Still others identified sounds from the abdomen, the joints and even the brain, producing an acoustic lexicon extending across and throughout the body.

But as well as generating a new body of sounds, the stethoscope also generated a particular kind of listening. Auscultation required auditory attention to be carefully channelled and focused. At the same time, the technique required a detailed acoustic knowledge of how each sound corresponded to a particular physical condition. Using the stethoscope demanded that the doctor acquire a particular auditory knowledge of the body, familiarizing himself with a range of sounds, learning to differentiate one from another, developing a sense of acoustic anatomy. As Sterne observes, '[a] skilled doctor had to have a highly developed sense of hearing' (2003: 214). Auscultation could not be learned from books but required training, apprenticeship.

Sinclair points out that in the early years following the introduction of the stethoscope, English doctors would travel to France in order to learn auscultation from Laennec, the master auscultator himself (1997: 46). Fleming also notes that English doctors underwent practical training across the channel: 'Laennec kept records of his foreign visitors, sometimes with comments on their skill at auscultation. The performance of, for instance, Thomas Hodgkin, who introduced the stethoscope to Guy's Hospital, was recorded as no better than '*assez bien'* (1997: 90). A certain Charles Williams was more impressive; he is recorded as having been '*tres bien*' (ibid). Writing on the use of the stethoscope, Maulitz argues that the importation of the French anatomico-pathological tradition into England was 'not simply a matter of knowledge flowing through the funnel of a text tradition. Nor was it simply a question of "technology transfer" by which the stethoscope was taken to England. The process

was rather one in which *experience*, from the dissection table and the hospital wards, flowed through the careers of multitudinous young Englishmen as they made the journey out and back…The year in France was, far from a passive period of observation, a veritable *tour de main*' (1987: 136 original emphasis). It was also a *tour d'oreille*, a time in which young doctors could practice and perfect the new listening skills which the stethoscope demanded.

The amazing stethoscope

Those patients first encountering the stethoscope were disconcerted by the level of intrusion its use necessitated. Many feared the instrument initially, assuming it would cause pain. Equally, they were disturbed by the physical intimacy which its use required. Because the examination was a new development, patients were unused to it, and found the process awkward, disliking the exposure it demanded. Reiser mentions a stethoscope with a tube several feet long which was made so as to allow the patient to hold one end onto his or her body while the doctor listened in another room (ibid: 832). But patients were also amazed by the stethoscope's powers, and the reliable manner in which it appeared to describe their conditions to the doctor (ibid). In H. G. Well's famous story *The Country of the Blind*, the main character, Nunez, stumbles upon a village inhabited entirely by blind people. He is awed to find that the members of this blind community have a sense of hearing so acute that they are able to 'hear the very beating of his heart' ([1914] 1997: 15). He finds this extraordinary acuity both mysterious and disturbing. With their stethoscopes, though, doctors acquired this same ability to hear with uncanny penetration. The stethoscope unnerved patients by the seemingly magical powers which it lent to the physician (ibid: 831). Indeed, Annmarie Mol suggests that even for today's patients, the stethoscope represents a 'pretty impressive' technology (2002: 61).

But while the stethoscope may have produced a body of sounds for the physician, it had created an area of opaque silence for the patient: 'What the doctor heard, after all, was not generally discernible to the patient' (Reiser 1997: 831). Earlier it was suggested that the stethoscope served to create distance between the doctor and the patient. This distance served the interests of hygiene (though this was not a well-developed concept in Laennec's day, as germs and bacteria had yet to be discovered), of propriety (providing distance between the doctor and the intimate body space of female patients) and of perception (creating objective distance for the

physician). Evidently, though, the stethoscope had also created a distance of skill, of knowledge and authority between the doctor and the patient. The patient could only act as a passive recipient of the expertise which, wielded by the doctor, was directed towards the patient's body. The patient was obliged to allow him or herself to become the object of a focused, and importantly, practiced clinical attention.

The eye and the ear

In his highly influential archaeology of medical knowledge *The Birth of the Clinic*, Foucault (1973) identifies the turn of the eighteenth century as representing a point of change in the way in which doctors attempted to understand illness (ibid: xii). For Foucault, an enthusiasm for dissection and observation of the physiological changes caused by illness triggered a revolutionary medical conviction organized around what he refers to as 'the gaze'. The patient was no longer positioned as the bearer of a complex and subjectively organized disease, but was re-invented as a site of layers and surfaces which could be rendered open and visible to the eyes of the doctor through dissection (ibid: 8). The patient, and the disease itself, was lent a corporeal transparency. For Foucault it was *vision* which championed the development of a new discourse in medicine.

Foucault does examine the possibility that sensory fields other than the gaze may have contributed to the development of medical knowledge. He notes that the gaze of the anatomo-clinician is required to 'map a volume', and to engage with the spatial complexity of a three-dimensional body. As a consequence, he argues, medical techniques of listening and touching were important in engaging with the depths of bodily space. Thus, Foucault insists that 'the medical gaze embraces more than is said by the word 'gaze' alone' (ibid: 165). It comprises a 'sensory triangulation' or 'sight/touch/hearing trinity' (ibid: 164, 165). Foucault draws on Chomel in arguing that:

> the eye does not have the most important function; what can sight cover other than "the tissue of the skin and the beginning of the membranes?" Through touch we can locate visceral tumours, scirrhous masses, swellings of the ovary, and dilations of the heart; while with the ear we can perceive 'the creptitation of fragments of bone, the rumbling of aneurism, the more or less

> clear sounds of the thorax and the abdomen when sounded (Chomel 1817 cited ibid: 164).

The medical gaze possesses a 'pluri-sensorial structure' (ibid). It is a gaze that 'touches, hears, and, moreover, not by essence or necessity, sees' (ibid). Foucault notes the importance of listening and touching in the realization of medicine's rational project. He even goes as far as to envisage Laennec listening to a patients' chest (ibid: 165).

But though he gives more than a passing nod to the importance of listening in the creation of modern medical knowledge, there is in the end for Foucault 'an absolute, absolutely integrating gaze that dominates and founds all perceptual experiences' (ibid: 167). Foucault maintains that, in listening with his stethoscope, Laennec is still haunted by a diagnostic image which he is attempting to realize through sound. Foucault's historical or archaeological perspective isolates a visual dynamic at the heart of modern medical knowledge.

Foucault's 'vision' of medicine has had a considerable impact. His elucidation of 'the gaze' has come to dominate anthropological thought on the nature of modern biomedical knowledge. Draper (2002), for instance, draws on Foucault in her work on ultrasound imaging, while Armstrong (1995) argues that developments such as databases which monitor the health of large populations represent the encroachment of the gaze into new spaces for the conceptualization of health and illness. In this way, the medical gaze has been re-invented as the primary mechanism of medical investigation and continues to be the sensory axis through which medical authority, and indeed, scientific authority more generally, is validated.

This chapter might be considered as an attempt to use the example of auscultation to highlight the important contribution techniques of listening, as well as looking, have made to the development of medical knowledge. It could be understood as an attempt to provoke a reconsideration of the nature of 'the gaze', showing the manner in which auscultation allowed sounds as well as visual cues to operate 'in the service of science', and demonstrating how a type of listening contributed to the reorganization of the relationship between doctor and patient which the anatomical turn effected (Sterne 2003: 210).

This thesis, though, does not consider listening and gazing to be irreconcilable sensory opposites. Indeed, the chapter has argued that Laennec used vision and hearing together as a means of cross-referencing his findings in the diagnosis of

tuberculosis. Laennec's example shows that listening and gazing have each been used to deepen the perceptual scope of the other. Despite its being an acoustic technology, the term 'stethoscope' implies visual examination. 'Steth' is derived from the Greek term *stethos* meaning 'chest'. 'Scope' comes from a Latin ending derived from the Greek *skopein*, meaning to look at or examine. It has been used to form a number of other words denoting scientific instruments enabling the eye to make observations, for instance, 'laryngoscope' and 'otoscope'. The very word stethoscope, then, infers an object used to see through listening. This chapter does not deny the pertinence of the gaze to auscultation, or of auscultation to the gaze; at the same time, however, it seeks to emphasize that listening has played an important role in developing medicine's anatomical approach to the body and to diagnosis. This drive has strongly influenced the ideology of medicine as it is practised today.

In his book *Medicine, Rationality and Experience*, Byron Good ~~points~~ writes: '[p]erhaps because he was a historian, Foucault could picture discursive practices in the absence of the perceiving subject…Foucault's corpus excludes the centrality of experience' (1994: 69). In a similarly-orientated critique, Sinclair suggests that Foucault's concept of the gaze conflates 'medical knowledge' and 'medical knowledge through experience' (1997: 47). He argues that while there are close connections between experience and knowledge, and while there is also a tendency for experience to be converted to knowledge, the two are qualitatively different. Good and Sinclair warn, then, that to invest too heavily in a historical perspective is to overlook the lived sensory dynamics through which medicine is practised and medical knowledge produced. As Bryon Good argues, 'if we are to understand how medicine constructs its objects, we will need to join together critical studies of practices and the analysis of embodied experience' (1994: 69). This thesis echoes his statement. It explores the practice of auscultation through the experience of those being trained in its use.

Chapter Two: 'Mediate' Auscultation

In this chapter I suggest that the stethoscope is important in marking students' entrance into medicine. Wearing a stethoscope represents a move towards the fulfilment of an image of 'the doctor' which is reproduced in both medical and popular culture. But knowing how to wear and carry the stethoscope is also an important element of learning the hospital and recognizing the positions which medical students occupy relative to more senior doctors and other medical staff, for instance nurses. Not just a device for listening, the stethoscope is also implicated in the communication of relative status and seniority. I describe the consideration which is given to the purchasing of a stethoscope and the relationship with 'their' stethoscopes that students and doctors develop through frequent and repeated use. Drawing on Bourdieu's (1980) notion of 'habitus', I suggest that the use of the stethoscope in auscultation reproduces key dispositions within the medical profession. The example of auscultation shows how objects, animated through practice, are brought into play in creating and reproducing the established positions of the doctor, and by implication the patient within the hospital environment. The practice is thus integral to the stability of the established social dynamics of the hospital, between staff, and also between doctors and patients.

City Hospital – students as stethoscopes

In his book *Making Doctors*, Simon Sinclair remarks that 'the general public's appetite for both written and televised fictional and documentary portrayals of medical life seems insatiable' (1997: 5). He also remarks on medical students' and junior doctors' avid consumption of such programmes (ibid). It is as true in 2006 as it was in 1997 that hospital dramas enjoy enormous popularity, *Casualty*, *Holby City* and *ER* being obvious examples. If anything, such programmes are more numerous now than at the time Sinclair was writing. The setting of the hospital also seems to have become popular for comedies, for instance *Scrubs* and more recently *Green Wing*.

Several of the students I knew said they had been inspired to become doctors through watching *ER*. One even remarked that he felt his generation of medical students to be the '*ER* generation', a cohort for whom the programme had been a particularly formative influence in their electing to study medicine in the first place, and a force which was now shaping them as doctors. He suggested, for instance, that the particular manner used by a doctor on the screen when dealing with a patient might be adopted and re-used by a medical student in his or her own interactions with patients. He said that he modelled his own professional persona on one of the characters in *ER*.

A documentary rather than a drama, *City Hospital* is a television programme filmed inside St Thomas'. Shot by a small crew and broadcast live, the programme follows the trials and triumphs of patients and the staff involved in their care. A team of presenters speaks to patients about their problems and to staff about the measures being taken to help resolve them. Stories often take the presenters into treatment rooms and operating theatres. At our very first class with Dr Coltart, he surprised all of us by explaining that we were to appear on *City Hospital*. Apparently the producers wanted some footage of students setting out on the path to becoming doctors, and so were keen to film and briefly chat to students at their first clinic. Dr Coltart had a good rapport with the production team. He and his patients had featured on *City Hospital* many times in the past. The producers had approached him to see if it would be possible to film the chest rotation and he had readily agreed, thinking, he told me later, that it would be fun and exciting for us to start clinics with an appearance on national television. There was a considerable hubbub as Dr Coltart announced this news to the new rotation, and a flurry of activity to check appearances and to give voice to the butterflies which had suddenly burst into flight in all our stomachs.

The stethoscope was to be the focus of the piece. It was felt this would be apt as the students had just bought theirs, and in doing so had acquired the definitive emblem of the profession to which they aspired. Dr Coltart had agreed with the production team that they would film the firm on the ward, where the students would examine an elderly female patient who had expressed a willingness to be involved. One student would listen to the patient's heart while another gave an account of the stethoscope's invention. The listener would then give the diagnosis and the presenter would finish the piece with words to the effect of 'Well, it's good to see the next generation of doctors progressing so nicely'. There would then be a cut to a different story. The piece was to last just a few minutes.

It took some time to decide who would do the listening for the camera. Eventually Sue Ann agreed to do it. As none of us knew anything about cardiology, never having studied it before, no one would be able to make an actual diagnosis, so Sue Ann was told to say that she could hear the murmur of 'mitral regurgitation' after she had pretended to listen. She began to repeat it to herself over and over. Tom, perhaps the most confident student in the group, agreed to give a brief history of the stethoscope. It was decided all of us should wear white lab coats and carry stethoscopes around our necks. I was very embarrassed, as I did not own either. Dr Coltart lent me a stethoscope but there were no white coats. I wondered if it would not be best for me to sit out of the filming as I might look incongruous, but I felt this would be an important collective moment for the firm, and so I wanted to be involved. I decided just to go on camera without. We were ushered upstairs to the ward where an elderly lady was sitting up expectantly in bed. Cameramen were moving around choosing shots, and we were told to expect the presenter imminently for a quick briefing.

While we waited, the other students fiddled with the buttons of their white coats and toyed with their stethoscopes. Rishi explained that his father had bought him his as a graduation present. Following his lead, Diane said she felt it was quite exciting to know that this was an instrument which marked you as a medic, and which you could expect to use and have with you throughout your medical career. Dave said that it felt "strangely reassuring and empowering" when placed across the shoulders.

The presenter arrived, former *EastEnders* actress Nadia Sawahla. She explained that the camera would follow her into the ward while she introduced the piece. Then she would walk past us and say "hello" on her way to the patient. She would talk to the patient, Mary, for a few moments, and then Dr Coltart would be given a signal to lead us over to the bedside. She checked that Sue Ann and Tom were ready, and suddenly there were lights and cameras pointing at us, and we were on. The nervous chatter of the last twenty minutes was swallowed and we stood with humourless and startled faces. The following is a transcript of what was filmed and televised that morning, reproduced with the permission of the BBC.

> Nadia (to the camera): Look! Nine medical students! Their very first day on the ward! They're waiting to do ward rounds! Come on! Let's go and take the Mickey out of them! (she walks over with the camera following her) Hello!

Come on! Do your buttons up! Doctor's coming, doctor's coming! Now, one of you is going to be diagnosing my Mary over there, aren't you? Who is it?

Sue Ann: Me.

Presenter: Ha ha! First day and on the telly! How good is that? See you in a minute! (She walks over to Mary's bed with the camera following) Hi Mary! (in a whisper) Do you know (pointing at the students) that lot have got to come over - it's their first day - and they've got to say what's wrong with you? So what is wrong with you? Whisper...

Mary: I came in with severe chest pain. I've got left ventricular heart failure and mitral valve regurgitation.

Presenter: Oh! Do you think they'll get it?

Mary: Yes, I do.

Nadia: So you've basically got to have a…

Mary: Triple heart bypass which is next Thursday.

Presenter: It runs in your family doesn't it – this is why you're so cool about it. Both your brothers have had the same operation, haven't they?

Mary: That's right.

Nadia: And they're both fine?

Mary: They're both splendid.

Presenter: Did it run in all your family, then, the heart problems?

Mary: Yes, it did, yes. My Dad died of a heart attack at sixty-one.

Presenter: Ah…

Mary: And my Mum was found dead in bed

Nadia: When she was quite young?

Mary: Aged forty-four.

Presenter: You were only a wee thing yourself?

Mary: Aged fourteen.

Presenter: Oh! You're also a nurse, aren't you?

Mary: Yes.

Presenter: Does that make it more nerve-wracking being in hospital?

Mary: Not a bit of it.

Nadia: Okay, well look, here they come! Bless them, here they come!

(Dr Coltart arrives with the students).

Dr Coltart: Hello Mary. Morning there.

Mary: Hello Dr Coltart.

Dr Coltart: How are you? All right? Here's the new crew of students, look. Bright-looking lot, aren't they?

Mary: Very interested.

Nadia: Are they going to look this keen in a week?

Dr Coltart: I want Sue Ann to have a listen in to see if she can pick up a diagnosis with her stethoscope. You know all about that, so on you go, Sue.

Sue Ann: Good morning Mary. Is it okay if I have a listen in to your heart?

Mary: On you go.

Dr Coltart (to Nadia): You see, as new medical students they've all got their brand new stethoscopes.

Presenter: (To the students) Do you have to buy them yourselves? Do you? How much do they cost?

Tom: Forty quid…fifty quid.

Presenter: Ah, bless…

Dr Coltart: This is like the hallmark of a doctor – you've got the stethoscope.

Presenter: Was that really exciting this morning, putting that around your neck? (Students nod) Ah…cool.

Dr Coltart: So I've asked Tom over here just to tell us briefly, how it was, you know, invented. You know, when you ask a student who invented the stethoscope, you don't expect the answer to come back as Steth. There's a lot more *history* to it. Tom, tell us, what did you find out?

Tom: It was Rene Laennec who was working at the Necker Hospital in Paris during a tuberculosis epidemic and all the patients kept dying before he could diagnose it cos…they had no way of diagnosing tuberculosis until they were dead, which is quite useless. And, er, he was walking down the street one day and some street urchins were scratching pins through a piece of wood and he suddenly realized you could listen to someone's chest through a piece of wood because of the resonance, so he went and invented a wooden monaural stethoscope – just a tube… this was in 1816…and he started diagnosing tuberculosis.

Presenter: So he's done well for his first day's homework?

Dr Coltart: He's done well. Rene Laennec was a rather shy Frenchman and because the only way you could listen to hearts was by putting an ear on the chest, and all the doctors died from TB because that's what it was.

Presenter: OK, so have we been able to get a diagnosis, Sue, through your rather marvellous stethoscope?

Sue Ann: Well, I think I'm right. It sounds like a mild mitral regurgitation.

Presenter: Oh! I think that sounded like what I heard, a mild mitral regurgerurger…(laughter) Is that what she's got?

Dr Coltart: She has, she's got a little leak of the mitral valve. If the heart muscle picks up next week when she has this triple bypass then that should go away, so you've heard it for the last time maybe!

Presenter: Well done guys! I hope you enjoy your first day! Thank you for letting us be a part of it. (Turns to the camera) They're all so cute!

Watching the recording and reading the transcript I was struck by a number of obvious themes. Firstly, there is Mary's story, which is remarkable. She is in hospital for a triple heart bypass operation, and both her brothers have successfully undergone the same procedure. Furthermore, establishing the centrality of heart problems to her family story, we learn that her father and mother both died at early ages from heart conditions while she was herself young. In a pleasing coincidence for a television programme with a medical focus, we discover that Mary worked as a nurse. Throughout, the presenter is keen to demonstrate how young and appealing the medical students look, teasing them a little the way older children tease new arrivals into the first year of a school. She is keen to emphasize that this is the 'first day' of an important new stage for these students.

While the medical students are introduced in their own right as the presenter walks past on her way to Mary's bed, and again as they approach Mary's bedside with Dr Coltart, they are otherwise only presented through the stethoscope, and the stethoscope through the medical students. "You see, as new medical students they've all got their brand new stethoscopes" explains Dr Coltart. Then he asks Sue Ann to listen to Mary's chest while Tom gives an account of the instrument's invention. The people and the object are engaged in a kind of mutual performance. There is also a clear sense that the stethoscope represents a kind of trophy. "Was that really exciting this morning, putting that around your neck?" asks the presenter as if the stethoscope were a medal, and should be worn with a pride consistent with that analogy by those

who have 'won' it. The students obligingly all nod, smiling, confirming that wearing a stethoscope does indeed represent, for them, a kind of award. At the same time Dr Coltart suggests that being able to wear the stethoscope represents a progression into the world of doctors, and that the students have now acquired the right to wear the doctor's definitive symbol: "t]his is like the hallmark of a doctor – you've got the stethoscope".

A few weeks later I noticed that the library carried an old poster which appeared to be aimed at medical students. It advertised a series of revision seminars which had taken place prior to exams the previous year. Large letters at the top of the poster read '*Revision Routes'* and smaller print detailed the content of the seminars, their times and locations. The poster was designed to look like a Tube map - a map of the London Underground - but was constructed entirely from stethoscopes cleverly arranged so that train lines were formed by tubing of various colours, branch lines by ear pieces and stations by diaphragms. I read this poster as a stethoscopic journey, tying the stethoscope and the medical student firmly together in the course of training. It is clear, then, that the stethoscope is popularly considered to be representative of medical professionalism both within and outside the profession itself. In both the poster, displayed within the hospital and aimed at medical students, and the edition of *City Hospital* which was broadcast to a much wider audience outside it, the stethoscope is an icon of, and for, medicine.

Corridor politics: wearing the stethoscope

The students took obvious pride in their new stethoscopes. Mary explained that carrying it around made her feel "proud to have come this far" through medical school. Others said that the instrument made them proud of their achievement in being, in relative terms, poised to become doctors. Some had been bought stethoscopes by their parents (something Sinclair also observes in the medical students he studies) as a present for having worked hard (or hard enough to get to this stage) meaning that wearing it produced a sense of satisfaction (1997: 197). For those who had been given them by their parents, their stethoscopes also had a talismanic quality, being endowed with a parental blessing for their future careers. The new stethoscopes, then, were trophies, or tokens of parental approval and pride. Some took to showing off their new acquisitions, wearing them ostentatiously around their shoulders as they paraded down hospital corridors, their white coats billowing out

behind them. They would polish the diaphragms carefully whilst they stood around chatting, and would make sure that, before they entered the wards to see patients, the ends were hanging down evenly over either shoulder. This 'new medical student' exhibition or flaunting of the stethoscope was felt by some (medical students among them) to be something of a cliché. I once heard a doctor refer to a stethoscope worn draped around the neck as a "flea collar". 'Flea' is the mildly derogatory term senior doctors sometimes use to refer to medical students.

Speaking about wearing his stethoscope, Tom, the student who gave an account of the instrument's invention during *City Hospital*, said: "I love wearing it, I love wearing it…I get this feeling when I get into the lift and I've got my stethoscope on, and I've been in the hospital all day and I'm wearing my shirt and tie and all that and I'm feeling rough and I'm feeling tired. I just feel like all the other people in the lift should be nice to me, because I'm a medical student. I've been walking around the wards all day dealing with people. I feel something like, not superiority but 'I know what's going on and you guys don't'". Wearing a stethoscope makes him feel like an insider to the dramas unfolding at the hospital, and allows him to capture what for him is the essence of being a doctor. He is busy, working hard for the good of others, exercising knowledge which is denied to or beyond those who do not work in the hospital but are simply passing through it. He is dealing with important problems, which should grant him, he feels, respect in the eyes of the public.

Not all students were keen to parade their new stethoscopes. One third year medic I spoke to said that when he wore his stethoscope across his shoulders he felt "like a pretender, a bit of a ponce". Though he owned a stethoscope he "knew nothing", and by wearing it was boasting of a skill which he did not actually command. He might have a stethoscope of his own, but he had "no mastery over it". Sue Ann felt that although medical students might carry a stethoscope from the third year of their training, they should not wear it until they had actually qualified (usually after five years). Until that time, she said, the stethoscope "belonged in the pocket" rather than round the neck and that was how she chose to carry hers. Sue Ann is conscious that wearing a stethoscope across one's shoulders is something qualified doctors do, and wishes others to be aware that she is not qualified. She does not want to pretend to doctor status.

It is clear, then, that students use the stethoscope to project themselves into the social world of the hospital. Their conspicuous display (or concealment) of the stethoscope advertises not only their student status, but also their attitude towards that

status. Although they have attained prestige through being able to carry a stethoscope, they are still low within the social hierarchy presented by the hospital. As third year medical students they can be differentiated from lay people in the world beyond the hospital, from non-medical staff working inside the hospital, from medical students in their pre-clinical years, and from patients, but they remain a long way down the medical status hierarchy. They are less important than fourth and final year medical students, Junior and Senior House Officers, Registrars and Consultants, and because they do not yet have either qualifications or experience, they are of lower status than other medical staff, for instance nurses and physiotherapists.

Marks observes that: '[t]o see a doctor hurrying along a hospital corridor with his stethoscope around his neck is no more unusual than seeing a cowboy on television with his guns strapped around his waist, or a policeman directing traffic with his whistle in his mouth. The stethoscope is the doctor's symbol of office' (1972: 16). The stethoscope is part of the uniform of a doctor and indeed is frequently used as a symbol of the medical profession in its entirety. But of course, doctors are not the only people who carry stethoscopes. Initially I was confused by the presence of stethoscopes of various colours and designs worn in the hospital by people in different clothes and uniforms. Nurses carried them, as, for instance, did physiotherapists. Some doctors, too, did not overtly 'wear' their stethoscopes, either from personal preference or because it was not common practice for members of their particular area of expertise to do so. Surgeons, Dr Coltart told me, tended not to carry them, and neither did doctors from psychiatry, psychology, ophthalmology and so on. Not every doctor carries a stethoscope, and not everyone carrying a stethoscope is a doctor.

During an interview, Consultant Nurse Elaine Coady, who was based in the cardiothoracic unit told me:

> I work as a nurse in a clinic, but I don't wear a uniform, and I have a stethoscope. Now, patients in the heart failure clinic I see time and time again, they get used to the idea that I'm a nurse and I examine their chest and other things, but patients in the chest pain clinic who I only ever see once... I always introduce myself as a nurse. "I'm Elaine, I'm the *nurse*", and I emphasize the word in the chest pain clinic and I say "Your *doctor* has asked me to see you". Now what I see a lot of them doing is looking at my badge throughout the consultation, so you'll be chatting to them and their eyes kind of go like this…(stares at my ID badge) and you can guarantee that I would say probably

eighty to ninety percent of the time, when you say goodbye to them they say "Goodbye, doctor". And I think it's the imagery of not wearing a uniform, having a stethoscope, listening to the chest, listening to heart sounds, etc that conjures up an image… if I wore a uniform and a stethoscope, I don't think they'd be saying "Goodbye doctor".

Nurse Coady is making an important point. Wearing a white uniform and carrying a stethoscope it is unlikely that she would be mistaken for a doctor. It is only when she dresses in the smart-casual style of a doctor and carries a stethoscope, acting as a doctor might be expected to act, that she is mistaken for one. Medical students were also asked to follow a smart-casual dress code, which meant it was easy for a medical student (and the anthropologist studying them) to be mistaken for a doctor, or to pretend to be one.

When I wore the stethoscope Dr Coltart had lent me I found that people made a special effort to make way for me in the corridors or the lifts. Sometimes patients would catch my arm and say "Excuse me, doctor. Could you tell me where to find...?" Even for something as mundane as gaining access to the administration floor to leave messages for Dr Coltart, the stethoscope was a helpful facilitator. It acted as a passport, a 'way in'. The cardiothoracic department had a swipe-card lock on the door, and though I was authorized to go inside, the card I had been issued with did not work the lock. Doctors would tend to hold the door open if I was carrying a stethoscope, whereas otherwise they would make no eye contact and, feigning to be unaware of my presence, allow the door to close.

On one occasion, Rishi, Tom and I were standing in the hospital café *Tom's 2* when a woman rushed up to us and said "Excuse me, doctors, you have to come quickly, my sister has just passed out in the toilets". We ran to help. It turned out that two nurses were already on the scene, but the incident served as a loud reminder that it is dangerous to play with the symbolic order of the hospital. Although the two students were allowed to be involved in some medical procedures, and although I would not be reprimanded for helping a woman who had collapsed in a public place, if a similar incident occurred on the wards, and I had to announce that I was not, in fact, a doctor whilst dressed as one, there could be many potentially serious repercussions, not least confusion, a wasting of valuable time, and deep personal embarrassment. From then on I only carried the stethoscope in my pocket. Even there, however, it enacted its power through association. One day I was in an electronics

shop on Tottenham Court Road buying a new microphone for my interviews. I went to find my wallet and pulled out the stethoscope. The man behind the counter noticed, and nodding, made a remark about how good he thought it was that I was a doctor. He gave me a discount of £2.50.

Many of the students, then, enjoyed their freedom to wear the stethoscope, the symbol of their intended profession. Some took satisfaction from 'playing the doctor'. However, there was also a sense in which the students were obliged to learn the subtleties of meaning in the different ways of carrying the stethoscope, the nuances of concealing, or at least not overtly displaying the object. This awareness became particularly important, as will be explored in the next section, in interactions with more senior medics.

Stethoscopes as markers of status

A stethoscope does not have a predetermined life-span, as this depends on how heavily the instrument is used and how well it is cared for. Often a doctor will use the same stethoscope for his or her entire career. Some 'get through' a number, or keep two or three and alternate. The students were given little advice on which stethoscope to buy, except that the earpieces should be comfortable and give a good seal in the ear canal to shut out external noise. Rubber 'non-chill' rims on the diaphragm were also recommended so as to make auscultation as comfortable for the patient as possible. All the medical students in the rotation with which I was working had a Littman Classic II SE with black tubing. Wanting to fit in, I thought I would buy the same. When I arrived at the library shop, however, I found that the tubing came in hunter green, navy blue, Caribbean blue, black, burgundy or orange. Having been assured there was no colour code (having a red stethoscope, for instance does not signify that you are a nurse, it just goes well with the white uniform) I spent some time deliberating before I chose a navy one, which I thought was only subtly different from the black and looked a bit more stylish. It was exciting to take the lid off the box and see it stretched out in its foam inlay like a musical instrument. 'Who could resist the invitation of those dainty headphones?' asks Kracauer. 'They gleam…and entwine themselves around heads all by themselves' (1995: 333). Kracauer is writing on early radio use. He describes the manner in which users are seduced by the pleasing design of the technology. Similarly, staring at the stethoscope, the metallic shine of metal

earpieces and the steely gleam of the diaphragm were slightly hypnotic, the smooth coating on the plastic tubes pleasing to the touch.

I did not hold on to my new stethoscope for long. A few days later at the end of one of our teaching sessions, Rishi, with whom I was beginning to become friends, asked a little nervously if I wouldn't mind swapping stethoscopes with him. He had an identical twin brother who was also a medical student. They had gone to buy stethoscopes on the same day and had both bought the same design with the same colour tubing. Rishi felt it would be an important marker of his individuality if he had a stethoscope which was not the same as his brother's. He wondered whether it might be possible for him to have my stethoscope with its navy blue tubing, and for me to take his, with its black tubing. In actual fact I had become quite attached to my navy stethoscope, but I was keen to make friends, and thought this exchange might help cement our developing friendship. I said I thought that would be fine, and we did the swap.

As it turned out, a few months later, Rishi was the first of the students in the rotation to upgrade his stethoscope from a Littman Classic II SE to a Littman Cardiology III. Those who bought different, usually more expensive designs, were thought to be making statements about their commitment and eagerness to study medicine. It was considered a bit "keen" or "spoddy" to have a better-than-standard stethoscope even if a particular student had a special interest in chest medicine. Rishi, though, had never disguised the fact that he was passionate about his studies, and the other students seemed to accept this with a minimum of good-humoured teasing. Rishi opted for the Cardiology III because, he said, it offered an acoustic rating of 9/10, whereas the Classic II only had a rating of 7/10. No one was ever able to explain to me exactly how this acoustic scale of one to ten was calibrated, but Rishi felt the new instrument would give him a better chance of hearing sounds than he would have had with his previous stethoscope. Some of the other students complained that it would give him an unfair advantage. They grumbled perceptibly louder when, a few months later, Rishi upgraded once more and bought the Littman Master, with its acoustic rating of 10/10. It was expensive, but Rishi justified the money by saying that this stethoscope would last him for the rest of his career in medicine.

Rishi's second upgrade in particular was considered an unconventional move. By using the Master, Rishi might well be thought to be acting presumptuously by those he would encounter on the wards. There was a clear hierarchy of stethoscope ownership within the hospital. The Master tended only to be used by registrars and

consultants. Junior House Officers and Senior House Officers generally used a Littman Classic II SE like medical students. Rishi risked looking as though he had ideas above his station. It was not just that he lacked the skills necessary to use such a piece of equipment to its full capacity, though that was certainly part of the issue, but that he was inadvertently laying claim to an object which was properly the symbolic holding of someone much his senior. Some registrars, and a number of consultants, boasted stethoscopes which were different altogether from the commoner Littman designs. For instance, one registrar owned the Traditional Sprague, in which each earpiece is connected directly to the diaphragm and the bell by its own individual tube. One of the consultants used a Harvey Triple Head, which has two diaphragms as well as a bell. It was the tendency for senior doctors to carry unusual models of stethoscope which led to the formulation of the joke: 'What's oddly shaped and hangs off an anus? A consultant's stethoscope'.

Figure 2: The Traditional Sprague

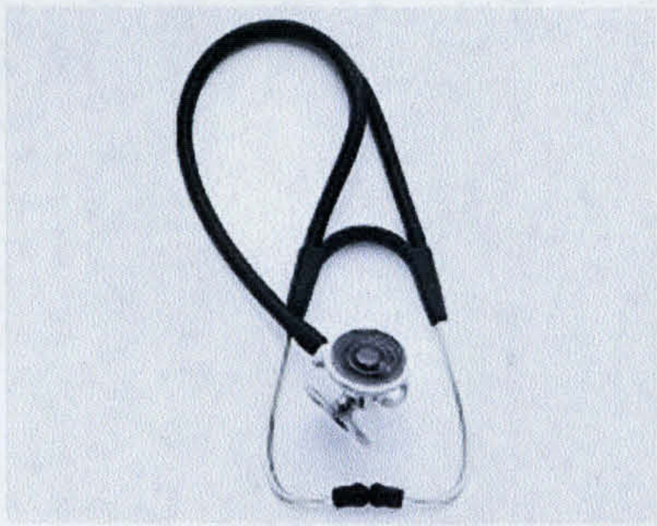

Figure 3: The Harvey Triple Head

Dr Coltart was the only consultant I encountered at the hospital who carried a simple and cheap red stethoscope. He explained that he wore it as a statement, to show that "[i]t's not the stethoscope you use, it's what's between the ear-pieces". "You see this stethoscope?" he would say. "I can hear *everything* through that". The trick seemed to work. The students were impressed by the fact that he managed to hear so much with such a cheap stethoscope. Tom once remarked: "It's quite impressive the way he can take what is a crap stethoscope – the one he has in clinics is a *really* crap stethoscope, and he listens with it and he hears everything". Dr Coltart used his stethoscope to encapsulate this personal ethos. His stethoscope reflected its owner's reliance on skill and experience, rather than fancy equipment.

The stethoscope which a doctor wears, then, is a kind of visual representation or manifestation of expertise. In a sense it stands for the knowledge he or she holds. Wearing a high-grade stethoscope as a medical student might appear presumptuous or arrogant. The articulation of relative status through stethoscopes overlaps both the formal and informal circuits of the hospital. At the same time that the students were beginning to learn about this particular relationship between people and objects, however, they were also beginning to develop a fuller understanding of the close relationship between their own skills as practitioners of medicine, and the objects they were required to use.

The doctor 'habitus'

Thus far in this chapter the stethoscope has been positioned as a relatively static object, a thing which is owned and carried, paraded up and down hospital corridors. But of course, the stethoscope is also displayed through its use in diagnosis. It is entangled with the clinical examination, and hence with the skill of the doctor who uses it. In the context of the clinical examination, the stethoscope is more obviously implicated in the mediation of the relationship between the doctor and the patient than between staff. The way in which the stethoscope is handled and applied to the patient's body is expressive of, and reconfirms the relationship between them.

In his book *The Logic of Practice*, Pierre Bourdieu discusses the concept of 'habitus' which he suggests 'could be regarded as a subjective but non-individual system of internalized structures, common schemes of perception, conception and action' (1980: 60). Habitus becomes evident in the realization and reproduction of particular 'dispositions', attitudes which determine the practical and ideological approach which a group, and the individuals within that group, take towards reality (ibid: 54). Habitus represents the 'active presence of past experiences' realized through schemes of perception and action (ibid).

Sinclair draws heavily on the notion of habitus in organizing the theoretical approach to his study of medical training. He shows that medical school represents a process of inculcation through which a particular medical habitus is reproduced in a new generation of doctors (1997). He points to distinct dispositions which have developed through history, structuring the communal understandings through which doctors think and act. The purpose of medical school is to develop these dispositions within its students.

It is beyond the scope of this chapter to précis or paraphrase Sinclair's discourse on the historical underpinnings of the medical habitus. However, I want to draw attention to the key 'dispositions' which he isolates and suggests are central to the medical practice and the 'habitus' of the doctor. These are 'Clinical Experience', 'Responsibility', 'Idealism', 'Status' and 'Knowledge'. For Sinclair, Clinical Experience represents knowledge of and familiarity with medical cases and situations obtained through seeing patients. Experience must be acquired gradually through medical training, but is a disposition which qualified doctors should be seen to possess. Responsibility is defined by Sinclair as 'a desirable attribute, archetypally found in the surgeon holding his patient's life in his hands, and gained by having patients and doing medical things to them' (ibid: 17-18). Again, medical students can only acquire Responsibility gradually, but it should be a disposition into which they are firmly indoctrinated. Idealism is the quality of wanting to help people and act in their best interest which Sinclair suggests to be perhaps the most straightforward disposition, one which medical students are expected to exhibit even prior to admission in their interviews for medical school. Status is somewhat self-explanatory, and refers to the respect and prestige which a doctor commands within society. Knowledge refers to factual learning, the body of knowledge which doctors must command and which medical students, to varying degrees, struggle to acquire.

Of course, the students are not familiar with the concept of habitus, or with the notion that in studying medicine they are responding to a set of dispositions. I would suggest, however, that they are seeking to realize a concept of 'doctorliness', a particular style which they consider to be becoming to, or representative of, a doctor. This concept is shaped, as has been suggested above, through images of the doctor in popular culture (for instance, in television programmes), and they are constantly adjusting and re-adjusting their understanding of 'doctorliness' throughout their medical education. I believe it is the fulfilment or realization of the dispositions of the doctor habitus which motivates the deep enjoyment expressed by the student above of wearing his stethoscope in the lift while he is looking tired. He feels he has exhibited Responsibility by working with patients on the wards, or 'dealing with people'. He shows something of both his Clinical Experience and Idealism in being able to have assisted those who need his help. He commands Knowledge of the circumstances which those around him do not command, and consequently feels himself to have earned prestige or Status. Thus, the 'look' of the doctor which the student has created is in fact the expression of key dispositions which make up the doctoral habitus. He

has momentarily attained the habitus which, through medical school, he has learned to emulate and seeks to internalize.

As suggested in the introduction, in the third year of medical school, while all of the key dispositions remained important, Clinical Experience received formal emphasis within the curriculum. It was the practical performance of examinations, and the development of diagnostic and clinical skill which was the focus of the majority of teaching. The concept of a doctorly 'style' was important in this teaching. One day, a few months into my fieldwork, a registrar was demonstrating the chest examination. She began by telling us how to find a point known as the apex beat, at which the auscultation of the heart begins. We were taught to start at the angle of Louie (the knot of bone where the collarbones meet and join the ribcage just below the Adam's apple), feel the width of one rib using index and third finger, and count five ribs down by moving these fingers down one step, and thereby one rib, at a time. We were then told to use a hand pressed flat against that region of the chest to feel for the beat of the heart. The registrar who was teaching this session demonstrated the technique. She was very skilful, quick and sure-fingered. Her hands seemed 'at home on a body' (Berger 1967: 18). It was almost as if they had their own memory and moved of their own volition. As she carried out the demonstration she said, with a nod towards her own movements, 'Keep style in mind. It's important. It shows that you're familiar with the examination, that you're confident'.

Similarly, at a different teaching session, a surgeon was instructing us on how to find and move between the eight pulses in the leg. He demonstrated how having found the common femoral pulse we should walk our fingers down to the superficial femoral pulse, then the profunda femoris, then the popliteal pulse just above the kneecap, the anterior tibial pulse, the posterior tibial pulse, the peroneal pulse, and finally, to the dorsus pedis on the top of the foot. Asking Dave to try the technique, he said "Let's not forget style here, chaps. Style is all-important in this". It was easy to see, having watched his demonstration, what he meant by 'good style'. He was referring to a fluency of movement, the hands progressing deftly over and around the body. The surgeon himself had developed excellent examination skills. It gave him an immediate aura of competence, of expertise which was noted by the students. He had internalized what might be described as the content of the examination, the order of the necessary actions, but moreover had developed an impressive skill in performing them.

Both these teachers suggested later in their respective classes that good style would be important in impressing the examiners at the end of the year. When I came to observe the exams, I saw that, indeed, the most impressive students had already grasped the importance of showing their clinical skill. In what are known as the OSCEs (which stands for Objective Structured Clinical Examinations and is pronounced 'oskies') the students were not obliged to make diagnoses. They simply had to demonstrate that they knew how to carry out the examinations. They needed to know what actions to perform in what order. The best students had acquired a certain flair for doing this, moving systematically but quickly and smoothly from one task to the next without hesitation or fumbling. Again, they had moved beyond knowing simply the content of the examination (where some students were still stuck) and were showing their skill in performing it.

Teaching doctors, then, encouraged us to exhibit 'style' in the examination. They offered their own skill as an example for us to follow. In setting out the concept of habitus, Bourdieu is obliged to confront the issue of the development of originality and personal style in the enactment of dispositions (1980: 55). He suggests that individual creativity does not represent a threat to habitus, but in fact serves to reinvent existing dispositions in new ways, thereby securing pre-existing schemes of perception, thought and action. Ultimately, he argues, it is impracticable to create ideas and actions which fall outside the framework of those dispositions which provide the context for their invention, and which furnish the concepts for their own interpretation (ibid). Of course, Bourdieu's theory on style might prove inadequate in the explanation of radical social change or technological development. In relation to the doctoral habitus, however, the exercise or display of clinical skill does not represent a student or doctor's stepping outside the structuring dispositions of the profession, but instead constitutes a personalized means of demonstrating a particular flair in reproducing that same set of structures.

Of course, medical skill is not limited to the performance of examinations. I also attended classes in which the students were given guidance on how to talk to and interact with patients in particularly challenging situations. In these classes a tutor would present a scenario to the students, for instance, 'a Senior House Officer asks you to look after a female patient who has just been involved in a hit and run incident as a consequence of which, she had just been told, she will lose the baby she is carrying'. A student either volunteers or is asked to show how he or she would handle the situation, and an actor enters the room. In the case of the scenario described above

it was a female actor, who sat down holding her belly, and proceeded to sob, saying very little as the student spoke to her and did her best to be comforting and supportive. After the exercise, the tutor would lead a discussion on how the student had fared, how he or she might have conducted him or herself differently, and what issues the situation raised. These skills were later assessed in an exam context at the OSCEs. The students needed to show themselves to be well-rounded individuals who understood the varied nature of medical practice and the importance of competence in all its areas.

I felt that the stylistics of medicine were also being taught at an informal and more subtle level in the small actions and touches (which might be described as 'professional mannerisms') of the teaching doctors. The concerned nods, the speed at which the air in the blood pressure cuff was released, the pace of note-taking and the flamboyance of signatures were all small details of action which the students seemed to pick up as they went through their training. These mannerisms were reproduced by the students in their own engagements with the patients, for instance, when they used the exact words and intonation of the teaching doctor when asking a patient to "Take a nice deep breath", or warmed the diaphragm of the stethoscope and placed a free hand on the patient's shoulder while auscultating. As Sinclair suggests, medical training depends to a considerable extent on non-verbal communication between doctors and the students they are teaching (1997: 21). Students 'absorb' the doctoral habitus without its being directly articulated. Sinclair suggests that bodily deportment and the management of the space created by the medical interaction in particular are communicated this way (ibid). Bourdieu, too, emphasizes the powerful role which non-verbal communication has in the transmission of habitus. Some of the most vital ways of thinking and acting are conveyed simply through contact between one who is learning and one who is teaching (1980: 68).

I have suggested then, that the medical habitus is both explicitly taught and informally – often unconsciously – absorbed by students during their training. This manifests itself in the formation of a particular 'doctorly' approach or 'style'. But of course, the habitus of the doctor must be defined in relation to a patient, or group of patients. The historical origins of the patient habitus are beyond the scope of this chapter, but it is obvious that the patient habitus and the doctor habitus are closely intertwined, the two having emerged together, symbiotically. Where the habitus of a doctor includes Clinical Experience, Idealism, Knowledge, Responsibility and Status, the patient habitus entails a need to be helped (Need?), a relative ignorance of medical

matters (Ignorance?), a willingness to be put into the hands of a doctor (Acquiescence?), and an ambiguous position in relation to Status, as the patient must be admitted to the doctor's charge (hence becoming a low status participant in the hierarchy of the hospital), while retaining his or her wider social status from outside, and remaining protected by the dispositions of the medical habitus (Idealism and Responsibility) which place the patient as the most important person within any medical interaction. The patient thus drifts between being within and outside the status hierarchy of the hospital.

The anthropologist Helle Ploug Hansen suggests that 'when the doctor's hand is applied to the patient's abdomen and he asks a question such as "How do you feel?", or when the stethoscope is placed gently on the patient's chest, these actions may be looked at as the stuff of power' (1999: 101). Auscultation, she argues, is one of the ways in which a doctor secures control over the symbolic capital represented by the patient. My immediate concern here is not the dynamics of power. I do not wish to position the doctor as seeking to negotiate power over the patient or influence within a particular web of social relations within the hospital. My point is that in the interaction created by auscultation the patient accepts (to some degree) the doctor placing the stethoscope upon him or herself, and allows the examination to take place. At the same time, in placing the stethoscope on the patient, the doctor applies the dispositions he or she has acquired through training, Clinical Experience, Knowledge, Responsibility, Status and so on. Auscultation produces and reproduces the habitus of the doctor and patient respectively. It allows the habitus to be articulated.

The stethoscope as an extension of the doctor

During consultations, Dr Coltart tended to use his stethoscope like a conductor's baton. It was important to the way he would organize the consultation. If, between patients, there was an opportunity for him to talk to us, he would sit, holding the tube of the stethoscope in his right hand and tapping the diaphragm quickly and nervously against the fingernails of his left hand, making a noise a bit like a clock ticking down. It was as if he was impatient to get on with the clinic. He would make the same action when listening to a patient explaining the problem that had bought him or her to the clinic, only he would tap more slowly and meditatively, as if thinking. Then he would point to the couch with it when he thought the time had come to examine the patient. After he had listened he would sometimes hold the diaphragm

in his hand, cupping it in his palm as he explained what he thought should be done. When he felt it was time for movement he would stand up, letting it drop, swinging and dangling from around his neck, creating movement which echoed his sudden animation. The stethoscope seemed to act as an extension of his body, and, as suggested above, he used it to punctuate the clinic.

A qualified doctor who was training to specialize in cardiology would sometimes sit in on Dr Coltart's clinics. I noted how, when it was this doctor's turn to examine the patient (his position in the hierarchy was after Dr Coltart, a more senior doctor, and before the students, more junior than him) he would stand up from the stool he sat on by the wall (again spatially differentiating himself both from Dr Coltart and the students) and would swing his stethoscope very skilfully off his shoulders as he could only have done had he repeated the action, and thereby practised it, many many times. As he used his stethoscope he would move it around with remarkable ease, almost with flippancy. We students were all far clumsier, and had to fuss about getting the earpieces in the right way round, making sure we were using the diaphragm rather than the bell and so on. But we noted how this doctor used his stethoscope, and tried to imitate him.

I am not suggesting that this doctor had practised handling his stethoscope somehow separately from using it in auscultation. His aptitude came from frequent and repeated use of the stethoscope. Similarly, Dr Coltart's use of the stethoscope was not rehearsed but acquired through his familiarity with the progression of the clinic, the movement from speaking to the patient and listening to what he or she had to say, to the examination, to diagnosis and discussion with the patient. Nonetheless, their manoeuvering of the stethoscope was a clear expression of their familiarity with, and confidence in this particular situation.

For the two doctors I describe above, the stethoscope represents a kind of prosthesis, closely connected to the body. It serves as an extension of the body, allowing the doctor to nuance particular actions. Others doctors to whom I spoke also conveyed a sense of the stethoscope having become closely integrated with their movements, being physically 'part of' themselves through repeated use and the accumulation of skill. "I would be lost without a stethoscope. I wouldn't feel complete", one commented when I asked him what would happen if he found himself at work without a stethoscope. He continued:

If I forget it at home or something I try to find one when I get to the hospital and carry it around with me, but I would consider being late for work rather than coming in without my stethoscope. If I get to the corner and realize I have forgotten it, I will certainly go back for it. If I get to the tube station and realize I've forgotten it, I will hesitate for a minute, and then go back for it.

Another doctor described his feeling that without a stethoscope he would be restricted or inhibited: "Without the stethoscope I'm limited. It would be like one of my capacities is not working at full strength. I could only operate at less that one hundred percent of the potential which would be available when I did have it with me". The stethoscope is necessary in order for these doctors to feel 'whole', even normal, as they go about their work.

The students, too, quickly developed a close attachment to the stethoscopes they used and carried. They began to experience strong feelings that their stethoscopes were 'theirs', and belonged uniquely to them. Although it did occasionally happen that one student would borrow another's stethoscope, there was a distinct sense that this was something of an imposition, and the instrument should be promptly returned to its owner. A notion also quickly developed among students that they were only able to hear properly with their own stethoscopes. Other people's simply weren't as good. This feeling of being 'used to' a particular stethoscope expresses a firm embodied connection with it. The following is an excerpt from an interview I conducted with two students named James and Sheila:

> James: Even though she's got a better stethoscope than the one that I have, sometimes I don't really hear the sounds that I want to hear. But when I have *my* one, I can hear. Her stethoscope is better than my one but I feel that I can actually hear the sounds that I need to hear better with *my* stethoscope.
>
> Sheila: I don't like using anyone else's either. I'm more confident using mine. I'm more familiar with it. I know it more. When I use someone else's, I can't hear as well.
>
> James: Although mine's the cheapest version, I still get the best out of it. It's my stethoscope; I know how to use it. She doesn't like it, but it's my one and I can hear the sounds I need to hear. When you're used to something, and you

> know it, you just use it better anyway. I don't really like her stethoscope. As much as I can I'll try and use my one.

Writing on metal workers and their relationship to their machines, Mao Mollona describes a 'world of intimate connections between objects and persons' (2005: 196). The relationships which seem to have developed between these students and their stethoscopes are also characterized by an intimacy 'forged' for the students, much as it is for the metal workers described by Mollona, through repetitive and frequent use. Once again this attachment is indicative of a definite embodied commitment to a particular instrument, a consequence of the intense familiarity with the stethoscope which auscultation creates.

Stethoscopes as 'biographical objects'

In her book *Biographical Objects: How Things Tell the Stories of People's Lives*, Janet Hoskins (1998) describes her work among the Kodi, who live on the island of Sumba in Eastern Indonesia. She details the manner in which her research led her to position objects as a means of accessing the lives of those with whom she worked. Indeed, she found that it was more constructive to ask questions about objects in the Kodi context than to ask targeted personal questions about the lives of individuals (ibid: 2). The orientation of her research, she suggests, is traditional in an anthropological sense, as anthropology has always been concerned with the importance of objects, particularly in contexts of exchange. But, she argues, it is also innovative, as her work explores the way in which people use objects in constructing narratives of their own life stories. Hoskins' research thus looks at the way objects are used as vehicles in Kodi narratives of the self.

In her article 'On Being a Doctor: What the Stethoscope Said', Bonnie Salomon (2001) describes her own feelings of attachment to a stethoscope which is now broken and must be replaced. She writes:

> You might think it odd to care about a broken stethoscope – a piece of steel and plastic tubing, an instrument, a mere tool. You might think it overly sentimental to care about a fifteen-year-old stethoscope, now broken, a dud, not able to transmit the harshest breath sounds or murmur. My stethoscope has come to the end of the line, so to speak, lived out its life expectancy perhaps,

> and no longer works. It's time to get a new one. So why the fuss? Why bother feeling an emotional attachment to this inanimate but intimate object of auscultation? (ibid: 56)

She goes on to explain that her stethoscope has accompanied her throughout her medical career, touching nearly every one of the hundreds of patients she has examined. She suggests her stethoscope is a storied instrument, 'often bloodied during resuscitations'. 'If this stethoscope could speak', she writes, 'it would tell stories of all my patients' (ibid).

It is easy to see in this extract that she uses the stethoscope to reflect on her own career. She suggests that it has been a companion in her work and attributes to the instrument a kind of memory. It is positioned as having absorbed the experiences in which it was implicated. It would retell them if only it could speak. Returning to the Kodi example, Hoskins describes betel pouches as receptacles, repositories or containers of memory (1998: 5). In Salomon's case, the stethoscope is an object on which the events of her career are inscribed. Its accumulated bloodstains are both proof and a reminder of her accumulated experience. Hoskins writes that: '[b]iographical objects share our lives with us, and if they gradually fade and deteriorate over the years, we recognize our own aging in the mirror of these personal possessions' (ibid: 8). This point is well illustrated by Salomon's recognition that her stethoscope has been broken through sheer attrition, the constant wear and tear of use in her professional life. Its eventual breaking testifies to the great many different cases she has encountered over her fifteen years in medicine. It also indicates how hard her work is, and the difficulties she has confronted during her career. In Salomon's case, the stethoscope is not only 'the witness of the functional unity of its user' (ibid). It is evidence of the demands and challenges she has met in her work.

I have mentioned the initial comments made by medical students while we were waiting for the *City Hospital* filming to begin. Diane said that it was exciting to know that this instrument was one which you could expect to use and have with you throughout your medical career. Later, after buying a Cardiology III, Rishi justified the purchase by saying that the money had not been wasted because he would be using the stethoscope for many years to come. Clearly the stethoscope is felt to be a tool which will accompany a medic for years, being present at, or used in a huge number of interactions. The instrument becomes a companion, an object around which memories and associations may be concentrated or organized.

Ultimately, of course, Salomon is throwing her stethoscope away. It is broken and she will replace it with another. Indeed, it seems unreasonable to suggest that stethoscopes become particularly important objects for their owners given that they are mass-produced, disposable and can be easily substituted. When it comes to new stethoscopes, doctors are spoilt for choice. Furthermore, stethoscopes are ubiquitous objects and are, within context of the hospital, ordinary and unremarkable. Nonetheless, Salomon's example shows how a simple object, the medical equivalent of an ordinary household possession, might be given extraordinary significance by becoming entangled in the events of a person's life and being used as a vehicle for a sense of selfhood. Imbued with a personal history, the stethoscope becomes closely linked with the life of its owner. A man I spoke to during my research told me that his father had been a doctor and had found it very difficult to 'let go' of medicine after his retirement. For three years he had carried his stethoscope around with him wherever he went. He would not relinquish it. Eventually one of his children had organized a small ceremony at which his father was able to formally 'pass on' his stethoscope to the doctor who was now in charge of the practice where he had worked. This formal, physical separation from his stethoscope was necessary in order for him to experience a definite shift in his identity, and to accept that he no longer practised as a doctor.

At the beginning of this chapter I suggested that the stethoscope has become a symbol of the doctor in popular culture. The students with whom I worked also recognized that wearing the stethoscope and using it skilfully formed part of a doctorly way of thinking and acting (a doctor habitus). Indeed, I would suggest that it is because the use of the stethoscope encapsulates the habitus so neatly, representing its encapsulation, its crystallization, that the instrument is considered emblematic of the medical profession. It was through learning medical skills that the students began to internalize ways of behaving 'like a doctor'. Of course, it is not uniquely through auscultation that the doctor 'habitus' is manifested. Other medical skills, dealing with clinical examinations or handling difficult interactions, for instance, also involve a process of learning which entails the internalization and enactment of what Bourdieu refers to as the 'dispositions' of the medical profession. Interestingly, though, stethoscopes *as objects*, through skill and technical mastery, come to be tightly bound up in the production and reproduction of dispositions. This intimate engagement is reflected in some doctors and students developing close personal attachments to their particular stethoscopes, even considering them to act as physical extensions of their bodies. At the same time, stethoscopes, as what might be described as 'biographical

objects', are invested with memory, providing an object through which some doctors reflect on their work and on their own lives. In the final example given above, the stethoscope is not emblematic of medical practice in general, but becomes the means through which one particular doctor remains connected to a sense of his life's work. He cannot bear to be separated from his stethoscope, as this would involve him separating himself from the doctor habitus, a way of being through which he has defined himself throughout his life.

Chapter Three: An Acoustemology of the Body

Following a group of third-year medical students being introduced to the auscultation of the heart, I detail some of basic principles of the technique. I give a description of the students' initial confusion as they grapple with an unfamiliar practice. While the students receive instruction on how to listen, I suggest that auscultation, like other clinical skills in medical training, is learned through practical engagement. An embodied knowledge of auscultation is created through repetition and imitation within a broader framework of what anthropologists refer to as 'apprenticeship' (Jenkins 1990: 440). The stethoscope as a technology and auscultation as a practice create a particular acoustic relationship between the user (the doctor or medical student) and the patient body. Drawing on the work of Stephen Feld, I go on to argue that auscultation may be understood as a system of acoustic knowledge, or 'acoustemology' (1996: 97). While Feld applies the term 'acoustemology' to engagements with place and space, I suggest that through learning auscultation the students become participants in an 'acoustemology of the body'.

The 'lub' and the 'dup'

On our first day of actual teaching for the cardiology rotation, we sat around a table in the tutorial room. Dr Coltart asked us "What sound does a heart make?" From the blank expressions around the table it appeared that none of us knew. This seemed strange. As Ackerman points out '[w]e're used to associating the heart with sound' (1990: 190). Most people know what a heart sounds like. Even though one might not actually listen to a heart very often, one is often aware of one's own heart pumping and of the texture of sound which it creates in the ears. Also, the sound of the heart beating has a high profile in popular culture, as it is often used in television and film soundtracks. Evidently, though, while recognizing the sound might be easy, describing it is more difficult. No one answered.

In the end, Dr Coltart responded to his own question. "You might be familiar with the song by Peter Sellers and Sophia Loren in which they sing about her heart 'going boom boody-boom'. Well, this describes the heart beat quite nicely. 'Boom boody-boom' suggests the heart beat has four components, boom, then boo-dy, and another boom. In fact, the heart does have these four sounds, but because of the way our ears are designed we can't easily separate the many components, so in medicine we say the heart has two main sounds. We say it goes 'lub-dup'". Dr Coltart went on to explain that the first heart sound, the 'lub' is caused by the closure of the mitral and tricuspid valves, the second, the 'dup', by the closure of the aortic and pulmonary valves. I myself had never thought about what caused the sound of the heart beat. I had assumed it was simply the force of the heart's muscular contractions. To learn that it was in fact the closing snaps of two pairs of valves was surprising. A diagram showing the valves and their position in relation to the rest of the heart may be helpful here:

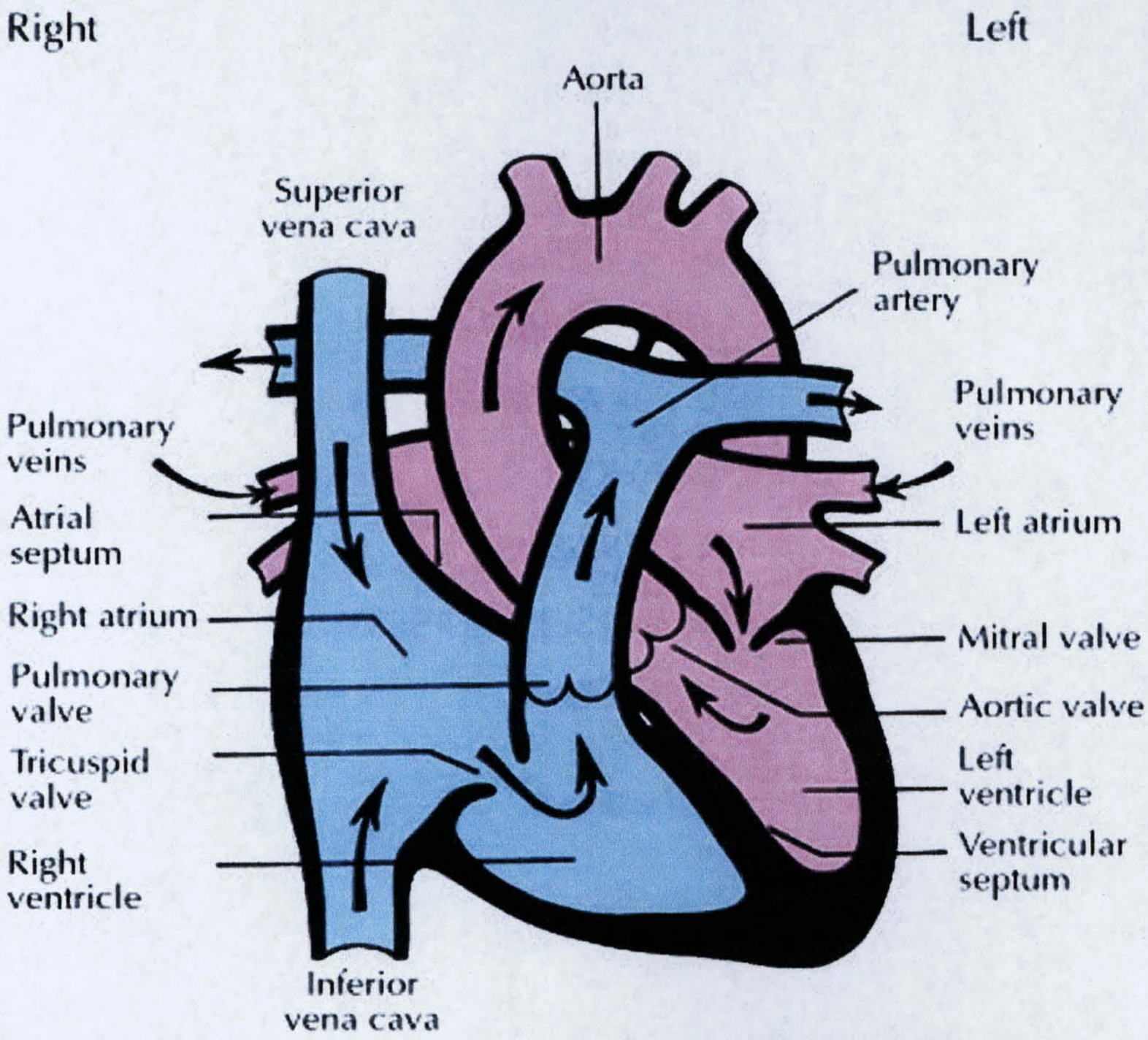

Figure 4:' The Normal Heart', I. Kennedy (2001)

The simplified diagram below shows the valves more clearly. From the reader's left to right, they are the tricuspid, pulmonary, aortic and mitral valves. The mitral and tricuspid valves function as one pair, the pulmonary and aortic as the other.

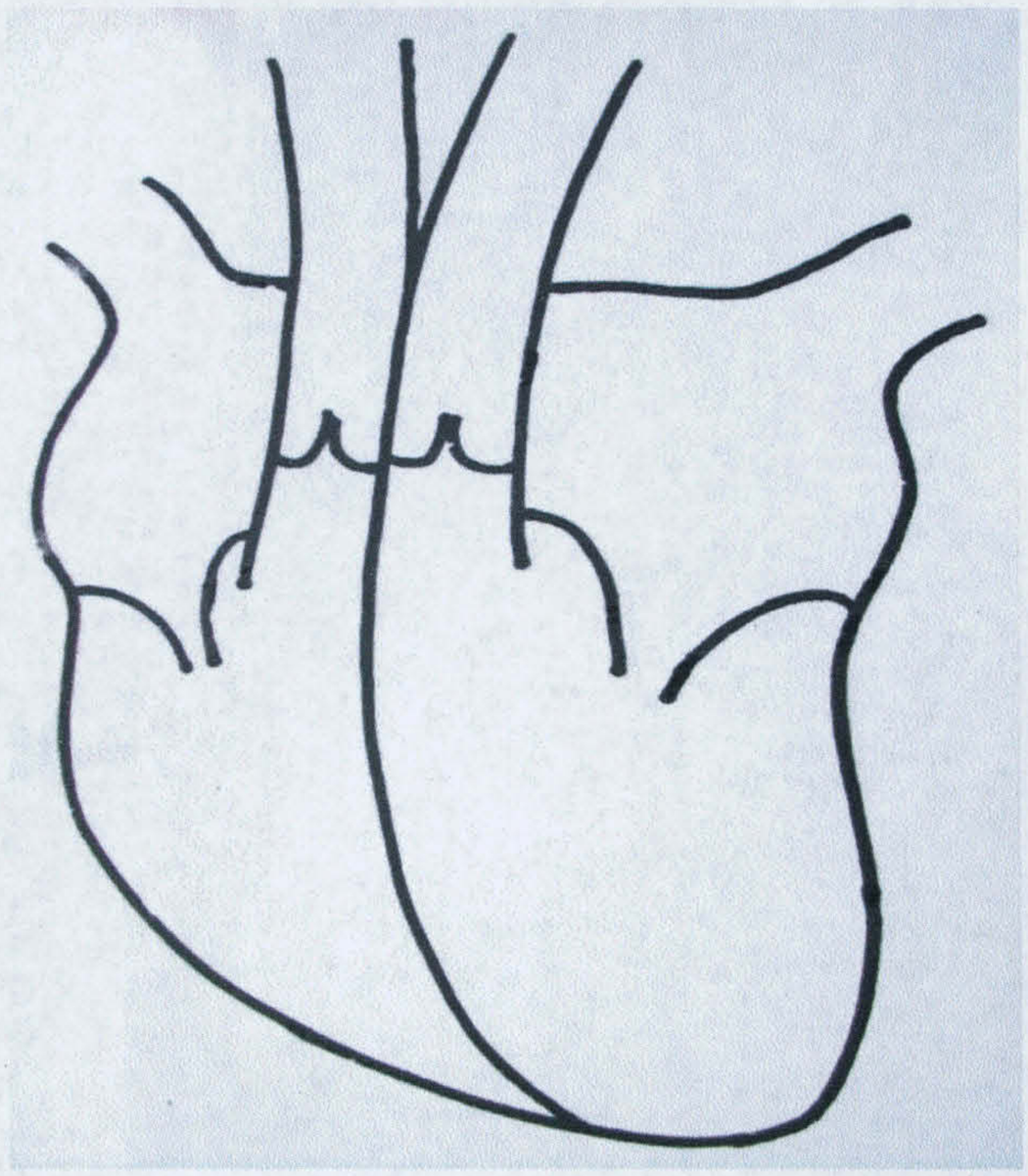

Figure 5: 'A Simple Diagram of the Heart', K. Petersen (2000)

Dr Coltart went on to explain that normally when blood flows through the heart and across the valves, it does so smoothly, meaning that the only sounds that can be heard through a stethoscope are the closing snaps of the valves which create the 'lub' and 'dup'. Sometimes, however, a physiological cause triggers the blood flow to become turbulent. This turbulence creates what are known as 'heart murmurs'. For instance, if a valve for some reason becomes stiff and the blood has to be forced through a rather narrower opening than is made by a normal valve (this restriction of the flow of blood is known as 'stenosis'), turbulence will be created and a murmur produced. If the valve fails to close properly, or becomes floppy meaning that the blood, after going through a valve, flows back through it (a development known as 'regurgitation'), a murmur will again be produced, though at a different stage in the cardiac cycle and with a different sound. Problems with the valves are not the only causes of murmurs. Small holes in the septum, the muscle wall which separates the two sides of the heart, for instance, can cause large volumes of blood to be forced back and forth between the chambers of the heart causing a murmur known as a 'shunt'. Some murmurs

appear to have no physiological basis at all, being caused by unexplained turbulence in the blood flow. These are known as 'innocent' or 'flow' murmurs. In general, though, heart murmurs are linked to incompetence in the functioning of the valves. Dr Coltart went on to explain that "[m]urmurs are the bread and butter of cardiologists". It was murmurs which we would devote most of the rotation to learning to hear.

At this point the tone of the class became more serious. The pace of Dr Coltart's explanation became faster, his terms of reference more detailed and technical. Over the course of my fieldwork I attended the full rotation in cardiology three times, taking notes in each class. Below I give an account of the basic instructions Dr Coltart gave to each set of students in preparation for auscultation. The guidance was intended very much for newcomers to the technique, and as a consequence contains none of the subtlety which would be appropriate for more senior medical students or doctors. This account has also been somewhat simplified in the interests of clarity. However, I hope that it creates a sense of how the students are introduced to auscultation.

In order to listen to the heart one must first know *where* to listen. Certain points on the chest have become established as the best places to put the diaphragm of the stethoscope in order to produce the clearest and most audible sounds from each of the valves. Students must therefore know where to find the mitral, aortic, pulmonary and tricuspid areas, the points on the skin at which the sounds of the four valves may be heard most clearly. They should also know where to place the stethoscope in order to listen to important blood vessels, in particular the aorta, carotid arteries and the pulmonary vein. The first question asked of students as they try to describe a heart murmur, then, is 'Where on the praecordium (the chest) is it heard?' Listening usually begins in the mitral area, followed by the tricuspid, pulmonary and aortic areas. The surface of the chest becomes a kind of acoustic map, marked with the points at which the heart sounds may be accessed most readily.

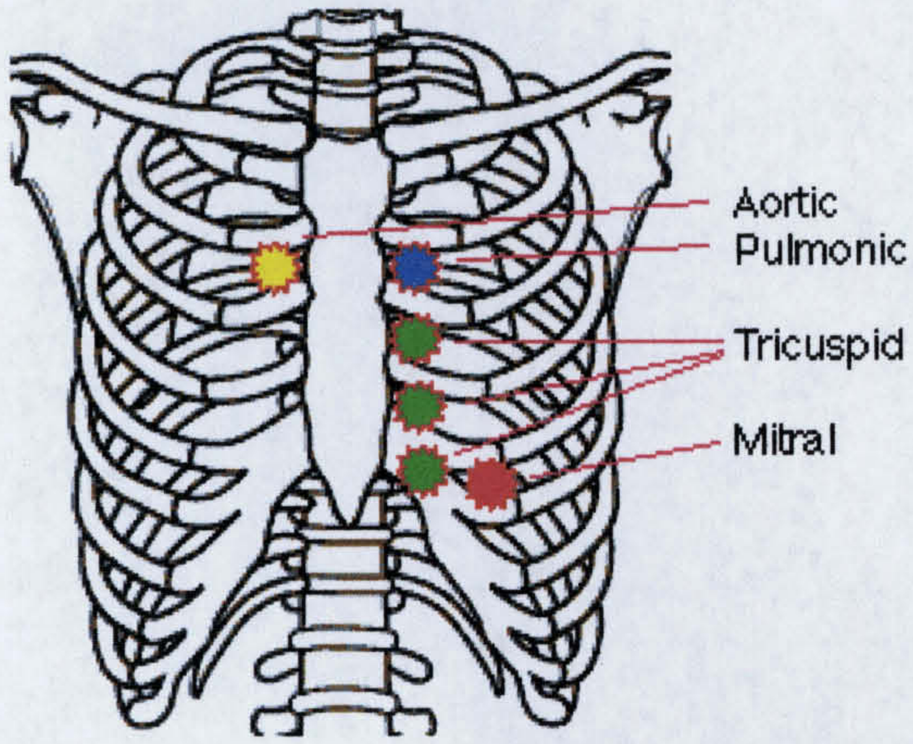

Figure 6: 'Basic auscultation areas', R. Raithe (2000)

Previously Dr Coltart introduced the sounds of the heart as 'lub-dup', with the 'lub' element of the heart sound being caused by the closing of the mitral and tricuspid valves. During the interval between the 'lub' and the 'dup', then, the mitral and tricuspid valves are closed, and the aortic and pulmonary valves are open while the heart pumps blood down the aorta through the aortic valve, and down the pulmonary artery to the lungs through the pulmonary valve. This interval of pumping is known then as 'systole' (pronounced sis-toe-li). When the aortic and pulmonary valves close, making the 'dup' as they do so, the mitral and tricuspid valves are open, and blood flows through them, filling the ventricles. This interval is known as 'diastole' (pronounced di-as-toe-li). A murmur, then, should be described in relation to these two intervals of the cardiac cycle as either 'systolic' or 'diastolic'. The second question to ask oneself when auscultating the heart, then, is 'Where in the cardiac cycle can the murmur be heard?'

As can be seen in the first diagram, the mitral valve channels incoming blood from the pulmonary vein through the left atrium into the left ventricle. The aortic valve lets blood from the left ventricle into the aorta. The blood from the aorta also travels into several major arteries. One of these is the carotid artery which is found in the neck and which supplies blood to the brain. If either the aortic or the mitral valve is creating a murmur, the sound usually travels to the carotid artery or the pulmonary vein respectively. So if, when pressing the stethoscope either to the axilla (the area of flesh on the torso under the upper arm and below the armpit on the left side of the body) or to the neck over the carotid artery a murmur can still be heard, the murmur is said to *radiate* to the axilla, or to the carotid artery. This gives a sure indication that the mitral valve (if the murmur is heard in the axilla) or the aortic valve (if the

murmur is heard in the carotids) is affected. The third question students should ask themselves, therefore, is 'Where does it (the murmur) radiate to?'

If a patient is auscultated whilst sitting up and taking deep breaths, the interval between the two heart sounds is extenuated, meaning that murmurs may be heard more clearly for a slightly longer time. Exhalation increases the return of blood to the right side of the heart, making murmurs in the tricuspid and pulmonary valves louder in volume. The heart beats also tend to slow down on inspiration, making some heart murmurs easier to detect. By making the patient sit up, and listening while he or she takes deep breaths, any abnormalities in the heart are likely to become more audible. The fourth question, then, is 'What happens to the murmur during respiration?'

Having imparted these basic principles, Doctor Coltart pointed at one of the students and asked "What do I want to know about a murmur?" The answer he wanted was: "Firstly, where on the praecordium is it heard? Secondly, where in the cardiac cycle is it heard? Thirdly, where does it radiate to? Fourthly, what happens during respiration?" In the weeks which followed he would often test us on these principles. He insisted that the answers be automatic, cutting out what he referred to as the 'student refractory period', the time taken to recover information from the brain (there is a medical reference here, as the refractory period is time taken following the response of a muscle or a nerve for it to regain the capacity to make a second response; there is also a touch of medical humour, as the 'refractory period' is the term given to the time it takes a man to regain erectile function following ejaculation). Sinclair observes in his study *Making Doctors: an institutional apprenticeship* that teaching doctors emphasize the need for students to operate 'on automatic pilot or at brainstem level' (1997: 225). Dr Coltart certainly did this. The penalty for not remembering immediately would be subjection to ridicule in front of the rest of the firm, and the implication that the unfortunate student was 'letting the firm down'.

It might be said that the principles are deceptively simple. They suggest that auscultation is a straightforward process, a simple matter of induction by reference to the answers to the four questions outlined above. For instance, a murmur detected in the aortic area, in systole, radiating down the aorta and becoming louder on inspiration must be that of aortic stenosis. There is a pleasing simplicity to the process. However, there is a huge discrepancy between learning a set of principles or guidelines for a certain medical examination or procedure, and applying them. This fact is beautifully illustrated in one of Bulgakov's (1975) stories from *A Country Doctor's Notebook* entitled 'Baptism by Rotation'. The author, who is able to boast of

having graduated from medical school having 'passed the obstetrics paper with distinction', finds himself to be utterly helpless when a woman in labour arrives at his remote country hospital presenting the first transverse lie he has seen (ibid: 59). He finds himself able to visualize the relevant text of his bible, Doderlein's *Operative Obstetrics* in its entirety, but realises that its advice is worse than useless. It is ultimately through the guidance of Anna Nikolavena, the assistant who saw Bulgakov's predecessor carry out the procedure many times, that he finds the wherewithal to carry out the necessary 'podalic version'. Of course, I am not suggesting that a third year medical student's attempt to convert his or her rote-learned knowledge of auscultation into the successful identification of a heart murmur even comes close to matching the delivery of a difficult birth in terms of either drama or gravitas. However, I think it is fair to say that the medical students with whom I studied felt something of Bulgakov's sentiments when clutching their stethoscopes, standing in front of their first patient, with Dr Coltart asking what he or she had heard.

The sensation experienced by the students of being hopelessly ill-equipped to deal with the practicalities of listening while knowing the principles by rote might be said to highlight the distinction between two different forms of learning within medical training. There is the explicit and 'formal' knowledge which is acquired through the textbook or through learning in the classroom environment, and a non-verbalised, practical knowledge which must be acquired through carrying out or performing examinations and procedures.

In his book *Making History: Pukapukan and anthropological constructions of knowledge*, Robert Borosky (1987) explores how Western theories of learning have tended to focus on the acquisition of formal knowledge, usually in a designated learning environment such as a classroom. During his fieldwork in the South Pacific, however, he notes much learning in Pukapukan society occurs through participation in everyday activities, and as such might be regarded by Western theorists of learning and education as 'informal' (ibid: 78). He observes that it would be a mistake to contextualise all Pukapukan learning as 'informal'. There are some situations, for instance English classes and sessions during which the young learn Pukapukan mythology, in which learning is formal and explicit. However, he suggests that most is informal and tacit.

For Borofsky, informal learning in Pukapuka takes place in the context of activity. It is embedded in some purpose and is situationally relevant (ibid). He gives the examples of canoe building, in which techniques are learned through watching and

copying an experienced canoe-builder, and fishing, in which children learn the different species of fish and the places in which they are likely to be caught while out fishing with family members. 'Learning arises through carrying out concrete tasks' (ibid: 79). Explicit instruction in these contexts is rare. Above all, children learn practically through participation.

Within medical training, as the example of Dr Coltart's class given above suggests, 'formal' learning is very much in evidence. The students are frequently verbally instructed and directed. At the same time, however, they are obliged to learn a great deal through observation and participation. The example of auscultation illustrates this nicely. While the firm learned how to auscultate in the abstract in the seminar with Dr Coltart, they came to acquire the skill, as I will suggest below, through doing, through performing the examination. It was particularly important to develop a practical sense of *how* to listen because auscultation is a skill in which 'successful practice normally excludes knowledge of its own logic' (Bourdieu 1977: 19).

But the example of auscultation may be used to refer to clinical skills more generally. I suggested in chapter two that the students internalized the 'habitus' of the doctor to a considerable extent by observing and imitating the actions and gestures of their teachers. In the same way, clinical skills are 'learnt and employed bodily…practical mastery is transmitted in practice without attaining the level of verbal discourse' (Jenkins 1994: 439). As such, medical training is best conceptualized in terms of an 'apprenticeship' through which students learn through participating directly in medical practice (ibid: 440). Much as medicine represents for the students a specific system of relating to the patient body, it also requires that they readjust their relationship to their own bodies. They internalize what for them are new kinds of embodied knowledge.

From 'the foot of the bed'

Apart from our very first class with Dr Coltart, which, as I explained in chapter two, was somewhat exceptional, our clinical teaching sessions on the wards would generally follow the same pattern. We would meet in a seminar room on the administration floor of the cardiothoracic unit and change into the white coats which, as students, we were required to wear whilst on the wards. Picking up our stethoscopes and notebooks we would then follow Dr Coltart upstairs, tagging along

behind him like a gaggle of geese. Rather than using the (slow and patient-filled) lift he took the stairs two at a time, a confident movement which expressed his ease in this environment. The hospital can be difficult to navigate, and students were impressed by people who knew their way around it (knowledge of a new short cut or route through a lesser known part of the hospital could gain a student some credibility with his or her peers, and of course, it is only for novices and patients to ask how to get to somewhere). Pushing open the swing doors of a ward, Dr Coltart would then walk in, greeting the ward sister and the nurses as he did so. A number of patients would sit up in their beds, turning to look at us as we went past. We would follow him to the bedside of a particular patient who would usually be expecting us, Dr Coltart having asked prior to the class whether he or she would be happy to be involved. One of the students would then pull the curtain around the bed, and the others would form a semicircle round it. Dr Coltart would generally be at the head of the bed, on the side nearest the patient. Simon Sinclair remarks that this particular way of arranging a class has become a distinctive feature of medical education. He observes its potential to create a 'temporary dramatic space' in which the students find themselves alternating in their roles as audience (in relation to the consultant and one another) and as actors (in relation to the patient) (1997: 215).

Dr Coltart would then introduce us as a group to the patient. His manner was generally quite jocular, and he always succeeded in establishing a good rapport. It was clear that his patients reacted well to him. He would refer to us as "these young doctors", which perhaps distracted the patients from the fact that we were students using them for practice. Having done this, Dr Coltart would ask us to give our initial observations, not necessarily relating to the patient directly, but to the clues which were given by the objects around the bed. In time we learned the kind of things he wanted us to spot. The condition of flowers in a vase by the bedside might give an indication as to how long the patient had been in hospital. The level in a bottle of orange squash might yield similar information. The kinds of cards the patient had would suggest some of the dynamics of his or her social life – cards from young children for instance suggesting the patient was a parent, or numerous cards from more formal senders indicating that the person was of some social importance. The presence of medicines and inhalers on the bedside table offered further clues, this time as to the nature of the patient's illness. On one occasion Dr Coltart wanted us to spot a plastic cup which had a bluish tinge in the bottom. We were able to identify this as methadone, indicating treatment for heroin addiction. Before it became routine for

them the students were impressed by the amount of information which could be gleaned from these observations, though they were amused by occasional spectacular misreadings of the clues. For instance, on one occasion Dr Coltart was explaining that the patient had had fluid drained from his lungs, and held up ~~as~~ a jug full of yellowish liquid which had been resting on a nearby window ledge, announcing "And here it is!" "Actually that's urine", said the patient, bashfully.

Following these observations from the patient's immediate surroundings, Dr Coltart would ask us to make more general observations, this time concerning the patient him or herself. Was he or she sitting up, speaking comfortably, breathing evenly and regularly, talking, behaving compliantly? Were there scars from previous operations, bandages, tubes, cylinders? Was he or she over or under weight? I explore in more detail in the following chapter the more specific observations which take place prior to auscultation, and which have considerable bearing on the act of listening itself, but having talked to us about the observations we might make from the foot of the bed Dr Coltart would instruct one student, generally the one closest to the patient's head on the left side of the bed (students are taught always to approach the patient from the left) to auscultate the patient's heart. The student would introduce him or herself to the patient personally and ask permission to listen to the chest (along the lines of "My name's Alistair. Is it all right if I have a listen in to your heart?") this being part of learning to engage with patients and to develop a confident and courteous manner in dealing with them. We all felt silly making such a redundant introduction and asking a question to which the answer was so obvious. The patient invariably nodded and said "Of course, of course", waving us on. Having listened, the first student would swap places with the next student until each of us had taken a turn. Generally, while this was taking place Dr Coltart would ask the waiting students questions relating to cardiology, and sometimes, football.

Non-sense

During the first few lessons, while the others were waiting for their turn to listen, one student would be struggling to get to grips with the stethoscope, squinting with his or her ears down the tubes. I want to try to communicate here how strange it feels to use a stethoscope for the first time. On inserting the earpieces, the sounds to which one is accustomed disappear. The outside world is sealed off; it becomes muted, distant. Several scientists working in psychoacoustics have observed that

during experiments carried out using headphones, 'physiological noise of vascular origin' (that is noise created by the heart beat and the circulation of blood known also as 'self-generated noise') becomes trapped inside the ear (Anderson and Whittle 1971, Soderquist and Lindsey 1972). The same 'occlusion effect' is produced by using the earpieces of the stethoscope so that, paradoxically, the first heart sounds a person hears when first using a stethoscope are usually his or her own (Yost 1994: 150). The initial experience of using a stethoscope, then, is one of simultaneous deafness to the outside world and acute sensitivity to noises from within one's own body.

As was explained in the introduction, the third year of medical school, with the beginning of clinics, represents an important progression for medical students. They begin to acquire practical experience and encounter real live patients rather than learning from books and lectures. Learning auscultation represents this new level of practical engagement very nicely, as it requires the student to move close to and to touch the patient, experiencing the physical presence of his or her body in an immediate way. Placing the stethoscope on the patient's chest is strange at first (though it quickly ceases to be experienced as such) because it involves entering the cocoon of warm air which surrounds his or her body. This air is charged with that patient's particular smell, pleasant or otherwise. Touching the skin, one becomes aware of its temperature and texture. The chest can be felt rising and falling, and the patient's breath can often be felt on one's face as one's head moves in closer to the patient. It becomes easy to notice certain details of the skin, its colour, the presence of pigmentation, scars and moles. Pressing down the diaphragm of the stethoscope also creates a sense of the skin's resistance, suggesting its age and condition, the presence of muscle, bone, fat. As I have suggested, this intimate contact with the patient is initially very strange. Smells in particular were much commented upon by the medical students once off the ward. At first they would try to define the smells of patients as if discussing perfume. However, as they became more accustomed to this kind of proximity with patients, their observations, or at least the verbalization of them, became less frequent.

Just as the physics of the stethoscope suggest that the vibrations of the chest wall are conducted through tubes directly to the ears of the physician, the sensation for the auscultator is one of a sudden rush of body sounds up the tubes, filling the ears. Instead of the doctor penetrating the patient's body with a kind of 'auditory gaze', the sensation is more one of the patient's body penetrating that of the listener. Yost writes that sounds presented over earphones are generally perceived by

experimental subjects as being 'inside the head' rather than 'out in space' where actual sound sources usually appear (Yost 1994: 178). The same is true for the sound conveyed to the earpieces of the stethoscope. Making any sense of the cacophony is at first almost impossible. There is just the feeling of something like a sonic draft reaching the head, and one becomes, as Ellman writes, 'stuffed with sound' (1993: 101).

In order to listen, then, it becomes necessary to try to exclude or shut out particular sounds, to cultivate a kind of 'selective hearing', channelling auditory attention so as to ignore certain noises. The auscultator must filter out 'meaningless' sound in order to identify those parts which are meaningful. One is, partly at least, listening to *not* hear, a phenomenon which has received much investigation from psychologists with a special interest in audition. Brian Moore (2003) details a number of experiments which explore listeners' relatively strong ability to 'hear out' certain components of a complex sound. He observes that people are able to listen in distinctly separate 'analytical' or 'synthetic' modes. The 'analytical' allows the listener to hear or attend to individual components of a sound, while the 'synthetic' mode fuses elements into a single percept (ibid: 282). Warren suggests that some training may be necessary in order for listeners to shift effectively between these 'analytic' and 'synthetic' modes (1982: 63). Welsby, Parry and Smith point out that the sound which is conveyed to the ear by the stethoscope may contain, for example, breath sounds, or sounds created by the heart muscle which are not the focus of the listening exercise (2003: 695). They detail an experiment they themselves conducted in which they played doctors tones of various kinds through a stethoscope. They noted that practised auscultators were effective at filtering out extraneous or misleading sounds. These people were never able to explain, however, how it was that they were able to do so.

During auscultation, the volume of sound fed directly to the ears creates an overwhelmingly acoustic experience. This is not to say that the other senses are negated or somehow deleted from experience. They are not. One continues to be able to see, touch, smell etc. However, the sense of hearing is engaged in a way which gives it a certain priority in the sensory present. Many students chose to auscultate with their eyes shut or screwed up tight as if trying to force the concentration away from the eyes, squeezing it into their ears. Harjit was an eye-closer. "If you close your eyes you can hear better. You have to suspend all your other senses and put all your energy into your ears", she said, later referring to this state as "murmur mode". These

students attempted to create a sealed auditory space in which to listen. Others kept their eyes open to listen, but stared blankly ahead or into the middle distance as they did so. "Your eyes may be open but you lose your vision. You stare into space but you don't see anything because your concentration is in your ears", said Dave. There is the creation here of a disengaged, inattentive gaze, a gaze which has been vacated or diverted in order to allow sounds to becomes the focus of attention. Auscultation, then, required an unusual acoustic effort, a special kind of concentration. "A will", as Dave put it, "to think yourself into your ears".

But in much the same way that at a concert one might see an experienced concertgoer close his eyes and let his head drop back, abandoning himself to the music, the students' efforts to listen also constituted a kind of 'performance of listening'. This was perhaps helpful for convincing themselves that they were listening as attentively as possible, but it also served to demonstrate to the teacher that they were trying hard and even if they were not actually able to detect anything meaningful, at least their self-application was good and they were making an effort (the presence of an authoritarian added to the complications of listening, as it was felt to be an additional pressure). However, students were also later advised by one of the registrars that clearly demonstrating that one was listening offered a good means of communicating to the patient that, if he or she had been talking before, it was now time to stop and let the doctor concentrate. This 'performance of listening' therefore served both as a technique for shutting out extraneous sound or distracting presences, and shutting up the patient.

Particularly in the earlier lessons of the rotation, few of us could make any sense at all of what we were hearing. Shaking our heads we apologized to Dr Coltart, saying words to the effect of "I'm sorry, I can't hear anything. I honestly can't hear anything". As Tom explained, "When you first come in you don't know what you're listening for. You're just listening. You've got your ears open and everything's coming in and you're like 'Arrrgh!' The first time I came in I didn't know anything. I didn't know what were the heart sounds, I was just listening and thinking 'Oh my God'". Mary agreed: "You try to convince yourself that you're hearing something but actually you have no idea". In later classes, Dr Coltart would wait until we had all listened and then, putting one of us on the spot, would ask "What did you hear?" Once the student had given an answer he would point at another student and ask "Is he right?" Once he or she had answered he would go round the rest of the group, until he had acquired all our answers. Particularly to begin with, all of us were very unsure of

what we had heard. Groups would form on the "yes" or "no" side with individuals swayed by the opinions of the students they thought might be good listeners. It was not uncommon for all of us to be entirely wrong. As Simon Sinclair observes, heart murmurs 'are notoriously hard for novices to identify' (1997: 202).

Learning to listen

To help us get to grips with murmurs, we were told to listen for the 'landmark' sounds, the two distinct pulses which make up the heart beat, the 'lub-dup'. These form the most recognizable heart sounds. After a time, though without being specifically aware of how, we began to be able to carefully extract them from the rest of what we heard, or were able to tune out the other sounds, allowing us to concentrate on these two. Dr Coltart would encourage us to tap out the rhythm of the heart sounds we were hearing while we listened, or to nod with each beat. Eventually we were all able to recognize the 'lub' and 'dub' with some degree of reliability, although from time to time we would encounter a case where none of the sounds we heard were recognizable, or we had positioned the stethoscope so that it was not conducting sound at all.

Next we were advised to progress in stages through the sound, attending to the whole sound, studying it with our ears then moving to focus on specific details. Tom describes this in terms of devoting units of time to elements of what one is hearing: "The first time you listen you're trying to hear everything, and you can't. There's no way you can hear all of the information that's there in one go. You've got to listen for five seconds to everything, then for five seconds you've got to find the heart sounds, then you've got to listen for five seconds for any murmurs. You've got to have points that you're listening for that you can work from". Mary describes being taught to isolate elements of sound from an initial cacophony: "I remember when I had a session with one of the registrars, and I said to her 'Ah, I can't hear anything' and she said 'Okay, just concentrate on the heart sounds, first and second, can you hear those?' and after a while I was like 'Yeah, I can hear those', and she said 'Can you hear anything after that or before that?' So she kind of helped me to break it down, then after that it became a bit easier". Although this idea of gradual auditory 'focus' has not received attention from psycho-acousticians in the literature I have encountered, it appears to be well-recognized, as suggested above, that people are able to separate specific 'acoustic objects' from their background, isolating particular

elements for focused attention. Indeed, the ear works by dividing up and attending to parts of complex sounds, rather than attending to every aspect at once. Moore explains: 'It seems that we are not generally capable of attending to every aspect of the auditory input…rather, certain points are selected for conscious analysis…it appears that the complex sound signal is analyzed into streams, and we attend primarily to one stream at a time. This attended stream then stands out perceptually, while the rest of the sound is less prominent' (2003: 294-5). It is difficult to attend to elements which form part of two separate 'streams'.

Having developed the skill of listening to the heart sounds, the students next began listening for murmurs. This however, was more complicated. Some murmurs are easier to identify than others. The murmur of aortic stenosis, which is caused by blood being forced through a narrowed aortic valve, is particularly distinctive. While the volume and clarity of the murmur varies with the severity of the valve's stenosis, in its classic form the murmur is harsh, and one can hear the 'pushing' quality of the sound due to the pressure under which the blood is forced across the valve opening. This murmur of aortic stenosis is also relatively common, which meant that there were often patients on the wards who exhibited it. The students therefore had the chance to practise listening to this murmur fairly frequently. Other murmurs were very difficult to detect. The murmur of pulmonary regurgitation, for example, is very soft, and often goes unnoticed. It is also rare, and so there were fewer opportunities to get to know it. Moore states that long-term auditory memory is poor, suggesting that students would find it easier to recognize and become familiar with murmurs they heard frequently (ibid: 351). To speak more generally, though, while it took some time for the students to familiarize themselves with specific heart murmurs, they in general became better at listening to the spaces between the 'lub' and 'dup', detecting when a murmur was present, even if they could not recognize and name it immediately. As Alistair put it, "When we started we could hear a sound and that was about it. Then we could hear the two heart beats and a load of muffle. Now we can listen to that muffle and understand what it means".

Dr Coltart was keen for the students to learn to recognize certain murmurs immediately, "as one learns to know a dog's bark". He provided us with a CD on which several different kinds of murmur were recorded, and a consultant's voice talked through their distinguishing features giving helpful tips as to how each might be identified. Listening repeatedly to this recording allowed the students to become familiar with a number of murmurs; those of mitral regurgitation, mitral valve

prolapse, moderate aortic stenosis, severe aortic stenosis, aortic regurgitation, mixed aortic valve disease, mitral stenosis, mixed mitral valve disease, the murmur of a bicuspid aortic valve, the sound of a prosthetic aortic 'ball and cage' valve, an atrial septal defect or 'shunt', a ventricular septal defect, a patient with a fourth heart sound, and a patient with a third and a fourth heart sound. To give a sense of the considerable variety of heart sounds a doctor or medical student might encounter, this was not an exhaustive catalogue of heart sounds, and contained only one example of each 'type' of murmur. There is in fact scope for considerable variation within each 'type' and across 'types', as the murmurs of 'mixed valve disease' referred to above suggest. Nonetheless, the students found this CD helpful, as they were able to listen to it at home and on personal CD players while travelling to and from the hospital, giving them time to listen when they were not 'under pressure'. Some also felt that it was helpful to have the CD on while they were reading, allowing the murmurs to creep into the memory rather than being forced inside it. However, the sounds on the CD were much bigger and cleaner than the sounds that could be obtained by listening through a stethoscope. When listening to the patient the important sounds tend to be muddled and obscured by vascular noise and breath sounds from inside the body. Though one might be reliably able to complete the 'heart sound quiz' at the end of the CD after some days of listening, recognizing the same murmurs in a real live patient was a process which took many weeks of practice, and was not something any of us could reliably do even at the end of the rotation.

Daniel Shindler remarks upon the 'enthusiasm for the stethoscope' shown by medical students as they are introduced to auscultation (2004: 51). I found that the students with whom I studied were also surprisingly keen to practice listening to murmurs. They would, as I have suggested, go back to see patients whose murmurs they had found tricky. They were also energetic in visiting the cardiothoracic wards after classes, asking the nurses on duty if there were any murmur patients they thought might be good to listen to. There was a definite sense of satisfaction among those who identified murmurs correctly (they could check by looking in the patient's notes afterwards) and a definite frustration among those who did not. Clearly auscultation is an important clinical skill. Doctors are expected to be able to detect murmurs reliably and there are clear clinical advantages to being a good listener. But it is also a skill which is impressive in its own right, and there seems to be a desire among students to become 'virtuoso listeners' like the doctors they learn from, hearing the body 'in ways inaccessible to lay-people' (Sterne 2003: 214).

The soundscape of the body

Murray Schafer carried out a pioneering study which was published as *The Tuning of the World* in 1977. Interested in the acoustic dimension of places, he made recordings, observations and analyses of the sonic experience of spaces within the city of Vancouver. Schafer is credited with having coined the term 'soundscape' to describe the acoustic character of a place. His work inspired later studies and the formation of the World Forum for Acoustic Ecology, an organization which is concerned with the social, cultural and ecological aspects of the sonic environment. The term 'soundscape' has become an accepted term within wider public discourse (I notice that *Ecologist* magazine for April 2006, for instance, carries a long article by Nick Kettles on 'soundscapes'). Awareness of the importance of soundscapes as a dimension of both urban and rural environments appears to be increasing. Places and spaces, more and more, are recognized as having their own particular acoustic characteristics.

Schafer's concept of the soundscape might also be applied to other spaces. From the above consideration of auscultation it is clear the body also has a distinctive soundscape created by the work of the organs and the activity of the body itself. The body is a 'sounding cavity', it 'sounds and resounds' (Gell 1995: 240, Ree 1999: 53). This bodily soundscape is imaginatively evoked by Walter Murch in his foreword to Michael Chion's (1994) book *Audiovision: Sound on Screen*. Murch suggests that human beings develop within a sound-rich world inside the womb. Each of us as a foetus, he writes, grows 'in a continuous and luxurious bath of sounds: the song of our mother's voice, the swash of her breathing, the trumpeting of her intestines, the timpani of her heart' (ibid: vii). Murch uses this evocation of the intensely sonic nature of gestation as a metaphor, a rhetorical device through which to consider the conditions of the development of cinema. Unlike people, who gestate in sound and are born into a world of sight, he claims cinema began in a world of silence and visual interest, and later emerged into a realm of sonic possibility. Murch, then, uses an elaborate take on the socialization of the foetus to comment on a wider process of evolution within cinema. It is important to remember, though, that he is concerned with producing a dynamic critique of cinematic development rather than a realistic

documentation of the process of gestation and birth. The decorative and dramatic language he uses to describe the sounds of the womb reflects his agenda.

Diane Ackerman (1990) also imagines the resonant womb in her book *A Natural History of the Senses*. She fancies that 'for a baby in the womb the mother's heartbeat forms the ultimate cradle song of peace and plenty; the surf-like waves of respiration lull and soothe. The womb is a snug, familiar landscape, an envelope of rhythmic warmth, and the mother's heartbeat a steady clarion of safety' (ibid: 178-9). Ackerman, like Murch, draws on rich acoustic imagery, this time to create a sense of an idyll of warm and reassuring intimacy between the mother and the foetus: '[m]other and child are united by an umbilical cord of sound' (ibid: 179). Perhaps an umbilical 'chord' would have been a more appropriate term.

Professor Colwyn Trevarthen, a psychologist working at the University of Edinburgh, also speculates on the acoustic characteristics of the womb (2006). He uses premature babies to demonstrate that the sense of hearing is well-developed before birth, and claims that the premature babies he has studied are born with a capacity to identify the voices of their parents, an ability which must develop through hearing those same voices in the womb. The soundscape he imagines to exist within the womb, then, is characterized by vocalizations. Trevarthen has begun to provide experimental evidence for the popular notion that the foetus develops a sense of hearing a considerable time before birth and is sentient to sounds from an early stage of development.

In the examples given above it is only the foetus, positioned *inside* the body, that is audience to its soundscape. Even the mother herself is largely unaware of the sounds she is generating. The body, then, is only a rich acoustic presence for ears somehow immersed in, or positioned inside the body. Once the baby is born, he or she no longer hears the body sounds of his or her mother, or at least, they recede given the tide of new sensory experiences. As Ackerman points out, 'we rarely hear the internal workings of our body, the caustic churning of our stomach, the whooshing of our blood, the flexing of our joints, our eyelid's relentless opening and closing' (1990: 178). These sounds are distinctive, but so familiar that we are not always conscious of them. Perhaps our internal concert is, as T.S. Eliot suggests, a sound 'heard so deeply that it is not heard at all' (1963: 199). The body, or to be more specific, our own bodies, are not experienced as dynamically acoustic entities. They are quiet.

Although our bodies may be quiet, however, they are not silent. In his book *I See a Voice,* Jonathan Ree (1999) describes how as a child he would stick his fingers

in his ears in an attempt to exclude *all* sounds, to attain silence. As he did so, however, he remembers that he would still encounter 'the ceaseless internal concert of [his] breathing and swallowing, and the eerie continuo of [his] beating heart' (ibid: 51). Though, as Ackerman states, 'we rarely hear the internal workings of our body', we do on occasion become aware of them (1990: 178). They are never entirely absent. Indeed, Ackerman continues the sentence quoted above with a qualification: 'at most, if we wear earplugs, or have one ear pressed against a pillow at night, we might hear our heartbeat' (ibid). Our own bodies, then, occasionally become audible to us; they make themselves present as acoustic entities. These sonic expressions may be subtle and indistinct, but their distant presence is a presence nonetheless.

Stephen Feld (1996) acknowledges Murray Schafer's soundscape study as an important influence in his work 'Waterfalls of Song: an acoustemology of place resounding in Bosavi, Papua New Guinea'. Feld emphasizes the pertinence of soundscape studies to anthropology, pointing out that the exploration of how places are heard, how they sound and resound, has been widely neglected in ethnographic inquiry: '[i]n contrast to the long history of the landscape idea in both artistic and scientific inquiry and representation, approaches to the way in which worlds are sonically apprehended have shallower histories...' (ibid: 94). He urges that the multi-sensory nature of perceptual experience logically requires the multi-sensory conceptualisation of place (ibid). Ethnographic writing on place has, however, been dominated by a pervasive visual bias. Feld uses his article to 'argue the potential of acoustic knowing' (ibid: 97). Sound, combined with an awareness of sonic presence, is posited as a powerful force in shaping how people interpret their surroundings.

Feld goes on to describe the manner in which the Kaluli of Bosavi, Papua New Guinea dwell in dense, remote forest on steep mountains. It is the sounds which emanate from the forest, creating a 'sensual wraparound of sound' which provide the primary means through which the Bosavi engage with their landscape (ibid: 100). Feld's work has been highly influential, and has inspired a number of other studies which dwell on the particular acoustic relationships which people have with their environments, for instance those of Leach (2003), Gell (1995), Weiner (1991). He also inspired my own previous study of hospital soundscapes (Rice 2003). Feld considers his writing on the Bosavi to be a study of local conditions of acoustic sensation, knowledge, and imagination which he feels are embodied in a culturally specific sense of place. He underscores 'the potential of acoustic knowing, of

sounding as a condition of and object for knowing, of sonic presence and awareness as shaping forces in how people make sense of experiences' (1996: 97).

Feld gives a detailed explanation of the particular sensory engagement which the Kaluli have with their landscape. The synopsis I offer here obviously misses much of the subtlety (and beauty) of his argument. In essence, though, Feld writes that the landscape which the Kaluli inhabit is latticed by hundreds of streams and rivulets. These trickle and tumble down the steep hillsides, making waterfalls as they do so. These waterfalls form pools which in turn spill over into more streams and more waterfalls. The sounds created by the cascading water fill the forest, and produce a landscape of flow. The 'sensual primacy of water' becomes conspicuous in Kaluli naming practices (ibid: 108). Feld notes 'the descriptive prominence of onomatopoeic ideophones for water sound and motion' (ibid). For example:

"falling"	bu, bulu, gu, gulu, gulugulu, gululu.
"spraying"	fu, fuga, fuwa:n
"flowing hard/fast"	fo, foo, oo
"flowing light/slow"	tin, tintin, tiya, tiyatiya
"swirling"	go, gogo, golo, gologolo, gololo
"splashing/plunging	kubu, kubukubu, tubu, tubutubu

The Kaluli recreate the sounds of falling water using these ideophones in songs, evoking the resonant landscape. The flow of the voice through the body reproduces the flow of water over the land: 'Kaluli sing about waterways, sing with water, imagine song as water flowing like an embodied voice' (ibid: 134). For Feld, the sensory engagement with the landscape which is created by the Kaluli constitutes an 'acoustemology', an experience of place…grounded in the acoustic dimension' (ibid: 97).

In this chapter I have introduced the practice of auscultation as a specialized appreciation of the soundscape of the body, and in particular, the heart. I have described the manner in which medical students begin to learn auscultation, and develop what for them is a new kind of listening as part of their medical training. The soundscape of the heart is heard and interpreted through a particular auditory knowledge which they must internalize and apply in pursuit of their medical qualifications and in preparation for their future practice as doctors. Auscultation represents a particular set of embodied acoustic sensations, knowledge and

imagination which has developed in Western medicine. Like knowledge of the landscape for the Kaluli, auscultation is a system in which 'sound is central to making sense, to knowing, to experiential truth' (ibid). As such, auscultation is appropriately framed as an 'acoustemology'.

Feld considers his study of the Kaluli to be an exploration of a culturally particular understanding of place and emplacement. His is specifically an 'acoustemology of *place* resounding in Bosavi, Papua New Guinea'. I also position the acoustic knowledge which medics possess through auscultation as an 'acoustemology'. But while I take my theoretical orientation from Stephen Feld, I extend the concept of acoustemology into new physical and conceptual space, namely the body and its interior. I work towards an acoustemology of the body.

In his article 'The Language of the Forest: Landscape and Phonological Iconism in Umeda', Alfred Gell (1995) observes that the Umeda inhabit a sparsely populated and densely forested area in hilly country, very detached from other groups, much like the landscape inhabited by the Kaluli. The contours of the dense forest are such that it is never possible to gain a visual vantage point from which to ascertain, for instance, the appearance or situation of the village. Gell describes how he, a visual thinker, was deeply frustrated by his inability to gain a perspective on the village in its entirety, and was forced to re-assess his ambition to construct the village as a visually discrete entity in the intellectual imagination (ibid: 236). Like Feld, whom he acknowledges as an important influence, Gell believes that the forest environment brings about a 'reorganization of sensibility', such that hearing receives particular emphasis in the sensory interplay through which reality is experienced (ibid: 235). He details his gradual realization that 'the balance between vision and other sensory modalities was differently struck where the Umeda were concerned' (ibid: 237). The Umeda did not organize their engagement with the environment in the way he was accustomed to do. They were always more aware of their acoustic surroundings. Gell describes the Umeda as an 'auditory culture' (ibid: 236).

It is absolutely not my contention that doctors represent a particular group whose sensory engagement with the world differs from that of others in their culture. I do not believe that auscultation creates in those who are experienced in it an emphatically acoustic mode of engagement with the world. Auscultation does not bring about a broader 'acoustic' reconfiguration in the sensory interplay through which reality is experienced. On one occasion near the end of my fieldwork I asked a group of medical students who had finished the rotation whether they felt that learning

to auscultate had made them more conscious of the sounds around them. They all agreed that it had not, though it had made them more aware of the things their ears could hear when they concentrated on listening. I do not think that doctors represent a kind of 'auditory culture'. The example of auscultation does, however, show the value of listening, and the important ways in which listening structures the relationship between doctors (and medical students) and the patient body. The students with whom I worked began to develop an acoustic understanding of the anatomy of the heart, recognizing and analyzing its function through sound.

Chapter Four: Hearing Aids

In this chapter I contextualize auscultation, explaining how it 'fits in' to the examination of the patient more generally and describing how auscultation is directed and informed by findings accumulated through history-taking and observation. I show that stethoscopic listening is shaped by other techniques of gathering medical knowledge. The chapter draws on the anthropology of the senses and the work of Tim Ingold (2000) to argue that auscultation as an 'acoustemology' should not be understood in isolation from, and certainly not in opposition to, other types of sensory knowledge. However, I go on to explore the experience of a hearing-impaired student named Nirit, and her engagement with auscultation. This student finds herself at a distinct disadvantage compared to her fellow students who hear normally. Though she is able to compensate using hearing aids, she worries that her lack of trust in her own hearing will influence her ability to work in certain areas of medicine, in particular, cardiology. At the same time, she is concerned that the strange impression made by her use of hearing aids may adversely affect her relationship with her patients. Nirit's example shows the sensory specificity of listening, and illustrates the manner in which hearing is intricately bound up in the formation the doctor-patient relationship, while also affecting dynamics of social relationships within the hospital more generally. As a consequence I suggest that, while the anthropologists working on hearing should be open-minded to the contribution made by the other senses, they should not be dissuaded from exploring the contextual uniqueness of audition where it becomes apparent.

Auscultation as a network of knowledge

When I first began fieldwork at St Thomas', I was struck by the way in which the hospital engaged my own senses. An early impression which stood out for me, as it does for many people experiencing a hospital, was the smell of the place, the uniform scent of disinfectant which pervaded the atmosphere. I found that when I

came back to my room in the evenings, the smell I carried on my clothes was evocative of the hospital and stimulated me to recall the day's events. I gradually became more familiar with this smell, and began to notice different smells more particular to areas of the hospital or to individual wards. The dermatology ward, for instance, had a very distinctive acrid smell produced by the medications which were heavily used there. I was also both immediately and persistently aware that, as R. S. Thomas observes in his poem *Healing*, 'Hospitals are their own/ weather; the temperatures/ have no relation/ to the world outside' (1988: 65). The hospital thermostat seemed to be unpleasantly dissociated from the temperature beyond the automatic doors. The heating in the building was arranged so that it ran at the same temperature all 'winter', from October to May, regardless of the weather outside. We would sit sweating because of the radiators in the consulting room while the sun poured in through the huge windows. The same often happened on the wards, to the more than occasional discomfort, I am sure, of patients. These sensory impressions reinforced the reality of the hospital as an institutional environment (Goffman 1961). However, like Stoller's initial impressions of the Republic of Niger related in his introduction to *The Taste of Ethnographic Things* (1989), for me they were preludes to a more deliberate engagement with the sensory dynamics of the hospital.

In the previous chapter I described how, having started clinics, the third year medical students with whom I worked were moving away from book-learning and in teaching sessions with clinicians were entering close proximity with patients. They were starting to learn how doctors act through engaging in clinical situations. In relation more specifically to the diagnostic techniques used in medicine, the students were learning how to use and direct their senses in order to gather information, making observations, feeling pulses, palpating abdomens, pressing ankles, percussing lungs, becoming attentive to breath and body smells, listening to hearts and so on. The students were drawing on a range of information in learning to conduct examinations and make diagnoses. In the context of auscultation, this information shaped what they expected to hear, and influenced, for instance, the areas of the body to which they attended most carefully. Auscultation, then, takes place by reference to a network of other sensory information.

The auscultation of the heart is in fact an element of a larger and more general 'cardiovascular examination'. It would be impossible to provide an exhaustive account of how the cardiovascular examination should be carried out, giving a list of all the observations which the examiner might make and the diagnostic implications

his or her findings might have. I want to give an indication, however, of the manner in which the examination proceeds, clarifying how auscultation 'fits in' to the cardiovascular examination as a whole. This account will be somewhat simplified, but I hope it will convey a realistic impression of how the examination is conducted.

As explained in the introduction, medical students at Guy's, King's and St Thomas' or GKT (now King's College London School of Medicine), pass through a set of three 'rotations' in their third year. In each of these rotations the students learn how to carry out an examination of a particular body system: in the 'abdomen' rotation, the gastrointestinal system; in the 'head' rotation, the nervous system (they also learned to perform a psychiatric assessment) and in the 'chest' rotation, the cardiovascular and respiratory systems. But even these examinations do not take place in isolation from other means of gathering medical knowledge. For example, the students were taught that, prior to beginning an examination, a medical history should be taken.

'History-taking', as it is known in medicine, is an important skill in itself. It involves gathering information from the patient aurally, using a highly stylized question format. The specific questions asked depend on which system is being examined, but they are phrased in such a way that the patient generally answers with a 'yes' or a 'no', and the pace of questioning is quick. Though some questions are more open, students learning to take histories were encouraged not to allow the patient to 'waffle', but to extract the relevant important information as quickly and efficiently as possible. For the cardiovascular examination, students were taught that, having established the patient's gender, age, occupation, and ethnic origin, they should ask about the 'presenting symptoms' – the symptoms which brought the patient to hospital in the first place. They should then ask about the patient's previous medical history, family history and social history. The medical history details illnesses from which the patient might have suffered in the past, as well as medications he or she might have taken, or might still be taking. The family history concerns medical problems which may have affected the patient's parents and other close family, and which might therefore be likely to affect the patient him or herself (the family history therefore is centred round the possibility that a particular illness may be passed on through genetic inheritance). The social history covers the patient's occupation and hobbies, diet, and social situation (i.e. is the patient married, does he or she have children etc). Risk factors such as smoking or alcohol consumption are also detailed here. Dr Coltart pointed out that the answers given in the history would usually

provide important clues as to the diagnosis. Sometimes 'classic' answers might be given by the patient, providing an almost sure indication as to the diagnosis. For instance, if a patient used the term 'crushing' to describe pain in his or her chest, or gestured in such a way as to express pressure on the chest, this was a sure sign of ischaemic heart disease.

Sinclair notes in his study of medical training that, of the history and the examination, 'the first is officially accorded great importance, students being told that in 60 per cent or 70 per cent of cases the diagnosis can be reached from the history alone' (1997: 201). The book which most of the students with whom I studied regarded as their bible, *The Oxford Handbook of Clinical Medicine*, states that 'an accurate history is the biggest step in making the correct diagnosis' (Longmore, Wilkinson and Torok 2001: 32).

Although history-taking was emphasized as being important in the classes in which I participated, and it was certainly held to be true that a good history could be informative and give a strong indication of a diagnosis, I found the findings obtained during the examination were valued as holding more weight. On one occasion, for instance, Rishi and I had been left to take a history and conduct an examination on a particular patient. When we had finished we went to report to the teaching doctor who asked Rishi to present what we had found. The teaching doctor made a 'hurry it up' motion with his hand and said "Yes, yes" quite impatiently until Rishi got to the findings from the examination, at which point the teaching doctor said, "Ah! That's what I wanted to hear, the *concrete* findings". On another occasion I watched Tom present a patient to a teaching doctor. The doctor nodded in a distracted way, and said "Right, right" as though bored while Tom explained that the patient had described feelings of breathlessness and dizziness over a period of several months. His attention snapped back when Tom began giving the clinical findings. Eventually, Tom explained that he had detected a slow-rising pulse, and the doctor snapped his fingers saying "Ah! There you go!" I picked up a more general sense from working among cardiologists that they liked to think of themselves as people of science, who dealt in facts and observation, rather than as translators who unpicked and re-interpreted patient narratives.

I also found that it was the performance of examinations which received the most attention from teaching doctors. The students were examined on their history-taking abilities in their end of year exams, but the assumption seemed to be that, once students had become familiar with the order of questioning for a particular kind of

history they could practise their fluency, manner and so on in their own time by visiting patients on the wards. I would often accompany students as they went to find patients with whom they could practise their history-taking, and would also practise taking histories myself. Sinclair observes that the rehearsing of this particular skill generally takes place in what he (borrowing from Goffman) refers to as the 'official backstage' (1997: 15-6). By 'official backstage' he means a space in which 'official' work required by the manifest curriculum takes place, but there are no 'official' staff members as audience. The absence of an official staff audience meant there was relatively little time pressure exerted on the students, and they tended to be conversational, rather than officious, with patients. Students were prepared to spend time listening to a patient's account of his or her illness, which signifies an entirely different kind of illness narrative from that acquired through history-taking. Patients also seemed to appreciate an opportunity to talk to someone they did not immediately experience as a figure of power or authority. This time spent rehearsing history-taking was generally much enjoyed by students and patients alike.

For two days of each rotation, the students would also be asked to go 'on take' in groups of two or three. This meant that they would go to the casualty department and, for eight hours, be involved in 'clerking' (taking the history of and examining) some of the patients arriving in hospital. They would present their findings to one of the more senior doctors on duty. Going 'on take' was exciting for students, as they felt it provided a context in which their limited knowledge could actually be usefully applied. Sometimes it meant the students had to work in the casualty department overnight, which made them feel they were participating in the challenging and demanding role of the casualty doctor. I often noticed students 'complaining' that they were exhausted after being 'on take' all night in such a way that it was clear they wanted to be overheard and asked what challenges they had faced. On the two occasions on which I went 'on take' with students from my rotation, however, there was relatively little to do. The senior doctor asked us to carry messages to other doctors, and gave us patients to clerk whose problems were so obvious our presentations of them seemed inconsequential. On one night, having sat unoccupied for an hour watching a drunken man wandering naked and shouting round the ward while staff pleaded with him to be quiet, we were told to go home. I am sure the experience is much more exciting and worthwhile at other times, however, and students certainly regarded it as an important opportunity to use and polish their skills and knowledge of the workings of the hospital.

The example of history-taking shows how the students, positioned as participants in a particular 'culture of practice', become involved in a variety of roles. Belonging at what Lave and Wenger describe as 'the periphery' of the 'culture of practice' which medicine represents, they are obliged to act as status subordinates, while at the same time being sole responsible agents in minor tasks, as well as learning practitioners and aspiring experts in medicine (1991: 34). These represent some of the different 'colours', or what Lave and Wenger describe as 'shapes, degrees' and 'textures' of their participation within the community of doctors within which ~~their~~ the undergo their training (ibid: 35).

With the exception of time spent 'on take', then (which Sinclair would describe as 'official front-stage' work), history-taking was generally practised on the 'official back-stage', meaning that it was the examination itself which tended to be the focus of formal classes. Dr Coltart delivered the majority of classes for the cardiovascular examination, though we were also sometimes given extra classes by one of his registrars and also by one of the cardiothoracic unit's surgeons. As described in chapter two, we would meet the teaching doctor at his or her office, and having followed him or her onto the ward would arrange ourselves in a semi-circle around the patient's bed. The patient would have been selected for his or her clinical signs. In the early classes we would listen while the doctor demonstrated the examination on a patient, talking us through his or her actions sequentially and explaining any findings. Having been through the examination, the doctor would then select one of us to do as he or she had done, asking us to explain what we were doing as we progressed through its various stages.

Before the examination began we were taught to position the patient so that he or she was sitting up at forty-five degrees. Needless to say, this gradient was not measured precisely, but rather was gauged by the teaching doctor. Although moving the bed to ensure that the patient was lying with his or her chest at approximately the right angle was a simple manoeuver for a doctor, nurse or even patient familiar with the mechanism of the bed or the set of electronic controls dangling beside it, even this procedure had to be learned at the cost of some mistakes on the part of students, not to mention some irritation on the part of patients. They were jolted and jerked by our sudden movements of the old-fashioned beds whose upper half could be raised and lowered manually. Patients with beds which moved automatically were prone to being slowly stretched or squashed by students who weren't familiar with the buttons on the handset.

If the patient was a man he would generally be asked to remove his shirt or pajama top before the examination began. This was not requested of women in the early part of the year, though as exams drew closer and it became more important to carry out the examination entirely in accordance with formal guidelines on the practice, women were also requested to remove any tops they might be wearing. A bed-sheet or blanket was used to cover the breasts, although thorough auscultation meant this too, would have to be removed. It was at first embarrassing for students to have to ask patients to undress. They knew that in time, though, they would become accustomed to it, and indeed, would have to get used to asking patients to prepare for other examinations which would be far more embarrassing.

With the patient positioned correctly, and the chest sufficiently exposed, the initial part of the examination, as explained in chapter two, involved making observations from 'the foot of the bed'. Was the patient in pain, short of breath, anxious? Students were told to look for deformities or abnormalities, for instance to note whether or not the patient had Marfin's or Down's syndrome (both these conditions frequently entail congenital heart defects, heart problems with which the patient was born. They are introduced in greater detail in chapter five). A patient's being over or underweight was usually obvious, but was also important to state. We were then told to check for dressings, stitches or surgical scars – irregularities visible on the skin. If a scar was present, it was often possible to tell from its position what kind of operation had been carried out. Doctor Coltart was sometimes able to tell from the particular line of the scar which surgeon had carried out the operation.

More subtle signs also observable from the foot of the bed could give quite precise information as to what was wrong with the patient. For instance, the presence of a malar flush, a slight purpling of the cheeks, could be taken as an indication of mitral valve stenosis, a condition which creates a distinctive heart murmur. Initially students found the malar flush difficult to spot, often mistaking it for what they thought were healthy pink cheeks. After encountering it a number of times, though, the particular shade of the flush became more easily identifiable. Following these observations from the foot of the bed we were told we should essentially move our attention to the patient's hands, to the wrists, then neck and head and from there to the chest and finally the back. Examples of the checks we should make were as follows, though this is by no means an exhaustive list, and different teachers tended to emphasize different elements of the examination as being important:

Hands:

Are the patient's hands warm and well perfused with blood, or are they cold and clammy? These observations could give information as to the state of the patient's circulation. Warm hands suggested the blood was circulating normally, whereas cold hands indicated that blood was not reaching the extremities properly.

Do the fingers show signs of 'clubbing'? Clubbing is a thickening and stiffening of the fingers caused by a decreased flow of oxygenated blood which, again, indicates poor circulation.

Are there splinter haemorrhages? These are marks on the fingernails which look like tiny lines drawn in black biro and are also a sign that circulation is poor.

Do the wrists show scars caused by intravenous drug injection? The presence of scars might indicate drug abuse or use of intravenous medication.

Wrist:

At the wrist, students were told to take the pulse, which Dr Coltart emphasized could be particularly informative. 'A pulse' in biomedicine is the pressure of the blood pushing against an artery as the heart beats and rests. Pulses are most easily felt in arteries which lie close to the skin and against a bone, making the wrist a good site. Dr Coltart would ask his students to describe the patient's pulse through a number of criteria, the rate, rhythm and character being the most important. Rate and rhythm are perhaps self-explanatory, but there are several terms which are used to describe the pulse's 'character'. For example, a 'slow rising' pulse means that instead of the pulse being clear and definite the beat is slightly more gradual, taking a moment to reach full strength. One of the major reasons for a slow-rising pulse is that the aortic valve is stiff and will not open fully, meaning that it takes longer for the restricted blood flow to reach the wrist and create a pulse there. A 'slow-rising pulse' is a sign of aortic stenosis, a diagnosis which would be confirmed by the presence of a harsh systolic murmur in the aortic area. Elizabeth Hsu's experience of apprenticeship to a doctor of Chinese medicine suggests that, like learning to listen, learning to 'palpitate the pulse' is a skill in its own right, and must be practised (1990: 98).

Arm:

Having taken the pulse at the wrist the students were taught to lift the arm at the elbow to ascertain that the blood did not drop back down the arm. Feeling blood flow back down the arm is considered to be another indication of incompetence in the aortic valve, this time of aortic regurgitation, which would be confirmed on auscultation by hearing a diastolic murmur in the aortic area of the heart.

Neck:

At the neck we were told to inspect the pulse of the carotid artery for abnormal pulsations and to do the same for the jugular vein pulse.

Head:

We were instructed to pull down and inspect the colouration of the lower eyelid. We should then ask the patient to lift his or her tongue and examine the underside. Any paleness (known medically as 'pallor') detected is taken as an indication that the circulation of blood in the body core, rather than the extremities, is poor. The state of the teeth is also observed because rheumatic fever, which although rare in this country is still known to have affected some now elderly patients as children, is thought to be contracted by infection through bleeding in the gums. Among other things, rheumatic fever can cause damage to the heart valves.

Chest:

After closely inspecting the chest for smaller or subtler scars than were visible from the foot of the bed, we were instructed to check for palpations of the chest, feeling with the back and heel of the hand for heaves and thrills. A thrill is a palpable murmur, vibrations from inside the heart which can be felt on the surface of the chest. Only now should auscultation begin. Students were taught to start listening in the mitral area, detected by finding what is known as the 'apex beat'. The apex beat is the down-most and outermost point of the body at which the beat of the heart can be felt. Normally, this point falls at what is known as the 'fifth inter-costal space' the space between the fifth and sixth rib, and in the mid-clavicular line (in line vertically with

the middle of the shoulder). The apex beat should be detected with the palm of the hand. Having listened to the heart as was discussed in the previous chapter, students were instructed to listen over the carotid artery using the bell of the stethoscope, asking the patient to hold his or her breath so that vascular sounds might be heard and not masked by breath sounds.

Back:

Finally, asking the patient to lean forward and take deep breaths we were instructed to listen down the patient's back for any unusual sounds during respiration.

We were encouraged to practise this examination again and again so as to learn to recognize abnormal 'signs' or indications of disease when we saw them. As the students became more familiar with the examination the teaching doctor would skip the demonstration stage and would simply watch students carrying out the examination, correcting any oversights and answering any questions students might have about particular clinical signs. Because students acquired a degree of physical and verbal fluency in the examination after a time, several students in one class would perform the examination under the teacher's watchful eye.

Auscultation of the heart, then, is not a self-contained diagnostic technique. It is used in the wider context of the examination, and I have described its specific application in the examination of the cardiovascular system. The emphasis of any examination is also shaped by information gleaned from the patient through history-taking. Information gathered aurally will shape one's expectations of what will be felt, observed and heard. Having taken a thorough history and having made an examination one might 'expect' to hear certain sounds when auscultating the heart. *The Oxford Handbook of Clinical Medicine* makes this point plain. Its authors claim that auscultation is 'generally, but wrongly, held to be the essence of cardiovascular medicine at the bedside. A caricature of cardiology ward rounds is of the anxious junior gabbling through the history, while noting his chief's fingers twisting his stethoscope, impatient to "get down to the main business" of listening to the heart – thereby blotting out all talk in favour of a few blissful minutes communing with the 'lub' and the 'dup'. This is absurd…if you spend time listening to the history, and feeling pulses, auscultation should hold few surprises: you will often already know the diagnosis' (Longmore, Wilkinson and Torok 2001: 39).

Listening as a 'species' of sensing

While in the previous chapter I presented auscultation as an emphatically acoustic practice, it is clear that it in fact belongs within a web of other techniques used in the examination of a patient. The recognition of the inter-connectedness of these different ways of accumulating knowledge represents a challenge to some anthropologists working on the sensation who, as I explore below, have tended to conceptualize the senses as discreet experiential categories. Using the interplay of vision and hearing as his example, however, Tim Ingold has challenged this comparative approach, introducing the senses as to an extent interchangeable or mutually constitutive. Auscultation should arguably be regarded as a kind of listening produced through the integration of hearing with the other senses.

In a chapter of his book *The Perception of the Environment* entitled 'Stop, look and listen!: vision, hearing and human movement', Tim Ingold (2000) gives a quotation from Igor Stravinsky, which reads: 'I have always had a horror of listening to music with my eyes shut, with nothing for them to do. The sight of the gestures and movements producing the music is fundamentally necessary if it is to be grasped in all its fullness' (Stravinsky 1936: 72 cited ibid: 277). Ingold embellishes: 'Watching the movements of the drummer, the violinist or the trombonist gives shape and direction to our hearing which would otherwise be empty and aimless' (ibid). He goes on to draw a distinction between the detached bathing in sounds which he feels is the indulgence of those concert-goers who close their eyes to enjoy 'hearing' the music, and those who actively engage with the music-making through attending to it with their eyes and ears, so becoming active 'listeners' (ibid). For Ingold, 'we hear with the eyes as well as the ears…it is the incorporation of vision into the process of auditory perception that transforms passive hearing into active listening' (ibid).

Ingold's comments have a rather dictatorial ring to them. But his wider point is that auditory perception is guided by vision and vision by auditory perception. The two ways of perceiving become, in experiential reality, one. In a subsection of the chapter entitled 'Being deaf', Ingold engages with the author David Wright, who lost his hearing aged seven. '[A]t the time', writes Ingold, 'he did not realize he was deaf, and only gradually became aware of his condition on account of his inability to pick up the sounds of unobservable movements like the ticking of a clock. In the case of visible movements, the fact that his ears had ceased to function made no perceptible

difference, at least at first, to what he heard. This furnishes compelling evidence for the view that hearing is critically guided by the 'antennae of sight'' (ibid: 275). Ingold observes a consistency in this account with that given by John Hull, a blind writer and professor of Divinity, who found that as he lost his vision, his hearing also deteriorated because he lost the 'visual steering of auditory perception' (ibid). While conceptually hearing and seeing may be analytically regarded as distinct perceptual realms, in practice, Ingold argues, vision and hearing are 'virtually indistinguishable: vision is a kind of hearing and vice versa' (ibid: 245).

Ingold's remarks are to some extent supported by the findings of psychologists working in the field of audition. Moore clearly states that 'what we hear is influenced by what we see' (2003: 319). He uses as evidence an experiment by McGirk and MacDonald (1976, cited ibid) who made videotape recordings of a person pronouncing bi-syllables such as "baka" and "mama". The video and audio tracks were then deliberately mismatched, so that subjects in the experiment saw speakers uttering bi-syllables which were in fact different from the ones they were hearing. Most subjects perceived bi-syllables which were not present in either the video or the audio recordings. The combination of a person saying "mama" on the video track and "tata" on the audio track, for instance, was typically perceived as "nana". Moore writes: 'Most observers were not aware of the conflict between auditory and visual cues. They 'heard' the sound "nana" and were surprised when they closed their eyes and the percept changed to "mama"' (ibid). Clearly, then, information from both the eye and the ear is combined. However, Moore points out that audiovisual integration might conceivably apply only to speech perception as a special type of perception which makes use of articulatory cues. A number of other studies have demonstrated that vision has an important influence upon sound localization and these perhaps provide better evidence for the close interplay of auditory and visual perception (e.g. Wallach 1940, Mills 1972).

Ingold's remarks are particularly relevant to the present discussion of auscultation because they are explicitly formulated as a critique of the work of the anthropologists generally credited with having founded a discrete 'anthropology of the senses'. Constance Classen (1990, 1993, 1997, 1998) and David Howes (1988, 1991) identify a pronounced visual bias in Western culture, an observation which meets with consensus from many other theorists (Tyler 1984 and Jay 1993 are good examples). They hold that the sense of sight came to distance itself significantly from the other senses when it was championed as the sense of science and rational thought

(Classen 1997: 402). Once sight came to be espoused as the sense of rationalism and science, vision dominated Western ideology and the social practices which emerged from it. Classen considers that '[m]odern Western culture is a culture of the eye' (1998: 1). The sense of hearing on the other hand has been characterized in opposition to Western 'visualism' by Howes and Classen, and is closely linked to non-Western cultures said to espouse an oral/aural sensory structure. Unlike sight, which was imagined as inherently analytic and reflective, auditory sensibilities are conceptualized as being (relatively) 'intimate, concrete and tactile' (Gell 1995: 235). Hearing is an inclusive and participatory sense, active and generative, whereas sight creates distance and abstraction.

Tim Ingold takes exception to the premise upon which this establishment of a division between vision and hearing is founded. He observes reluctance among sensory anthropologists to engage with the actual *practice* of seeing, and suggests that a blind eye has been turned to the participatory dynamics of sight (2000: 260). For Ingold, seeing and hearing are not distanced from one another by any inherent qualities they might possess. They are intensely relational, reciprocal and participatory, and should not be understood independently of one another as both are involved in the wider fabric of sensory being. He proposes, as suggested above, that we attune ourselves to treat hearing as 'a *species of vision*, a kind of seeing with the ear, or 'earsight' (ibid: 248 my italics). Ingold writes that 'by exploring the common ground between vision and hearing…we may be guided not only towards a better appreciation of the richness and depth of visual experience, but also towards a more generous, open-ended and participatory understanding of thought' (ibid: 287).

Ingold's critique of the foundations of the anthropology of the senses seems valid in the context of the present ethnography. The practice of auscultation reveals that vision and hearing are mutually implicated in the cardiothoracic examination. Not only that, but tactile and even olfactory information is combined in directing acoustic attention and in shaping what is understood to be heard. It would be wrong to set up categorical differences between the ways in which the senses work when they are in fact used to guide and consolidate one another.

There are good examples of work which, if not explicitly, has taken on Ingold's criticisms of sensory anthropology and examines listening practices through interplay with, in particular, sight. For instance, Michael Bull's (2000) book on auditory culture *Sounding Out the City: Personal Stereos and the Management of Everyday Life* introduces points of contact, overlap and merging between sensory

categories. For instance, referring to a personal stereo user looking out at other people on a train, Bull describes the manner in which the user's gaze is influenced or nuanced by the music to which he or she is listening. The personal stereo user is thus engaged in what Bull describes as an act of 'auditory gazing' (ibid: 73). The visual gaze and a certain auditory attention are fused, a possibility which a rigid division of the senses along the lines adopted by Howes and Classen does not comfortably accommodate. Bull's auditory culture study shows that it is both constructive and representative to explore sensory experience through notions of mixture, fusion and multi-sensorialism, a lesson which the present ethnography must surely take to heart.

Nadia Seremakis takes a still more fusionist view of the senses and their interplay. In the introduction to her edited volume *The Senses Still*, she situates the senses as 'fluid semantic currents' (1994: 5). She suggests that we find 'no clear cut boundaries between the senses and emotions, the mind and body, pleasure and pain, the voluntary and the involuntary, and affective and aesthetic experience' (ibid). Sensory experiences are solvent and synaesthetic. They transform and are transformed through the processes of memory and imagination. Sense is intrinsically bound up in these processes, and cannot be rigidly separated into channels of experience which serve as comparative categories. Sensing is characterized by synthesis.

I have cited *The Oxford Handbook of Clinical Medicine*, which, after detailing the procedure for auscultation remarks that if an appropriate amount of attention is given to the history and feeling the pulses, auscultation should hold few surprises and the diagnosis will often already be plain. What is heard will be largely determined prior to auscultation. Although auscultation might involve a particular acoustic emphasis, the nuances of that emphasis are influenced by information gathered in other ways. While in the previous chapter listening with a stethoscope was located as an emphatically acoustic practice, it in fact forms part of a web of diagnostic practices which involve a range of sensory skills. It would be misleading to create an impression of auscultation taking place in a separate perceptual space, an isolated auditory realm. Listening is framed and constituted through a multi-sensorial engagement. Following Ingold, the example of auscultation encourages a close look at the diversity of ways in which the senses might combine to shape and reproduce one another. *The Oxford Handbook of Clinical Medicine* offers sensible advice both to students of auscultation and anthropology of the senses. It echoes that of the Duchess in *Alice's Adventures in Wonderland*: 'Take care of the sense, and the sounds will take care of themselves' (Carroll 1986 [1872]: 79).

The Deaf Cardiologist

Having established the need to attend to the multi-sensory dynamics of listening, I want to introduce the example of a person I met during fieldwork whose experience provokes a deeper examination of auscultation. Her hearing impairment makes auscultation a challenge, and though she rises to this challenge admirably, the fact that she feels she cannot depend upon her powers of hearing has serious re-percussions as she seeks to enter the medical profession. While in practice doctors listen, look, touch, feel and smell towards the same diagnostic end, it is this student's *hearing* which creates problems for her. Although it is important to consider the manner in which auscultation is bound up in a complex network of sensory references, the particularity of the acoustic dynamic of the practice is brought to the fore through this student's example.

Concerns over hospital-acquired infections were running high during the time I spent at St Thomas'. National newspapers ran several features decrying horrific infection rates within British hospitals. St Thomas' itself had reported a number of cases of MRSA (menthicillin resistant staphylococcus aureus), also known as the 'hospital super-bug', during the time I was researching there. Indeed, one ward was actually closed because of it. This very serious infection is thought to cause pneumonia, septicaemia, wound infections and even death. Its spread has been linked to poor attention to basic hygiene. A distinct lack of effective and plausible strategies for understanding and tackling the spread of MRSA created a climate of fear within the hospital.

The stethoscope has been identified as a potential harbourer and transmitter of pathogenic micro-organisms. Introducing their study of the stethoscope as a potential source of infection, Marinella, Pierson and Chenoweth write: 'Stethoscope diaphragms have been shown to harbour potentially pathogenic bacteria' (1997: 786). They go on to identify 'eleven genera and species of bacteria' on the stethoscopes in the sample used in their study (ibid). The researchers report 'staphylococcus present on 100% of stethoscopes and staphyloccus aureus on 30%' (ibid). In concluding, they note that '[s]tethoscopes transfer M lute to human skin, making it likely that other bacteria can be transferred as well' (ibid). As bullet point three on its list of basic steps to combat the spread of MRSA, the *Oxford Handbook of Clinical Medicine*

advises: 'Wash your hands and your stethoscope!' (Longmore, Wilkinson and Torok 2001: 592)

From early on in the cardiology rotation, students were reminded of the need to clean the diaphragms of their stethoscopes with alcohol gel, ideally before and after each use. They were in general very responsive to this requirement, perhaps because it was simple to do and yet made them appear professional and attentive to their responsibilities towards themselves and the patients. It also meant they could use up a few moments of the rather stressful hours which they had to spend under the watchful eyes of Dr Coltart engaged in an activity for which they knew they could not be criticized, and which might even earn them approval. Stethoscopes were thus cleaned with particular regularity, care and attention.

That the stethoscope has been implicated in the transmission of illness is an interesting role-reversal, as the instrument was originally designed partly to distance the doctor from the patient so that he would not become ill as a result of the close contact which auscultation necessitates. Now it seems that doctors are at risk of infecting patients with the instrument, the very people from whom they were originally protecting themselves. The stethoscope, then, may become an agent of 'iatrogenesis' or doctor-caused illness. But the patient is not the only person who risks being infected by the stethoscope. Doctors, too, are in danger. The plastic plugs (sometimes referred to as the 'olives') which the doctor inserts into his or her ears in order to listen are also thought to be sites at which pathogens accumulate. Doctors and nurses who share their stethoscopes with others thus become vulnerable to ear infections. Stethoscopes are rarely lent; most people are quite particular about their stethoscope being *their own* (an idea I explored in chapter two). However, some instruments belong to wards rather than individuals, and these tend to be kept handy for occasions when people have misplaced or forgotten their own. They are shared and used by different people and thought to be particularly dangerous. This was a phenomenon I experienced first hand after following a ward round in which, having forgotten my own, I used the ward stethoscope a number of times; after a few days I developed an ear infection. My right ear became itchy and a little painful, and my hearing became a trifle impaired.

It was strange after spending a good deal of time around the hospital carrying out my research, to return to it as an outpatient. When I walked into the waiting room of the ENT (Ear, Nose and Throat) department, I was surprised to see there too one of the students whom I had met. Rhydd was equally surprised to see me, and we started

chatting. He explained that he had come to have his ears syringed by the nurse as, he said, his ears felt continually blocked and he was finding it harder and harder to hear. I explained my reason for attending the clinic, and he told me all about the doctor I would be seeing whom he had met and who had taught him on his 'head' rotation. While we were talking a girl walked past, and Rhydd nodded and smiled to her.

"Who is that?" I asked him.

"Her name is Nirit. She's a third year medic as well. She's going into the audiology clinic which is not surprising – she's deaf".

I was interested to hear this. I wondered how a medical student would cope with having to acquire the auditory knowledge which I understood to be so important to medicine. I asked Rhydd if he thought Nirit might be happy to talk to me about the implications of being a deaf medical student. He said that he did not know her well enough to say, but that she and Sarah (a good friend of his) were friends ~~and that~~ and that I should ask her for an introduction. He gave me Sarah's email address, and a few days later she arranged a meeting between Nirit and myself.

We met in the *Tom's 2* café at St Thomas' (I became nicknamed 'Tom 2' by some of the medical students, as I often met people there to have coffee or do interviews). I was unsure how I would recognize Nirit, as I had no memory of what she looked like from the clinic and had not obtained a description of her from Sarah, so I stood in the middle of the café looking conspicuous – like a man anticipating a meeting. A girl soon came over and introduced herself as Nirit. Speaking to her I was in no way aware of her deafness. I didn't have to make any concessions in terms of altering my speech.

I found myself to be very ignorant about deafness. Nirit described herself as 'hearing impaired', explaining that there are few totally deaf people. She considered herself to represent part of the grey area living between deafness and a totally hearing world. Her hearing impediment is congenital. She has 70% hearing loss in each ear, but explained: 'It isn't that I don't hear – I have found strategies to hear in spite of my hearing impediment'. She went on to describe how she had chosen to live as a hearing person in a hearing world. This decision had met with disapproval from some members of a deaf group with whom she had worked. They had wanted her to assume a deaf identity and maintain solidarity with other deaf people by not adapting to the hearing world. Oliver Sacks (1989) observes the strength of this ideology among deaf people in his book *Seeing Voices*. Nirit had, however, taken steps to compensate for her hearing impairment. She wears hearing aids and also finds lip-reading helpful.

We moved our discussion outside, as there was rather un-conducive live music in the café. We sat for a time on a bench by the river, but work boats were pile-driving huge metal beams into the river bed just above Westminster Bridge, making loud banging noises every five or six seconds. It made listening difficult for both of us, so we moved back inside to a bench in the main corridor. Nirit explained that medical training presented many challenges for her. She rose to them not in order to make a particular point, or to prove a principle, but because she is pursuing a personal ambition, and is determined to fulfil it. It has been her dream and goal since childhood to become a doctor. Though she had encountered medicine as very much "a listening science", this was not a problem in itself; after all, as she pointed out: "I am already good at *listening* rather than *hearing*, because I have had to listen all my life".

'Hearing, it seems, has nothing active in it: it is mere supine susceptibility' remarks phenomenologist Jonathan Ree (1999: 53). This statement makes hearing a 'non-act', a state of being rather than a process in which people are able to assume agency. The hearer is simply a receptacle, carrying his or her ears around, but having no control over the sounds which drip into them. Conceptualized in this way, hearing a sound is an act devoid of consciousness, intention or purpose. But Ree points out that *listening* can be an active means of inquiry, an intentioned engagement with the world, and Nirit, too, is keen to make this important distinction. The fact that her *hearing* is impaired makes *listening* all the more important. She must actively seek to acquire sounds which she would not otherwise absorb. Interestingly, the example Ree uses to illustrate the engaged nature of *listening* as opposed to *hearing* is that of the doctor, 'investigating a patient's internal organs by means of the ear, perhaps assisted by a stethoscope' (ibid). Here the ear is not passive. The doctor uses it to seek out information, to find clues as to the patient's state of health. The nature of the ear, then, its metaphorical shape, is reversed. Instead of a receptive organ, passively receiving those sounds which happen to fall into it, the ear is transformed into an active, penetrating, proboscis of knowledge. Nirit requires her own listening to have precisely this same active, inquisitive intensity.

There were certain features of medicine which, Nirit found, made it a difficult path for a hearing-impaired person. Medics tend to spend a lot of time dealing with elderly people who are often weak and find it difficult to speak loudly and clearly. Furthermore, Nirit is aware that she is easily thrown by accents and unusual words, both of which proliferate in a hospital setting. There also tends to be a great deal of background noise in hospitals which can make concentrated listening difficult.

Situations such as operating theatres, in which mouths and practically entire faces are covered up, can also make comprehension difficult for hearing-impaired people, as lips, facial expressions, and the normal self-evidence of the speaker are all suspended. Though there are strategies which can be used to surmount all these problems (for example, surgeons in an operating theatre can be asked to wear small radio microphones which pick up the sound of the voice and relay it to a hearing aid) collectively they suggest that medicine is likely to be a forbidding path for a hearing-impaired person.

Nirit had heard several accounts of hearing-impaired people (some of them friends of hers) who had encountered unhelpful attitudes upon entering medicine. One student had been advised to go into x-ray on the basis that it was an area of medicine requiring visual skills rather than auditory ones. But the student had found that in fact x-ray work relied heavily upon listening. There was a great deal of discussion concerning particular images. More problematically, when senior doctors gave their opinion they would face the screen on which the x-ray was being examined. The student was then unable to hear what was being said, as the sound was being projected away from her, and lip-reading became impossible. X-ray turned out to be an entirely inappropriate department for this particular student to work in. Nirit felt the assumption that it might be suitable represented a degree of thoughtlessness which is frequently encountered by hearing-impaired people as they try to make their way in medicine.

For Nirit, four areas of medicine stood out as being particularly 'auditory' in nature, or rather, as being specializations in which listening was particularly important. These, she said, were general practice, pediatrics, respiratory medicine and cardiology. Her hearing impairment meant that she had felt reluctant to go into these areas, particularly cardiology. It would be terrible, she said, if she was unable to detect a particular sound which was an important diagnostic clue and the patient's health was jeopardized as a consequence: "I don't want to spend all my life wondering if a patient's well-being has been compromised by my hearing", she said. Nirit had deselected herself from cardiology as a profession because of her hearing.

She had, however, taken the chest rotation because it is obligatory, and found she had to do a great deal of stethoscopic listening in it. This presented particular challenges, and Nirit had acquired her own amplified stethoscope. In this device, as shown in the image below, the main tube coming out from the diaphragm plugs into a small amplifier, which is in turn connected to the earpieces. The sound picked up by

the diaphragm travels up the tube, is amplified half way, and then continues into the earpieces as usual. While simply making the sounds from the patient louder, the device could also be tuned to amplify high or low frequencies. In order to use her amplified stethoscope, Nirit had to take out her hearing aids, put the earpieces of the instrument in, listen, and then take them out and re-insert her hearing aids. While she thought this would be fine for the exams she would have to undertake as a medical student, she felt the procedure might undermine patients' confidence in her diagnostic ability in a normal medical setting.

Figure 7: An amplified stethoscope. Sound passes through the amplifier on its way from the diaphragm to the earpieces.

Nirit had become rather anxious about auscultation. The trouble with the amplified stethoscope, she said, is that you don't know if what you hear is the same as what others are hearing: 'It is easy to convince yourself that you are hearing things' (this is also a problem encountered by those learning auscultation who hear normally, and chapter seven focuses specifically on this peculiarity of auscultation). One of the cardiology registrars had offered to help her after she had let him know how uncomfortable she had been feeling about auscultation. He took her round the wards to various patients whom he knew had good clinical sounds. Nirit would listen first, and tell the registrar what she thought she had heard. The registrar would then listen himself, and would be able to confirm or otherwise what she had heard, talking or acting out the sounds in such a way that she might be able to grasp their particularities. In this way the subjective isolation she felt, which was 'amplified' by the amplified stethoscope, could be dispelled, slowly giving way to confidence. Nirit was grateful to this registrar, and felt that by the end of the chest rotation although some students in her group were better than her, some were worse, and that this was usually the case in every rotation, not just in those which drew heavily on auditory

skills. She thought in the end, then, that she had coped with auscultation reasonably well. However, she remained sure that she would not specialize in cardiology because she could not rely on her hearing.

Of course, the ordinary stethoscope, like the amplified stethoscope, might be considered to be a type of hearing aid. At a basic level, the instrument was born out of a struggle to make sense of sounds which could not otherwise be detected. Sterne points out that the stethoscope is a logical extension of the ear trumpet, a hearing aid which had been in use for centuries prior to the stethoscope's invention (2003: 194). It is designed to compensate for the ear's inadequacy by making sounds louder. In auscultation, though, a skilled listener uses the stethoscope to gain access to a group of sounds which are inaudible to others. The stethoscope is a technological innovation which enhances the listener's perceptual scope rather than compensating for its inadequacy. As Ackerman suggests, '[w]e can extend our senses with the help of microscope, stethoscope, robot, satellite…' (1990: xv). During our interview, Nirit explained that for her the stethoscope did not represent either a hearing aid or a way of extending her sense of hearing, but was simply an auditory device she had to struggle to use.

During an early interaction with Dr Coltart, I asked him if he knew of any deaf cardiologists. He said that he didn't, and thought it would be difficult for a deaf person to enter the specialization. He told me he had often wondered if cardiologists were self-selecting. Given that, as a branch of medicine, cardiology required a considerable amount of auditory skill, he speculated that medical students with good ears would be drawn into cardiology. There is evidence from psychologists that people display considerable variability in acoustic sensitivity. Moore points out that 'thresholds of audibility' (the point at which a sound becomes loud enough to be heard) may vary by as much as twenty decibels on either side of the mean and still be considered as 'normal' (2003: 64). Dr Coltart's idea, however, was that cardiologists would tend to be musical people, or people with a particular appreciation of sound. There is indeed some evidence that musicians tend to out-perform non-musicians in tests which involve filtering out parts of a complex sound (Soderquist 1970). Dr Coltart had, however, never found any evidence to corroborate this thesis in thirty-seven years of medical practice. Nirit's 'self-de-selection' from cardiology arose because her sense of hearing is not good enough. But her case is more acute than most.

Nirit felt that patients might be suspicious of a doctor who depended on hearing aids, believing that he or she might not have sufficiently good hearing to be able to pick up the necessary clinical signs. She evidently feels that patients expect their doctors to be reliable listeners. But perhaps the more general auditory component of doctoring is exaggerated by Nirit's particular experience. After all, patients surely expect doctors to be confident in all their skills, and auditory skills are no exception. A patient's confidence might be equally undermined, for example, by a doctor having trouble reading the results of an electrocardiogram. The patient might well be tempted to ask for a second opinion. A report entitled 'Enabling Disabled Doctors' produced by members of the Health and Sciences Department at Staffordshire University suggests that doctors with visible disabilities of all kinds often encounter the assumption of incompetence from some of their patients (Morgan and Chambers 2004). What Oliver Sacks describes as an 'otologically impaired' doctor might well be assigned a medical status of his or her own (1989: 2). In Nirit's case, of course, the patient will not actually know what she can hear and what she can't, but it is clearly important to the bond of trust between patient and physician that the patient believes the physician can hear well.

On one hand, Nirit's account demonstrates the manner in which hearing draws the senses together. Indeed, as a lip-reader she may be considered to exemplify the manner in which what a person hears is influenced by what he or she sees. It may be that Nirit overplays the role of the sense of hearing in auscultation, but it is equally important that those discussing the practice do not underplay it. Listening may not take place in isolation from the other senses, but it is clearly meaningless to describe it in terms of sensory equivalence, for instance as 'a kind of seeing' (Ingold 2000: 248). It does not reflect the true nature of hearing to describe this kind of sensing as a 'species of vision' (ibid).

Listening alone

Important studies of auditory knowledge such as Stephen Feld's work among the Bosavi argue the importance of sonic studies and urge a more 'ear-minded' approach to culture. There has been a definite response to this call. In recent years, enthusiasm for anthropological work on sound has become substantial, as is evidenced by, for instance, the recent publication of the *Auditory Culture Reader* (Bull and Back 2003). Writing in 1994, Peek makes reference to a discreet 'auditory

anthropology' (1994: 489). I have suggested elsewhere that the discipline may be witnessing the formation of precisely the disciplinary sub-specialization which Peek imagines (Rice 2005).

The movement towards an auditory anthropology, however, is fuelled by a critical drive which identifies a definite visual meta-schema underpinning the anthropological episteme: '[t]he predominant metaphors in anthropological research have been participant observation, data collection, and cultural description, all of which pre-suppose a standpoint outside – looking at, objectifying, or, somewhat closer, "reading" a given reality' (Clifford 1986: 11). The work of Johannes Fabian famously criticizes this 'visuo-spatial logic' of the anthropological discipline, and the auditory anthropologists mentioned above use the critical momentum of this anti-visualist thread strategically, suggesting that sonic studies might go some way towards redressing a powerful ocular-centric bias within anthropology (1983: 113).

It is somewhat predictable, and perhaps a trifle disappointing, that a contemporary auditory anthropology should set up its critical position by invoking anti-visualism, a movement to readdress or counteract the imbalance brought about by the visual hegemony which supposedly dominates modern Western thought and the Western intellectual imagination. Bull and Back consider their own project to be a movement towards what Berendt describes as 'a democracy of the senses' (Berendt 1985: 32). But the now rather over-familiar claim that 'the epistemological status of hearing has come a poor second to that of vision' merely paraphrases statements found throughout earlier work on the senses, *re*-re-establishing the visual/auditory dichotomy which dominates anthropological thought on questions of sensory experience (Bull and Back 2003: 1).

Arguably, the intellectual chasm which has been created by what Schmidt refers to as 'sprawling discourses about hearing's modern diminution' leaves auditory anthropologists with little choice in the construction of an over-riding theoretical position (2003: 41). Work on the senses has so defined the critical dynamics of the sensory landscape as to make it impossible to do anything other than somewhat touristically revisit the visual/auditory divide which has been set in place. I agree with Tim Ingold, however, that this 'great divide' has arisen from a lack of attention to the nature of visual perception, and in particular, a reluctance to engage with the actual *practice* of seeing and its relationship with hearing. It is important for the formative anthropological sub-discipline to remain open-minded as to the inter-connectedness of the senses in experience and practice.

At the same time, however, (as I think a consideration of auscultation illustrates) anthropologists must recognize the importance of auditory points of focus. They should not allow the critical thread persuasively argued by Ingold to lead to the adoption of a theoretical position whereby a consideration of multi-sensory dynamics will not allow the particularity or specificity of hearing to emerge. To return to Nirit, her story throws into relief the importance of listening in medical practice, and identifies some of the distinctly acoustic dynamics which are active within the hospital and which directly affect her life there. Amid the complexities of synaesthetic intertwining and co-mingling, it is important for auditory anthropologists not to lose a sense of hearing in itself. Nirit's concerns about her use of the amplified stethoscope bring us to see that stethoscopic listening is a central component of the clinical examination. Not only that, but auscultation is one of the well-established routines through which the relationship between the doctor and the patient is constructed, so much so that deviations from its routine may be disruptive. Listening, as all the students with whom I worked (not only Nirit) were learning, is integral to the social fabric of medicine, and should be recognized as such.

Chapter Five: Beautiful Murmurs

In this chapter I examine the position of patients in medical training. I describe how, historically, hospital patients came to be used in the teaching of medical students, and show that they are still routinely incorporated into classes in the present day. I suggest that patients with 'good' clinical signs are particularly sought after by teaching doctors. With reference to training in auscultation, patients with exemplary heart murmurs are especially valued, and become the focus of repeated examinations by doctors and students. I go on to explore the effect of this repeated listening on the patients concerned. Patients are aware of themselves, and their heart murmurs, becoming 'things' to be listened to. They are conscious of their being 'objectified'. I explore the nuances of the 'objectification' to which they allude. While for Lewis (2000) and Jackson (1994) objectification is a constructive step for both doctors and patients in conceptualizing and responding to a disease, the patients in question tend to feel resentful of the way in which repeated auscultation makes them feel 'reduced' to their clinical signs. Within the anthropology of the senses, objectification has tended to be construed as a negative product of visual practices. The sense of hearing, by contrast, has tended to be situated as free from the objectifying 'vices of vision'. Drawing on the work of Bubandt (1998) and Ingold (2000), however, I urge attention to the dynamics of actual sensory practice. I argue that repeated auscultation represents a context in which objectification may be brought about acoustically. While helpful in training medical students in the identification and diagnosis of an illness, this process of acoustic objectification is negatively experienced by the patients involved.

Medical training at St Thomas'

St Thomas' status as a teaching hospital meant that students were very much in evidence in wards, clinics, operating theatres, and indeed, the less formal spaces of the hospital, such as the cafes, shops and corridors. The teaching onus of the hospital was also reflected in the presence of buildings such as the medical library and the

sports bar, a kind of pub run for the students on the hospital campus. There were also a few lecture theatres and classrooms, though the students chiefly attended the hospital for 'clinics', classes in which they were taught on the wards, practising examinations on patients and extending their knowledge of medicine through encountering real medical cases.

Patients were notified as to the presence of students, potentially during all stages of their treatment, through the *Guys' and St Thomas' Outpatient Leaflet*. The leaflet reads:

> Both Guys' and St Thomas' are teaching hospitals, responsible for training a wide range of health professionals. This means that students, supervised by qualified staff, might be involved in your care. It does not affect the quality of your care in any way, but does give valuable training for the students.
>
> Please tell the doctor or nurse in charge if you do not want students to be present. Your wishes will always be respected.

This text underscores how valuable it is for students to be taught, as it were, 'using' patients. This same text is repeated in the Inpatient Leaflet, and both leaflets are available online. The Guy's and St Thomas' Hospital Trust website adds:

> Through its formal links with King's College London, the GKT Medical School, the GKT Dental Institute and the Florence Nightingale School of Nursing and Midwifery, the Trust plays an important role in the education and training of the health professionals on whom the NHS depends.
>
> The Trust currently has 440 doctors and dentists in training, one of the highest numbers of trainees in the country

Evidently, then, medical training is one of the major concerns of the Guys and St Thomas NHS foundation Trust.

Patients in teaching

In *The Birth of the Clinic*, Michel Foucault (1973), documents the origins of the hospital. He describes an important juncture at which the hospital as an institution came to comprise both a place of care for the sick poor, and a place in which doctors and students of medicine received practical training. Foucault notes the 'hidden contract' which was silently formed around the seemingly comfortable fit of this dual purpose (ibid: 83). In return for the care they were to receive in the hospital, patients would be obliged to make themselves available for use in medical training. But Foucault justifiably questions the morality of this move: 'by what right can one transform into an object of clinical observation a patient whose poverty has compelled him to seek assistance at the hospital?' (ibid). He points out the subtle violence enacted upon the patient: 'to look in order to know, to show in order to teach, is this not a tacit form of violence, all the more abusive for its silence, upon a sick body that demands to be comforted, not displayed?' (ibid: 84). The patient becomes a clinical object to be circulated among others – not for his own benefit, but for the benefit of medical students and their teachers.

Foucault points out that the position of the poor patient as 'an object of clinical observation' is brought about through his charitable status within the hospital. 'Can pain be a spectacle? Not only can it be, but it must be, by virtue of a subtle right that resides in the fact that no one is alone, the poor man less so than others, since he can attain assistance only through the mediation of the rich' (ibid). The patient, then, is entrapped by 'the tyranny of the gift' (Fox and Swazey 1992: 39). Refusing to offer himself as an object of instruction, the poor patient is guilty of ingratitude to the rich who are providing for his care. The patient, then, is effectively coerced into being used in the education of students through his poverty.

In her book *Death, Dissection and the Destitute*, Ruth Richardson (1987) also describes how in the early nineteenth century, the poor patient would be obliged come to the hospital (she specifically mentions St Thomas') 'cap in hand, to beg relief from the pain of his affliction; and finding this great institution willing to open its doors, would be expected to be duly grateful' (ibid: 47). The situation of the poor patient would be very different from that of a wealthy one. A wealthy patient was in a position to assess the reputation of various doctors, and could dismiss or refuse to pay those who did not provide satisfactory treatment. Poor patients, however, constituted a passive clientele, unable to challenge the aims and demands of the doctors who took

charge of their cases. They would therefore provide 'an ample source of clinical material' (Versluysen 1981 cited ibid). Richardson continues: '[i]n teaching hospitals such as Guys and St Thomas' this *clinical* material was also cast in the role of human *teaching* material' (ibid, original emphasis). Poor patients provided the means through which paying medical students could acquire experience and observe medical techniques.

Medicine has surely undergone huge changes since the time to which both Foucault and Richardson refer. But it is clear that some fundamental social structures have remained the same. In both the St Thomas' of 1828 described by Richardson, and the St Thomas of 2003-4 which I encountered during fieldwork, there was a general assumption that patients could be 'used' in the education of medics. As the extracts from the leaflets above make clear, it is presumed that patients admitted to St Thomas' today ~~to~~ will accept, or, at least, will only in exceptional cases not accept, their patient status as 'teaching material'.

The vast majority of patients I encountered at St Thomas' agreed to be involved in teaching. Some felt that by allowing themselves to be examined as part of classes they were helping to train the next generation of doctors, honing their skills and so making a contribution to the care other patients would receive in the years to come. "They've got to learn some time, haven't they?" was a sentiment which was commonly expressed. "I should do my little bit to help them, after all, they're the doctors of the future!" Other patients said that they were glad to be useful. Rather than existing solely as a burden on the hospital, absorbing its resources, they could now do something to help. By allowing themselves to be examined they could make a small gesture of reciprocation for all the care they had received (the tyranny of the gift is clearly in evidence here). They also felt glad to be needed after spending large quantities of time feeling bored and useless. In an environment where there is often a lot of waiting around to be done and a good deal of dullness to be endured, they were glad to be participating in what they felt to be a constructive activity.

But while some patients were willing and even pleased to have students examine them, others were reluctant. "I ought to start charging for this!" was the standard joke which I heard a number of patients on the cardiothoracic wards making as they tacitly agreed to be examined once again, slowly sitting up in bed and undoing the top buttons of their pajamas to allow students to reach in with their stethoscopes. Here the jocose suggestion is that patients should be paid for their services (perhaps they have forgotten their debt to the hospital, or do they feel *entitled* to treatment on

the National Health Service as tax-payers?), but the reference is more to the frequency with which they have been asked to be examined, i.e. "If I had a penny for every time I had been asked to do this I would be rich by now". Sometimes the repeated examinations were experienced by the patients as pestering. This is, of course, completely understandable given that many patients were feeling unwell and trying to rest. Examinations require that the patient sit up and move, albeit only a little; small movements, though, become a big struggle when a person is in discomfort or is tired.

As the leaflets cited above make clear (and this is a message which is frequently re-iterated by doctors and students who are anxious not to force them to be examined against their will) patients are able to specify that they do not want medical students to be involved in their care. They will not be treated any differently should they decide, for instance, that they do not wish to be examined on a particular occasion. It would sometimes happen that patients would say that they were too tired when a student asked if he or she could carry out an examination. At other times patients would make excuses, saying for example that they were expecting visitors any minute, or that they were about to be fetched for a test. Sometimes teaching doctors were also refused. In my experience patients were never made to feel that in refusing they had done anything other than exercise their perfect right. At the same time, however, as I have shown, there was a general sense of expectation that the vast majority of patients would agree to being examined. Those who refused or made excuses were acting outside the status quo, and might plausibly be regarded by the doctors as demonstrating 'non-compliant' behaviour.

'Classic cases'

When a patient is admitted to hospital, he or she is placed under a consultant who takes ultimate responsibility for that patient's treatment. The consultant has a team of registrars and more junior doctors who oversee the patient's care and, if only in hospital for a short while, the patient may not see the consultant at all. Nonetheless, the consultant remains ultimately responsible for that patient. As I explained in the introduction, each firm of medical students is also placed under the charge of a consultant during a rotation. That firm of students is taught using cases taken from among his or her patients. Thus, while the medical students with whom I studied were being taught by Dr Coltart they would practise on patients in his charge. The registrars

who occasionally did teaching for Dr Coltart's firm would also draw on cases from among his patients.

Teaching doctors tended to focus on patients who exhibited "good clinical signs". This meant that their bodies exhibited clear signs which were typical of a particular condition. For example, at one teaching session a patient was used because she presented the 'classic' signs of liver failure. Although we generally looked at cardiology cases under Dr Coltart, the registrar responsible for this lesson must have felt the patient's signs were too 'good' to be missed. She led us to the intensive care unit, and over to a woman who was lying in bed, clearly seriously ill. The patient was moaning and seemed to be semi-conscious, in fact, even less than semi-conscious; she was in a kind of coma. She would occasionally make strange crying noises, but she did not move and her eyes were closed. It was as if she was in a deep but tormented sleep (coma is a sign of the most severe grade [grade IV] of liver failure). The registrar spoke to her in a loud voice, but clearly without the expectation of being heard or understood. She said "Hello, I just want to borrow you for a moment" and lifted away the sheet which had half covered the woman's body. Looking around at the students, I could see shock and discomfort on all their faces. None of us had seen a person in this condition before. Her abdomen was hugely swollen and distended (another classic sign of liver failure, known as severe *ascites*) and her veins formed a pattern of bluish lines on the skin. The registrar pointed these out with a reflex hammer. She also pointed to the excess facial hair which had grown as a result of hormonal imbalance caused by the liver's malfunction, and told us to note the strong and unpleasant smell in the air (known as *fetor hepaticus* and often likened to pear drops). She then wanted us all to observe the tremors in the patient's muscles which were characteristic of the condition in its advanced stages. We took it in turns to slide our fingers under those of the patient, which were tightly curled-up, the muscles gripping and relaxing very quickly in a kind of spasm. It was a strange feeling because it was as though the woman was trying to cling to us. We were told, though, this was just an involuntary movement. The registrar explained that liver failure was brought on in this case by chronic alcohol abuse. Once we had left the ward, she took us to one side and told us in a low voice that the patient's chance of mortality had been evaluated at ninety-nine percent. We were all shaken by the experience of seeing and being so close to such a sick patient, and the registrar noticed. She said we would call it a day for teaching there. I found it ironic that we all felt we needed a drink so badly after class. We washed our hands thoroughly in alcohol and went to the pub.

On another occasion, a registrar who was teaching the firm for the afternoon told Rishi and I that an interesting case had come up in the cardiology department. He said he would not tell us what was wrong with the man. We should take a history and try to work it out. If we found ourselves stumped for a diagnosis, we should look at the patient's notes. Doing as we were told, we introduced ourselves. The patient was a soft-spoken man in his forties. He seemed a little suspicious of us and asked several times who had sent us to see him and what information we wanted. We explained that we had been asked to take his history by the registrar, and that the information he gave us would not be passed to anyone else in the ward. After a time he agreed to talk to us and we began gathering information on the symptoms which had brought him to the hospital. The man described how he had suffered an episode of 'crushing' pain in his chest which had shot down his left arm making him sweat profusely and feel nauseous and intensely anxious. These, Rishi and I knew, were classic symptoms of myocardial infarction or 'heart attack'. But it seemed too simple. The registrar had said that this man was an interesting case, and myocardial infarctions are common in cardiological medicine. We asked further questions and then carefully went over his history again, asking the patient if there was anything important we had missed. We seemed to have gathered everything, so we thanked him and went away. After a few more minutes of discussion we looked at his notes at the nurse's station. He had indeed presented with the symptoms of myocardial infarction, but the results in the file showed that there was no evidence from test results to corroborate the diagnosis. Eventually we went to find the registrar to ask what this meant. He told us that the test results all being negative had provoked some suspicion among the doctors, and they had run a check on the man's admission history. It turned out he had been admitted to fifteen other casualty departments throughout Britain reporting precisely the same symptoms, and none of them had been able to find signs of myocardial infarction following tests. The fact that the infarction had never been confirmed indicated Munchausen Syndrome. Munchausen Syndrome sufferers gain hospital admission via deception, seemingly wanting attention. They seem to have an actual need for what was introduced in chapter two as the 'patient habitus', and so continually seek to make themselves objects of medical attention. Munchausen Syndrome is also known as 'hospital addiction'. The syndrome was apparently named after Baron von Munchausen, an 18th century German man known for embellishing his stories. One of its classic expressions is for a patient to be admitted with false heart attacks, that is, describing the symptoms but showing none of the clinical signs. The patient in

question suffered from this manifestation of the syndrome, which is known as *cardiopathia fantastica*.

These, then are two examples of how patients were used in teaching sessions. The first was an example of a commonly encountered phenomenon in general medicine, and provided 'classic signs' of a severe condition. The second patient also exhibited 'classic signs', this time of a rarer condition. These two 'cases' (a term which effectively situates the patient as a particular instance of a disease) were both inpatients, one of whom would be imminently discharged, while the other would, almost certainly, die in the intensive care unit. But of course, the medical students were also taught through patients who exhibited less severe symptoms and who required more routine care.

Sitting in on Dr Coltart's outpatient clinic each Monday morning we saw more common and 'everyday' problems than those we tended to meet with on the wards. For instance, we would see patients who had had episodes of atrial fibrillation and required drugs to settle the heart back into its normal rhythm, or patients whose blood pressure required close monitoring. But in the outpatient clinic, too, Dr Coltart was always careful to draw attention to 'classic' signs of particular conditions. For instance, one Monday morning a lady of thirty-four who had Down's syndrome came into the clinic accompanied by her father. She was due for her six-monthly check-up, as Down's syndrome can often create heart problems. After examining the lady, Dr Coltart asked her if it would be alright for us to look at her neck. She and her father both agreed that it would be fine. Forming a line, we each introduced ourselves and looked closely where Dr Coltart had indicated. Then we thanked her and went to sit back down. Once Dr Coltart had told the patient and her father that he felt she was doing nicely and the two had left the room, he explained that he had wanted us to see the flaps of skin around the patient's neck (which we had all noticed). This was an example of 'webbing' which is a classic sign of Downs Syndrome. Dr Coltart said he had shown us so that we would recognize it were we ever to encounter it again. "You will never see a better example of webbing that that", he told us.

In a similar way, Dr Coltart asked one male patient who had come into the clinic if he wouldn't mind standing up and facing us. He wanted us to observe the man's unusually long arms. He also asked the man if he wouldn't mind holding up a hand so that we could see his fingers, which were also longer than normal, a sign known as *arachnodactyly* (meaning long, spidery fingers). Dr Coltart explained that these unusually long arms and fingers were classic signs of Marfan's Syndrome. The

man had appeared in the cardiology outpatients' clinic because people affected by Marfan's can experience heart problems, usually due to a structural weakness in the aorta which the syndrome creates.

Teaching emphasis on heart murmurs

Patients tended to be selected for teaching, then, when they exhibited 'good clinical signs'. Heart murmurs were of particular interest to Dr Coltart. Before consultations began he would say how much he hoped there would be some 'good', distinctive murmurs for us to listen to. Normally there would be two or three murmurs every clinic. If Dr Coltart saw as he read the patient's notes that he or she had a murmur he would say before he or she came into the room "We should have a nice murmur for you to listen to here!" If three or four patients had come and gone without there being a murmur he would shake his head and say "We haven't had many murmurs in for you chaps, have we?" Dr Coltart's interest in murmurs was something of a personal quirk of his, though murmurs in general were regarded as important signs, and other teaching doctors were also keen for their students to hear 'good' ones.

At one clinic Dr Coltart looked at a set of notes on his desk and said "I've been looking after this man for years. He has a really excellent murmur!" The man came in and he and Dr Coltart, who had indeed known each other for years, chatted for a short time before Dr Coltart asked him about his health. It emerged that this was a regular appointment, and that the man came to see Dr Coltart every six months to "keep an eye on his mitral regurgitation". Dr Coltart took the man's blood pressure and then listened to his heart before asking if it would be alright if we (whom he described as "young doctors") also had a listen. The man said he didn't mind. Dr Coltart told us to listen to his chest, paying particular attention to the mitral area and listening with the bells of our stethoscopes. We were all able to hear his loud, rumbling diastolic murmur.

On many occasions Dr Coltart read the GP's referral letter and announced "We might well have a murmur with this next patient!" I have reconstructed the interaction which took place in one of these instances from detailed notes taken in the consulting room. The pattern of interaction was typical of those consultations in which a murmur patient presented.

His stethoscope dangling from his neck, Dr Coltart walked out into the waiting area and called a name. A tall, grey-haired, and as we later learned, sixty-three year old man stood up and followed him back into the room where Dr Coltart was now sitting at his desk. The man said "Hello" to us and smiled, then took a seat.

"Now I've got a letter here from your doctor here", Dr Coltart began. "He says you're finding yourself getting rather tired and not feeling quite as fit as you used to".

"That's right. I've been feeling some discomfort in my chest, too. I can't walk as fast or as far as I have in the past".

"You're a Millwall supporter?"

"All my life! I live just opposite the Den. How did you know?"

"It's a classic South East London accent".

"I could have been Palace".

"Well, they tend to be a little posher, a little more plum in the mouth if you'll excuse my saying so".

"Excuse you? You're absolutely bloody right!"

"Good. Anyway, if you wouldn't mind slipping that shirt off and sitting up on the couch I'd like to have a listen in to your heart".

Here Dr Coltart demonstrates that good listening skills might not refer only to auscultation, but to the ability to place a patient socially through his or her accent. Knowing a patient's social background might also provide important diagnostic clues. The use of the term 'listening in' is interesting here as at this point in the interaction, after an introductory verbal exchange, it indicates a focusing, a directing attention onto and into the patient's body. When the man had removed his shirt and was sitting up on the couch, Dr Coltart approached him and took his blood pressure using his stethoscope and a blood pressure cuff. He then pressed his stethoscope at certain points over his chest, listening for perhaps three or four seconds at each point, so that the examination lasted around twenty seconds.

"I can hear a murmur in your heart". (The man looked horrified, the doctor saw and decided to keep things moving, perhaps so as not to let him dwell on the idea just yet). "I'm going to let these young doctors have a listen if you

don't mind. (To myself and the students) Have a listen in and tell me what you think".

We lined up and took turns listening to the man's chest. When my turn came I was able to hear a harsh murmur as I pressed the stethoscope over the heart's aortic valve. It was a raspy, almost whistling sound. The patient was looking very anxious at this point, but he listened to Dr Coltart as he explained the finding.

"What that murmur is telling me is that you've got a problem with one of the valves in your heart. The valve has become stiff so that the heart isn't pumping as efficiently as it should. It is reasonably common. I notice from your letter that you were a smoker for twenty years".
"I was a *light* smoker, yes".
"Were you much of a drinker?"
"Just a few pints now and then. I was never a *heavy* drinker".
"Well, this trouble with the valve can just come on with age. It's probably been happening for a number of years, but you've only recently become aware of it. We need to get in there and repair that valve. I think we can do that very easily and that you will feel much better as a result".
"It won't require an operation will it?"
"Yes it will. We will need to replace that valve which I can hear squeaking".
"Is it a serious operation? A major operation?"
"The operation is serious, yes, but we have a very good cardiology department here at St Thomas', and this, I assure you, is the operation we do best of all. It's called an 'aortic valve replacement'".
"Will I have to be in hospital for long?"
"Probably five days or so. We'll do the operation on, say, a Monday, and then you'll stay in so that we can keep an eye on you, and you will go home on the Friday. We are not going to do anything about it for the moment. You need to come back and see me in six months. We need to pick this apple when it's ripe. I will write a letter to your GP and tell him what I've found, and you'll need to make an appointment to come back and see me in six months".
"Is there anything I need to do in the meantime?"

"No, just carry on as normal. You might notice the breathlessness becoming a little worse, but don't worry. When you come for the next appointment in six months we'll have another listen in so that we'll be keeping a close eye on things".

"And there are no medicines?"

"No, no need for medicines. We can cure this problem but it's going to need surgery. I'm going to write a letter to your GP telling him what I've told you. All you need to do is make an appointment to come back and see me in six months".

The patient left. I felt shocked, and I am sure that he did, too, at the speed at which all this had happened. He had not been in the consultation room longer than five minutes and in that time he had learned that he would have to undergo a serious operation in six months. Dr Coltart shut the door and turned to us. "What did you hear? That was a classic ejection systolic murmur, wasn't it!?"

Of course, this case has many more elements to it than the simple hearing of the murmur. The patient had learned of an underlying problem which would lead to his having a serious operation involving surgeons opening-up his chest, prising open his rib cage and making incisions in his heart in order to remove the old aortic valve and replace it with a new one (probably a metallic valve, though perhaps a tissue valve harvested from a pig). He would be in hospital for some days, and would require a substantial time to recover. The operation is routine, and the outlook for the man is good. Nonetheless, this moment of diagnosis represents the beginning of a period of concern and nervous anticipation for him. The detection of the murmur in this case represents an element of a 'textbook' diagnosis, a best case diagnosis for Dr Coltart because of its apparently simple solution! The identification of the murmur also provides Dr Coltart with a clear and straightforward guide as to the action which needs to be taken. But the case shows how murmurs were given particular attention, and provoked considerable interest in the teaching sessions I attended.

Anticipated murmurs, however, were not always forthcoming. At one consultation a young man of eighteen was called into the waiting room. He had been sent to Dr Coltart because, the GP's letter of referral said, he had heard a murmur at his left sternal edge. Dr Coltart read the letter and asked the young man to take off his top and lie on the couch. He listened carefully to various points of the chest for about twenty seconds, and then shook his head. "You heart is entirely normal", he said to

him. “I don’t know what your doctor thought he heard, but all I can hear is a perfectly normal heart”. It is a running joke among medics that General Practitioners are less skilful than hospital doctors, and this incident provided the opportunity for several jokes along those lines.

With ward teaching, as with out-patient clinics, Dr Coltart emphasized the need to practice auscultation and would select patients with pronounced murmurs for our classes, creating opportunities for us to develop our listening skills. Prior to each class, Dr Coltart identified (or was notified of) a patient on the ward who might be useful because he or she displayed good clinical signs. He would then negotiate permission with that patient (generally before arriving with students) and would conduct the session ‘using’ that patient, and perhaps others whom he thought might be appropriate. For example, on one of our first teaching sessions on the ward, Dr Coltart led us to an elderly female patient from India who, it was rumoured, had come to the hospital suffering from ‘Heathrow Syndrome’. Heathrow Syndrome is a joke term used to describe patients who ‘happen’ to have been taken ill after getting off the plane from a foreign country (Pakistan, India and the Middle Eastern countries seem to feature particularly strongly in the demographic said to be affected by the ‘condition’). These patients have ostensibly come to Britain to visit relatives. Rather than the illness being a passing ‘turn’, however, it becomes apparent when the patient arrives at the hospital that he or she is in need of a serious operation, which will, since the patient is now in Britain, be carried out and paid for by the NHS. The NHS treats anyone who falls ill on British soil. ‘Heathrow Syndrome’ is a way of saying that the doctor suspects that it was recognized while the patient was in his or her country of origin that a serious and expensive operation was required. The patient was then put on a plane to England so as to be taken in to a British hospital to receive the necessary operation without incurring the heavy medical bills likely at home. In this particular case the woman’s age had not been verified by the doctor who had acted as translator, but it was gathered that the woman had been married and gone to live in Nigeria for a number of years. There, as a young woman, she had suffered a severe fever. This fever was believed by doctors at St Thomas’ to have been rheumatic fever, which had damaged her aortic and mitral valves, causing her to suffer valve disease in later life. This valve disease had created the murmurs which Dr Coltart wanted us to listen to in that lesson. He was deliberating with other doctors as to whether or not the woman was too elderly and frail to undergo valve replacement surgery.

On another occasion Dr Coltart led us over to a bed in which a young male patient was sitting. Dr Coltart had spoken to him prior to the lesson, and he was expecting us. Dr Coltart asked each of us to take a turn examining the patient, checking the hands to assess the circulation, checking the pulse and so on. When it came to auscultation, Dr Coltart advised that we pay particular attention to the mitral area. We were all able to hear a rumbling murmur there, indicating mitral regurgitation. Dr Coltart explained that the man was undergoing treatment for heroine addiction and that the mitral valve commonly becomes infected in intravenous drug users. The needles are often not sterile, and, because users inject into a vein, infected blood returning to the heart circulates and meets the mitral valve before any of the other valves. The bacteria therefore tend to 'sit on' and infect the mitral valve, hampering its working and generating a murmur.

"Listening again"

Dr Coltart always emphasized the importance of "listening again", of going back to listen to murmurs several times to be sure that the sound became familiar, to be sure that we *knew* it. He pointed out that St Thomas' was a teaching hospital, and that as a consequence students were allowed to go and examine patients at any time. The students could go and see a patient at three in the morning if they wanted to. I am not suggesting that he was encouraging his students to actually go and see patients at that kind of hour; he was making a comic exaggeration of the commitment to learning that he wanted the students to demonstrate. But he thought that most patients would agree to be examined at any point, and he said that students should keep going back and going back after the class. "Listening again", then, became an important pedagogical method for Dr Coltart.

"Listening again" also became an important methodological strategy for me. Listening to a patient with Dr Coltart and the students on the firm meant that I met a patient once, briefly, and then had a good means of re-introducing myself when I went back to listen a second time. Patients would usually recognize my face, and so already associated me with listening. They also knew that I was familiar with their conditions, and they tended to be open with me about their concerns and feelings over being in hospital. I found that the emphasis on listening to the patient's body and attending carefully to one kind of sound had created silences in another domain. During teaching my auditory attention was focused on the heart sounds, with relatively little

given to what the patient had to say. Returning to the patient's bedside created good opportunities to readjust this acoustic imbalance. I had a chance to hear patients' accounts of what was happening to them. I was also able to clarify my position within the hospital, to explain that I was not a doctor or even a medical student, but that I was a researcher interested in precisely the interaction in which we had both already become participants. Listening again, then, provided a means of building up a rapport with patients. It became a 'social' activity in a popular, as well as an analytical sense, providing opportunities to talk.

"Listening again" also gave me opportunities to build-up relationships with the students. Accompanying students as they went to listen became an important way for me to make friends, and to gather an understanding of the processes which learning to listen involved. Listening again meant listening together, and I got to know a number of the medical students this way. We had time to talk as we walked to the wards to find patients to listen to, and we were thrown together to some extent as we tackled the nerves which often built when meeting senior ward staff, or when making introductions to patients who were unfamiliar to either of us. We were also able to confer on what we had heard, and helped each other to understand the significance of the sounds we were hearing.

One day I accompanied Rishi, by then a good friend, around the wards searching for heart murmurs. Exams were approaching, and he wanted to see several patients in a short time in order to get in as much practice as possible. "Do you have any murmur patients?" we asked one ward sister on the East Wing. "Well, there's Mrs Platt in bed ten," Sister replied with wry smile. "She's been murmuring to herself all morning".

Patients as acoustic exhibits

The students learned through the process of "listening again" that some patients are 'better' to listen to than others when it comes to practising auscultation. Some patients have murmurs which can be heard clearly with relative ease while in others, often patients with a good deal of sub-cutaneous fat, the sounds of the heart and lungs are muffled or muted. This can also occur where there is a great deal of muscle tissue. Although the heart sounds are not in general rendered completely unintelligible in these cases, they tend to be clearer in thin patients. The heart sounds are often particularly clear in young men because they tend to have only thin layers of

fat and muscle tissue on their chests. It came as a surprise to me that some human bodies are acoustically more satisfactory than others, an idea which explicitly positions every body as an entity which generates sound.

Some patients are also better to listen to than others because they have particularly 'good murmurs. Their murmurs are 'classic', clear and audible while being typical of a particular condition. Patients with good murmurs tend to attract considerable attention. Instead of being known by their names, these patients come to be identified by their murmurs, being referred to, for instance, as the "beautiful aortic stenosis in bed nineteen" or the "wonderful mitral regurgitation in bed six". They are identified through the type of metonym defined by Lakoff and Johnson as 'the part for the whole' (2003: 38). The murmur stands for the person, though it could be argued that the murmur also stands for the learning and listening process which allows or enables a patient to be defined by reference to his or her clinical signs.

Patients with exceptionally good murmurs are often referred to as "celebrity" or "professional" patients. The "professional patients" I spoke to were aware that they received a great deal of attention because of their heart sounds. "I have been examined by thirty-six medical students today!" one man responded when I asked him if many people had asked to listen to his chest. This was an unusually high number, but for a patient with good clinical signs to be visited by two or three groups of seven or eight medical students accompanied by a teaching doctor in a day was common.

On one occasion I was speaking to 'celebrity patient' when our conversation was interrupted by a group of students under the instruction of a registrar. The students were practicing for their fourth year medical exams, and the registrar wanted them to listen to the patient's heart, which produced the murmur of mitral stenosis. I went into the adjoining room while the students did their examination. When they had finished I returned and asked the patient how he felt about being examined by so many people. He replied that he did not enjoy feeling like an "object of special interest" particularly. He understood, however, that his signs were interesting to the doctors. He drew a comparison with his own work, carpentry. "If somebody wants a door repaired that's a bit different from the standard, then more people will be interested in the job", he said. He also suspected that having an unusual murmur was working in his favour. "If the sound is loud or if it sounds different, or funnier, then maybe it means I get more attention". He had noticed that his surgery had been rescheduled from "some time next week at Guy's" to "this Friday at St Thomas" and he felt that this had come about because people were interested in his condition and

the repeated examinations had made him present in their minds. He was also conscious of his status as an acoustic exhibit. He did not object to his position, though, because he felt that being 'interesting' was actually benefiting him, influencing his care for the better.

Some clearly actively enjoyed the attention of being celebrity patients. For instance, one man I spoke to described how much he had liked it when pretty young female medical students came to do the chest examination on him. He laughed as he described the way they fawned over his chest, but insisted that they loved it even more than he did. Another patient I met had learned the technical term for his murmur over the course of several examinations. He liked being able to test the students when they came to visit him. If they got the murmur wrong he would shake his head and 'tut' slightly, as if to say "You really should know that". I once observed him from across the ward being examined by a group of students with a doctor. When the students had finished listening he asked them "So what is it, then?" As he did so he caught the doctor's eye and smiled knowingly.

The training of medical students creates a demand for patient bodies which can be examined and interrogated. But of course the need is specific. Although each patient case presents its own particularities and complexities, and so as a consequence offers particular learning possibilities, what is needed for medical students at a relatively early stage of their education are cases presenting clear clinical signs. Those patients with 'good signs' are much in demand from teaching doctors and medical students. Some patients enjoy the contact which the teaching interaction generates, but repeated examinations can have particular effects on patients too. I explore some of these effects below with reference to heart murmur patients.

Patients as acoustic objects

When I asked one 'celebrity patient' what she felt about receiving so many listening visitors, she replied:

> At the moment I am quite relaxed about it, but in general I do feel it to be an invasion of privacy. It's dehumanizing. It can make you feel like you're a leaf under a microscope. There's no bond. It's just anonymous people listening to something that's going on in your body. They see you as a kind of clinical curiosity. As I say, I'm quite relaxed about it now, but I have taken exception

to it at other times in my life. You may be helping by refining medical students but it is certainly not fulfilling for you as a patient. It's a clinical and anonymous process. It's rude. It's invasive, though as I say, right now, as it happens, I'm quite relaxed about it.

This patient appreciated that doctors had taken the time to listen carefully to her body, and said that she was "grateful to the stethoscope" for the light which it had thrown on her condition. However, she had spent some time in hospital, and took exception to the repeated examinations which she had undergone for the benefit, she felt, of others. Perhaps it is unsurprising that this patient describes auscultation as an 'invasion of privacy'. In medical terms, the technique is considered 'non-invasive' compared, for instance, to endoscopy or sigmoidoscopy, which involve the insertion of a probe very deep into bodily orifices. Auscultation can, however, involve the removal of some clothes, and entails the listener touching the chest. Though not generally considered to be an intensely 'private' space for men in Western society, this area is regarded as highly personal for many women. Of course, responses to the examination vary greatly from individual to individual. Some women do not object to the examination at all and are not at all fazed by the level of intrusion which auscultation necessitates. But the patient cited above also suggests repeated listening to be 'dehumanizing', making her feel not like a person but 'a leaf under a microscope'. Like the 'professional patient' described above who feels he has become 'an object of special interest', this patient feels she is simply 'a clinical curiosity'. She is a thing to be examined. She has become objectified through repeated auscultation.

In his book *A Failure of Treatment*, Gilbert Lewis describes how the process of identifying and naming a particular sign of a disease enables people to conceptualize the illness, to construct it as an 'it', an entity (2000: 11). He writes: '[i]n trying to identify or characterize diseases, we select and focus on the signs and symptoms – attributes that people feel or show or that we can find in them' (ibid). This process constitutes the basis for understanding an illness, and for deciding how it should be investigated and treated. Lewis, then, suggests that objectification is part of a constructive process of engaging with a disease. It is an activity in which both the patient and those addressing the needs of the patient all participate. It may be reductionist or nominalist to focus on or reify particular signs or symptoms, but, argues Lewis, 'that is part of their point and what makes them useful' (ibid: 13). For him, the objectification the body occurs equally in medicine as practised in New

Guinea and in the West. In a similar vein, Foucault argues that the process of objectification which the patient undergoes forms the basis of his or her own subjective engagement with his or her body. It makes little sense to imagine objectivity and subjectivity as polarized processes. In fact, Foucault argues, the objective and the subjective constantly inform one another, or 'exchange faces' (1973: 198). Knowledge of the body acquired through, and bringing about, its objectification feeds the fundamental structures through which the body is experienced.

In the instance of the patient above, however, the process of objectifying a particular element of the disease, namely the murmur, has moved beyond being a constructive, or at least, a positively-experienced exercise for the patient. The doctors have reified the murmur in such a way that the patient feels her body to have simply become a container for it. The murmur has become something separate from the 'synergistic interplay' through which she experiences her corporeality (Taussig 1992: 96). Through repeated auscultation her body is itself fragmented, deconstructed. Sharp observes that Western biomedical knowledge and practice 'facilitates the depersonalization – and, thus, dehumanization – of persons-as-bodies, a process that ultimately allows for the commodification of the body and its parts' (2000: 290). I would not suggest that heart murmurs are commodified in the sense that they become caught up in systems of market exchange, but they evidently become important knowledge objects which are passed from consultants and other doctors to their students, and which, to a limited extent, are circulated between students themselves.

The students were also aware that when listening to hearts there was a tendency to encounter patients simply as a set of acoustic signs. As Tom remarked: "Sometimes I become really conscious that all we do is reduce people to two heart sounds and a murmur". He pointed out that just as the stethoscope was, in essence, a small amplifier, it had the effect of amplifying the heart sounds in such a way that they came to drown out other considerations. 'The patient' recedes as 'the sounds' become the focus of interest. The heart sounds eclipse the rest of the patient. While Tom spoke of reducing murmur patients to their heart sounds, then, what in fact was occurring was an amplification of those heart sounds, both literally and conceptually, in such a way that they obscured the patient more generally. Nonetheless, Tom seems to accept that this 'reduction' of the patient to his or her heart sounds is part of the diagnostic process. Although he perceives the process of reduction as negative, he also accepts it as an intrinsic part of the medical approach in which he is receiving training. It is difficult to know precisely to whom he is referring we he says that 'all

we do is reduce people to two heart sounds and a murmur'. But whether he is referring to himself and his fellow students as they practise auscultation, or to doctors as they make examinations in general, the implication is that 'reducing patients to their signs' is integral to the medical approach.

In chapter two I described the manner in which students were trained to listen to patients who might be enduring very difficult or painful experiences. The example I gave was that of an exercise in which the students were presented with an actress performing the distress of a woman who had just been told she would lose the baby she was carrying. The students were asked to listen in a supportive and consoling manner. In chapter four I introduced history-taking, and the way in which students were taught to listen out for key words, phrases or expressions which were indicative of particular illnesses. In the present chapter I mentioned how Dr Coltart detected a patient's accent, and used it to inform himself about the patients' likely background and lifestyle. It is clear that different forms of listening proliferate in the clinical setting; auscultation is just one of these. But this chapter has shown that auscultation is strongly implicated in a powerful perceptual operation. For the doctor and the patient, it allows the body, or elements of the body, to be objectified. This process of objectification may be helpful to and even therapeutic for some patients, allowing them to conceptualize the disease as, for instance, a separate entity which they can then attempt to combat. In the context of the repeated examinations created in teaching medical students, however, the objectification occurs such that patients feel alienated from their own bodies in negatively experienced ways.

Acoustic objectification and anthropology

The idea that objectification might take place acoustically is interesting partly because anthropologists working on the senses have tended to situate objectification as a visual process (Gell 1995, Classen 1993, Howes 1991, Ong 1969, Tyler 1984). It is held that the distance which necessarily separates the perceiving 'subject' from the perceived 'object' in the act of 'looking' allows for the perceptual isolation of discreet entities, and hence the creation of distinct 'objects'. The notion that vision is a 'fundamentally objectifying' sense has become well-established (Grosz 1992: 448).

Looking then, is thought to be a powerful perceptual act. It is 'by means of the look [that] the subject is capable of being transformed into an object, reduced from a self-conscious subject, a being-for-itself, to a being-in-itself and for-others' (ibid).

Vision distances the perceiver from the perceived, creating not an inter-subjective exchange, but the perception by the subject of a detached object. The gazer objectifies that upon which, or upon whom, he or she gazes. Theorists have suggested that this perceptual nuance creates a particular dynamic of power between the perceiver and the perceived (Jenks 1995, Foucault 1977). Thus, for instance, the male gaze is implicated in the objectification of the female body, re-inventing it as a sexualized being-for-men rather than a being-for-itself (Jordanova 1989). Vision is hence associated with the reproduction of structures which reinforce the male domination of women. Similarly, as suggested in chapter one, the gaze of the medic is held to objectify the patient body, simultaneously establishing and consolidating the medic's position of power over the patient (Draper 2002, Foucault 1975). Power and gazing are mutually inferential.

Of course, gazes may be returned or exchanged, they may intersect: '[t]he objectifying, gazing subject recognizes in the gazed-upon objectified object that there is always the possibility that he too will be looked at, he too will be objectified in the very same way that his gaze has objectified the other' (Grosz 1992: 448). There is scope, then, for a more sophisticated 'view' of vision and the politics of gazing. The gaze that creates direct power relationships becomes more subtle: '[a]t the root of this power struggle between the looker and the looked-upon object is a recognition that the object of the look is also a subject, and thus capable of being at the centre of perspective, capable of looking as well as being looked at' (ibid: 449). Gazes may be deflected, welcomed and avoided. Nonetheless, the association of vision with objectification remains, and has led to vision being regarded as somehow *in itself* complicit in the creation and reproduction of particular power structures. Vision's involvement in the dynamics of power has been observed outside Western cultural contexts, too, as Adam Reed's (1999) study of 'modes of vision' in a Papua New Guinean prison illustrates. Reed suggests that there are qualities within vision which make it inherently amenable to establishing and stabilizing structures of control over and between prisoners in that setting.

Vision is thought to have been the lynchpin of science because as Carpenter puts it: '[s]ight has a natural bias toward detachment, creating the detached observer' (1976: 40). Sight 'carries with it a powerful aura of rationality and objectivity' which encourages 'the exercise of reason' (Classen 1998: 1). The objectifying gaze of the scientist encapsulates the spirit and substance of scientific enquiry. Because rational and scientific thought are held to be fundamental to the ideological basis of modern

Western thought, the objectifying gaze and Western hegemony are considered to be firmly intertwined. Vision itself is held by some theorists to have been responsible for the emergence of modernity and the subsequent development of the Western 'world-view'. Ong (1969), for instance, considers that it was vision which allowed Westerners to produce technologies such as texts (which allow the storage of visually-organized information) and which in turn create the possibility of analytical and abstract thought. These technologies led to the West becoming more developed and intellectually sophisticated than non-Western, and crucially, non-visual cultures (ibid: 71).

Because vision has been so closely linked to the development of Western hegemony, the sense of sight has also been identified as being the root of what are perceived to be problems or negative traits endemic to the Western world-view. Paul Stoller (1997), for instance, argues that Western visualism has led to a tendency towards detachment and analysis which prevents the inclusive engagement with the world experienced by other cultures. Johannes Fabian (1983) argues that vision only permits limited ways of organizing and representing the world, broadly speaking through graphic reduction and formal analysis. It does not comfortably accommodate notions of inter-subjectivity and flux. In 'looking at' vision, then, theorists have tended to reify, rather than objectify the sense of sight itself. They have attributed vision independent agency and seem to have endowed the sense with a (largely negative) 'personality' of its own, one which, through its tendency to objectify, has created a distinct, and flawed, hegemonic structure.

In his excellent article entitled 'The Odour of Things: Smell and the Cultural Elaboration of Disgust in Eastern Indonesia', Nils Bubandt warns that 'one should not exaggerate the 'inherent' hegemonic potential of any particular sense' (1998: 66). No sense is by nature more geared to power than any other. The 'hegemony of vision' has never been monolithic or complete in the West, and has created possibilities for 'counter-visions' that may potentially challenge the established visual order (ibid: 68). Bubandt observes that a consideration of the consequences of Western 'visualism' has led to a search for other, more benign 'perceptual' groundings for knowledge and power (ibid: 49). But in relation to his own area of interest – the anthropology of smell and olfactory knowledge – Bubandt points out that: '[a]ttempts to topple the taken-for-granted primacy of vision by descriptions of "exotic" uses of smell' have 'tended to present us with a radical alterity free from the "vices of vision" rather than with a detailed political ontology of a culturally specific mode of olfaction' (ibid).

Bubandt's suggestion, then, is that studies of olfactory perceptual systems have tended to be carried out 'in the shadow' of sight with the aim of destabilizing a demonized visual hegemony. In doing so, however, these studies do not give careful consideration to the practical dynamics of the olfactory perceptual strategies they claim to explore. Sight is, as it were, 'put in the black hat' at the expense of thorough analysis of the actual operations of an ideology grounded in the sense of smell.

Theorists writing on systems of auditory knowledge have also emphasized the manner in which their studies offer possible 'positive' alternatives to visual dominance. A sense that an auditory culture might in some ways be a more benevolent one than the 'visual' culture represented by the West can be detected in, for example, the work of Leach (2003) and Gell (1995) who point towards hearing as a sense of emotional and evocative immediacy, an emphasis upon which creates 'cultures of sympathy' – a cultural pattern not accessible to those with a visualist world-view (Gell 1995: 235). More esoteric thinkers have suggested that by using audition over sight people might become more spiritual and better connected to subtle harmonies within the natural world. Joachim Berendt (1985), with his book *The World is Sound*, is an excellent example of a theorist who adopts the position that listening is more ideologically laudable than seeing. He describes the eyes as 'aggressive, dominating, rational, surface-oriented, analyzing things', whereas the ears are 'female, receptive, careful, intuitive, spiritual, depth-oriented, perceiving the whole as one' (ibid: 5). Berendt is explicitly polemical in emphasizing the spiritual beauty which he believes would be created by an auditory ideology as opposed to what he perceives to be the relentless abstraction and analysis which has been the consequence of a visual culture.

Nils Bubandt, then, argues that in order to determine how a particular sense might be implicated in the dynamics of social life, anthropologists should look towards actual sensory practice rather than assigning the senses inherent properties. In his book *The Perception of the Environment* Tim Ingold (2000) issues the same call for anthropologists to overcome the temptation to reify the senses. He urges them instead to pay attention to the 'actual practice' of sensory perception (ibid: 286). Theorists who attribute the evils of modernity to Western visualism, he suggests, lack critical direction. They have created 'not an account of visual practice, but a critique of modernity dressed up as a critique of the hegemony of vision' (ibid: 287). Vision itself did not create Western hegemony, but became used in certain ways in the production of that hegemony.

My thesis has heeded the call given by Bubandt and Ingold, and attempts to detail the dynamics of auscultation as a sensory practice. In doing so, it has opened up a context in which the sense of hearing, orientated through a particular practice of listening, brings about objectification. The example of repeated auscultation shows that objectification is not a product specifically of vision. Neither is the sense of hearing necessarily benign, somehow spreading a legacy of inclusiveness and participation. In auscultation, the sense of hearing is used in such a way that it can bring about a negatively-experienced form of objectification. I do not want to suggest, however, that I attach value judgments to objectification *per se*. As Lewis (2000) has suggested, objectification may be a necessary and constructive element of understanding an illness. Also, as Jean Jackson points out in her article 'Chronic pain and the tension between the body as subject and object', some patients find the objectification of their symptoms to be extremely helpful and beneficial, allowing them to establish for themselves that the pain they experience is objective and hence 'out-there-and-real' rather than subjective as a consequence 'not-real' (1994: 204). However, on the basis of those patients whose opinions I give above, the objectification which takes place through auscultation tends to be negatively perceived.

But although patients may be made to feel like 'objects' and though they may feel their murmurs to be objectified within them, this process of acoustic objectification has arguably been initiated long before auscultation takes place. The patient body already occupies an objectified position within the hospital and the biomedical practice through which activities there are structured. As Sharp (2000) observes, and as was described in the first chapter, medical knowledge has historically been constructed through practices of fragmenting the body. The construction of medical knowledge has involved the transformation of the body into frames of reference which involve its objectification at many levels: '[m]edico-clinical dehumanization assumes a host of forms, where even living bodies are fragmented and transformed into scientific work objects' (ibid: 298). It is not specifically auscultation which brings about the objectification to which patients feel themselves to be subjected. Auscultation is part of a wider set of medical practices. To say that auscultation objectifies without recourse to a more general medical context would be to revert to the position from which this chapter has been struggling to escape, namely that the senses behave in particular ways, or exhibit particular properties independently of, or prior to, the contexts in which they are used. My point in this

chapter is that auscultation represents a particular listening practice which serves to perpetuate a medical culture of objectifying the body.

Chapter Six: Auto-auscultation

In this chapter I explore three different instances of what is known in medicine as 'auto-auscultation', or 'listening to oneself'. Firstly, I describe how medical students are encouraged to listen to themselves in order to develop a sense of what 'normal' heart sounds are like, and to acquire familiarity with the cardiac cycle. Listening cannot easily be practised in the abstract, and so for students listening to oneself is a way of learning to listen to others. Secondly, I examine situations in which doctors allow patients to listen to their own heart sounds in order to help them understand the cause of their illness. In the third instance I introduce a form of auto-auscultation in which patients' heart sounds are so loud as to be audible without a stethoscope, creating disturbing acoustic events. In each of these situations, auto-auscultation creates a particular relationship between the listener and his or her own body. Listening creates a subjective engagement, not with 'the body' in an abstract sense, but with the person's own body, *my* body, the body as it belongs to and is experienced by the subject. While I argue that sound constitutes an important element of the bodily 'hexis' (the habitual state in which a person finds him or herself) for people in general, the heart sounds come to be particularly pronounced through auto-auscultation. For patients who experience frightening auto-auscultatory events, sounds become integral to the patients' sense of themselves as 'sick' or 'diseased'.

The auscultation of everyone

Dr Coltart told us that we should listen to people's chests at every available opportunity. This meant we should listen not just to the chests of hospital patients, but those of people everywhere. He joked that even when we were sitting on the Tube, we should ask the person sitting next to us if it would be all right to listen to his or her heart. We should then go on to ask the same of the rest of the people in the carriage. "Imagine all the murmurs you would hear! You would find murmurs in people who didn't even realize they had anything wrong with them!" Dr Coltart enthused. From

many of its rooms St Thomas' Hospital has remarkable views out over the River Thames, the Houses of Parliament and Westminster Bridge. On one occasion Dr Coltart made a sweeping gesture towards the bridge and asked us to imagine what would happen if we were to stop all the people walking across it and listen to their hearts: "Think of all those interesting sounds. There would be hundreds of people walking around with murmurs who didn't even realize they had them!" For Dr Coltart the population of London could be understood as a vast collection of medical cases, amongst which there lurked surreptitious murmurs.

The firm would often kill time between teaching sessions drinking coffee and playing cards in the hospital café, *Toms 2*. After the session in which Dr Coltart had made the suggestion that we listen to all Londoners, we were sitting playing a game called 'hearts', and began to discuss how strange it was to think that every time you took the Tube there would be people in your carriage who had murmurs, and probably didn't know it. Tom explained: "You suddenly realize that they are inside everyone, these two heart sounds, these murmurs. All the people walking around the streets have two heart sounds and some of them have murmurs, and the stethoscope is like a window to that. If I just walked around the street and listened to everyone with my stethoscope I would be bound to hear murmurs that people never knew they had, and suddenly they've got a disease, suddenly there's something wrong with them". Harjit thought similarly: "I had never really thought about people in that way before. I could go around with my stethoscope and I would pick up heart murmurs in people everywhere, not just in the hospital but in the street". Through Dr Coltart's instruction and their own imaginative interpretation of his suggestions, the students became conscious of the importance of heart sounds not just in the cases of the individual patients they encountered during their classes, but within people in general. Interestingly, by making the population at large subject to (albeit hypothetical) medical scrutiny, the students effectively collapsed any distinction between patients and non-patients. The entire population becomes medicalised as potential bearers of disease. This imagined, generalized application of auscultation evokes what Armstrong refers as 'surveillance medicine', an all-encompassing project which targets everyone, 'all persons…becoming patients' (1995: 397).

In his book *Medicine, Rationality and Experience*, Byron Good explores the manner in which the Harvard Medical School students with whom he conducted his fieldwork were led to 'think anatomically' through their training , and how as a consequence they internalized 'an alternative way of seeing' (1994: 73). Good

suggests that the students carry and apply the gaze they acquire at medical school beyond the campus: 'the way of seeing is not neatly contained in the laboratory or limited to the appropriate contexts for the medical perspective' (ibid). After conducting dissections and autopsies, for instance, the students begin to anatomize the living people they encounter in everyday life. Good observes this effect taking place in himself, too:

> While participating in anatomy as an observer, I would occasionally be walking along a street and find myself a body amidst bodies, rather than a person amid persons. I found myself attending to the anatomical features of persons I passed, rather than perceiving them as persons with social characteristics or imagined lives (ibid).

Good cites a medical student on a rotation in pathology who notes the same 'perceptual shift': 'I'll find myself in a conversation…I'll all of a sudden start to think about, you know, if I took the scalpel and made a cut [on you] right here, what would that look like?' (ibid). Similarly, the students with whom I studied found that their acquired gaze, and in this particular instance, their knowledge of acoustic anatomy, could apply beyond the context of the hospital. They were led to imagine the sounds which they might hear inside the people they passed on the street, or saw moving around the city. For these students, too, a particular perceptual shift had occurred.

Listening to oneself

Dr Coltart also encouraged us to listen to the people close to us. He would often joke about how auscultation would be good for our love lives. He suggested that when the students were at home they should tell their boyfriends and girlfriends to lie down on the sofa and then take their time listening to them. Indeed, stethoscopic listening did retain a slightly romantic aura due to the intimacy and proximity which the practice requires. For instance, a rumour that a romance was blossoming between two of the students on the firm began after they were seen listening to each other's chests in a bay off one of the corridors. Other students would listen to one another, too, joking a lot as they did so about the intimate contact which the interaction required.

Dr Coltart told us to practise auscultation on our family members. This sometimes proved worrying and difficult. There was always a possibility that the students might hear something they didn't want to. As Mary explained:

> When you're in hospital you want to hear murmurs. You want to hear loads of noises and this and that. But then I went home and I was listening to my Dad's chest, I was thinking "Please, let there be just normal heart sounds, two sounds, no murmurs". I was thinking "Oh God", because I know he smokes. And I was thinking "Come on Dad! Be normal! Be normal!" And he was just sitting there and I was listening. Then I was thinking "Thank God I can't hear anything! Thank God there are no murmurs". So in this sense you were like "Thank you that you're not ill. Thank you that I can't actually hear anything". Whereas in hospital you're thinking "Come on! Let there be something! I want to listen to something!"

Rishi told me about the time he and his identical twin brother, who was also studying medicine in the same year, listened to their father's chest:

> I remember my brother listening to my Dad's chest. He's had an MI (Myocardial Infarction, popularly known as a 'heart attack') in '95. Anyway, my brother was listening to my Dad's chest, and he heard a diastolic murmur. I came in to the room, and I listened and heard it too. My brother and I kind of elaborated more on it, saying "What kind of murmur is it?" and my brother and me both agreed it was a diastolic murmur. It did worry my Dad – enough to make him go to the GP. It was a diastolic murmur, but the doctor told him it wasn't serious. Still, it wasn't very nice for any of us.

Several other students found their family members were unwilling to undergo the examination at all. They were too concerned for what the stethoscope might reveal. The students, then, became acutely aware of the sounds which might be produced by the bodies, not just of patients or an abstracted, socially distant population, but of those close to them. They found they could not maintain the position of distance and objectivity which characterized their relationship to the patients they saw for just fifteen minutes during a teaching session at the hospital. When it came to turning the stethoscope on those they knew well, they were personally affected by and implicated

in what was heard. Most would have preferred to, as it were, leave the stethoscope at the hospital, though as the example given by Good indicates, this neat compartmentalization of perspective is difficult to achieve at first.

Simon Sinclair argues that medical training is a process of building up medical knowledge of 'someone else's body' as distinct from one's own (1997: 203). While I found during fieldwork that medicine was indeed a question of building up knowledge of another person's body, we were encouraged to do so by practising on our own bodies. Rather than knowing a body as *distinct* from our own, there was a sense in which we were required to know that body *through* our own. For instance, in one class during the chest rotation the registrar began teaching us to find and palpate the liver. She demonstrated how to press our fingers just below the patient's rib cage in order to do so and then made us practise by palpating our own livers. We were also encouraged to practise, for instance, getting a good sound when using percussion by tapping our own chests. Similarly, in a class on cardiovascular medicine, one of the surgeons was teaching us about the circulatory system in the legs. He told us to trace the distribution of the veins on our own calves, naming each important blood vessel as we did so. We were effectively practising on ourselves the examination we would otherwise carry out on a patient.

In relation to auscultation, Simon Sinclair writes that the students he studied were told, 'Don't listen to your own heart; it's confusing!' (ibid). However, I found that, during the cardiology rotation at St Thomas', Dr Coltart actively encouraged us to listen to ourselves, a technique known as 'auto-auscultation'. It was partly through listening to ourselves that we learned how to listen to others. Dr Coltart recommended auto-auscultation because, he said, it would give us a chance to familiarize ourselves with normal heart sounds (there was an assumption on his part that our bodies would be clinically normal, reaffirming a dialectic of the 'healthy' doctor or medical student as distinct from the 'sick' patient) and give us time to think through the relationship of the heart sounds to the cardiac cycle. Rather than being confusing, then, Dr Coltart suggested that auto-auscultation could provide clarity.

It seemed sensible for us to practise auscultation on ourselves. Listening to the CD of heart murmurs which Dr Coltart had given us was helpful, but as suggested in chapter three, the recordings were unrealistic. The sounds were louder and clearer than normal. Similarly, we could practise auscultation by listening to recorded murmurs available via medical school websites, but these also did not create a realistic sense of auscultation, which required us to move our stethoscopes around to

find the best points at which to listen and find the right pressure at which to hold the diaphragm against the skin. Real auscultation required us to extract and focus on sounds, to work them out in relation to other diagnostic clues. Recorded murmurs were devoid of context. In fact, auscultation could only be properly practised *on a person*. As we ourselves were even more readily available for practice even than patients, it made sense to listen to our own hearts.

But auto-auscultation could be frightening; as Tom put it "You just never know what you're going to hear". He continued: "My Dad has had a few heart problems and I'm a bit of a hypochondriac, I think every doctor is. I don't really want to turn this ear that I'm being trained to use on myself. I don't want to be hearing anything". In fact, both Tom and Alistair found they had quite bad sinus arrhythmia, which can often be observed in young men. In sinus arrhythmia the heart tends to speed up perceptibly during inspiration, slowing down again during expiration. Although not a sign of disease or abnormality it can be disconcerting, particularly if an entirely regular heart rhythm is expected. Harjit experienced a similar fear of what she might hear: "I came back from class and was sitting at my desk and I thought 'Wait, I've never listened to my heart before'. I was uncertain about whether I should or not. I was very scared that I might hear something bad, something I didn't want to hear". Sue Ann likened the experience of listening to herself to being inside a maze in the dark, listening for danger while inching around, all the time not wanting to hear any of those sounds which might be a monster moving. In fact, no one in the rotation detected an abnormality in his or her own heart, although it later became known that a female medical student in one of the other firms had heard a murmur and become very distressed. She had gone crying to the doctor who was in charge of her rotation and had never been entirely convinced by his reassurances after he had listened that hers was a flow murmur and therefore 'innocent'. It is easy to understand why she was reluctant to believe him, given the strong emphasis which was placed on murmurs as an indication of valve disease throughout the rotation.

For those who heard their heart sounds to be normal, of course, auto-auscultation became a reassuring, even pleasant experience. Some students would try running on the spot while listening to themselves, seeing how fast they could make their hearts beat and how loud they could make them sound. Rishi's friend Ambrose said that he would spend large amounts of time listening to his own heartbeat and would lie in bed, sometimes falling asleep with the stethoscope still in his ears. He found the sound comforting and speculated that this might be because the sound of

one's own heart beat in one's ears created acoustic conditions similar to those experienced in the womb. His suggestion reflects Murch's (1994) and Ackerman's (1990) ideas, introduced in chapter three, of the intensely sonic environment in which the foetus develops, the mother's heart beat being one of its most distinctive 'soundmarks' (Schafer 1977: 173).

Through their training the students had learned to relate to 'the body' using a language of objective signs. The act of auto-auscultation, however, neatly illustrates the manner in which an objective engagement with the body also informs subjective experience. In her article 'It was a real good show': the ultrasound scan, fathers and the power of visual knowledge', Janet Draper (2002) points out that traditionally, through techniques of dissection, the interior of the body has been visualized as a series of silent, still sections, abstracted from the present and distanced from association with a specific owner. Introducing the foetal ultrasound scan, which allows images of the foetus to be produced using sound waves, she explains that the technique creates images of the inside of the uterus in real time. Furthermore, Draper writes: '[i]n contrast to dissection, which by definition was a passage into *the* body, these new technologies where the body can be anatomized live provide an opportunity for us to experience our own interiority first hand, a passage into *my* body' (ibid: 777). Auscultation, too, allows for this kind of live anatomization. The organs may be heard in real time as they move and work. Of course, auscultation is ordinarily conducted by a doctor on a patient, and so the technique does not, unlike ultrasound, create for the person being examined an immediate experience of his or her own interiority. However, in the case of auto-auscultation in which a student listens to his or her own body with a stethoscope, an experience of *my* body, rather than *the* body is produced. The students begin to appreciate the acoustic dimension of their own, lived bodies. This particular subjective engagement with the heart sounds, mediated through auscultation, is not unique to medical students, however. It is also seen to occur in some patients.

Patients as listeners

So far in this thesis I have been careful to preserve the distinction between the person who listens with the stethoscope (namely the doctor or medical student), and the person who is listened to (namely the patient). However, the phenomenon of auto-auscultation means that the previously straightforward distinction between 'listener'

and 'listened to' becomes blurred. The students turn the stethoscope on themselves and listen to their own bodies, meaning that the 'listener' and the 'listened-to' become the same person. The medical student becomes his or her own 'patient'. I also became aware of contexts in which hospital patients listened to themselves, bringing about a further inversion of the established relationship between the perceiver and the object of perception. The person usually 'listened to' becomes the 'listener'.

Few patients were given the opportunity to listen to their own hearts using a stethoscope. Doctors explained that this was because hardly any patients would ever have had the opportunity to learn how to use a stethoscope. Most would not know what sounds to listen for and even if a patient succeeded in hearing a particular sound, he or she would have no idea how to interpret it. Indeed, on one occasion I asked a patient if he had ever listened to, or ever wanted to listen to his own heart murmur. He said "No", as he wouldn't know what to listen for or what any of the sounds meant. He said that listening with a stethoscope was evidently a difficult thing to do as the medical students who came to listen to him often got the diagnosis wrong, and even senior doctors disagreed about the sounds they heard. "I wouldn't know if there are just two sounds, a good heart and a bad heart, or more than that. I wouldn't know the difference between one sound and another, a 'ff-ff', and an 'eek-eek'", he said. Listening to himself would be pointless. Only the doctor's knowledge and experience brings meaning to auscultation.

There was also a general sense among doctors that most patients did not want to know what was going on inside their own bodies. Indeed, they had an aversion to engaging with their own interiority and were frightened by the knowledge of what was happening to their own organs. This sentiment was expressed by several patients to whom I spoke. One, a former military man, explained: "I don't mind what the doctors do, where they poke or prod, as long as I don't have to know what is going on inside me or what the surgeon is actually going to do when he comes to operate". He said that thinking about his heart or imagining it in any way made him feel "queasy". Several other patients I spoke to also adopted this position. They said they became frightened whenever they thought about what was going on inside their bodies. Although I do not suggest that all patients feel this way, there seemed to be a strong and widespread aversion among patients from contemplating their own interiority. While he does not contextualize his comment either culturally or historically, Jonathan Sawday makes reference to this aversion: 'the interior recesses of the body are not merely private to others but peculiarly private – that is, expressly forbidden –

to the owner or inhabitant of the body' (1995: 15). He argues that there is a 'taboo' against gazing inside one's own body (ibid). The example provided by these patients might be said to lend some contextual support to Sawday's theory.

An example of the discomfort which could be created by a patient listening to his own heart was provided when one morning the firm was ushered to the bed of a sixty-five year old Turkish man. Dr Coltart introduced us and we spent fifteen minutes practising our cardio-respiratory examination, paying particular attention to the man's murmur. That afternoon I went back to listen to the patient again, and we began to talk about his being in hospital. He explained that he had been aware since the mid 1970's that he had a problem with his heart. His doctor had noticed a murmur when examining his chest after he had gone to see him suffering from a cough. The doctor had told him about the leaking mitral valve which it indicated. However, he had decided not to do anything about it at that time. "After all, I didn't need to be an Olympic athlete, I just needed to lead a normal life", the man explained. He was in no pain and had lived generally comfortably for many years until three days earlier when he had collapsed and was taken to hospital in Sidcup, Kent. There it was found that his mitral valve had prolapsed. He had been transferred to St Thomas' where doctors were deciding whether to replace his mitral valve, or repair the existing one.

We were discussing his situation when he began to tell me about a friend of his who was a cardiologist in Turkey. He explained that she was not *his* cardiologist, but *a* cardiologist nonetheless. They had become friends when they met at university many years ago. Shortly after he had been told he had a heart murmur, she had given him a stethoscope as a gift, and told him: "Listen to yourself from time to time". He had thought the gift was a strange one, but said it would act as a reminder of his murmur and of the fact that he should look after himself. She taught him to press the stethoscope to his side in order to hear the murmur best. He should see a doctor if the sound got louder or changed dramatically. "So I listened to myself from time to time. But I didn't like the noise. For one thing the heart is irregular and it has a loud noise in it". He began to cry, and said through his tears, "The listening filled me with disquiet". Clearly this man experienced the heart sounds as a disturbing presence, an unwelcome reminder of underlying ill-health.

The general line taken by doctors was that when it came to heart murmurs, "a little knowledge is a dangerous thing". It was extremely difficult to explain to patients what a murmur was without getting into detail which might create more concern than it would alleviate. The best thing, it was felt, was to tell the patient that he or she had

a murmur in the heart and that this meant one of the valves was leaking slightly. To say more, or to suggest that the patient listen to the murmur, would mean moving into more and more medical specifics which would have to be explained, making the patient's understanding of the problem increasingly confused. The patient's listening to the murmur, while not necessarily a bad idea in some cases, would, it was felt, create more worry than comfort for the patient.

One doctor I met was keen to allow *some* patients to listen to their murmurs although she did not recommend it in every case. She acted as gatekeeper, deciding which of her patients might benefit from listening. In one instance the patient had been suffering from chest pain for several months and had undergone a battery of tests, some of which she had found upsetting and painful, in order to determine the cause. It was only when the doctor in question examined her thoroughly and listened to her body carefully that a murmur caused by an aortic aneurism was discovered. This should have been detected by the doctors who had examined her weeks previously, and it was considered to be something of a professional embarrassment that they had not found it. The doctor, having made the diagnosis and discussed it with several colleagues, suggested the patient listen to her own murmur, which she did. Later, I asked the doctor why she thought it would be a good idea for the patient to listen to herself. She replied:

> After having so many doctors examine her it would be very rude not to let her listen to herself. It's a mark of dignity for her. She may be thinking "I have something really wrong with me", but letting her listen to the murmur and explaining why you were listening may alleviate her worries about other illnesses. In this particular case, I know the patient is intelligent. She has been ill and never known why. Allowing her to listen to her heart lets her say to herself: "Now I understand why I have been having these symptoms". She now has something definite to connect her thoughts to. She can hear the sound and understand what's going on. But you have to judge which patients want this kind of knowledge and which don't. Some patients don't want to know or learn about this kind of thing.

This doctor, then, decided that it would be polite to allow the patient to listen to herself after so many doctors had tried. She considered it to be important to invite the patient to share in the diagnostic process through which the decision over her

condition was reached and offering her the stethoscope was a way of making her feel included. The doctor also felt that allowing the patient to listen and hear the murmur might produce a sense of perspective, alleviating concerns that something terrible had been detected. If she could hear the murmur for herself the patient would be less likely to become over-anxious about what was going on inside her. Also, there was a sense that allowing the patient to listen to the murmur might serve as a kind of explanation, the sound declaring the cause and confirming the physicality of her suffering. The sound would be something definite to which the patient could relate.

When I spoke to the patient she described how she had heard "a whooshy, gushing sort of sound which shouldn't be there. It made the problem more credible, made me think 'Yes, something is going on there'". She seemed to use the murmur as a point to which she could refer part, at least, of her illness. The murmur is, for her, a definite indication of a problem; she is able to confirm it empirically. The patient also said that she felt being offered the chance to listen to her own murmur constituted an important mark of respect. "It's like they're saying, 'We're all listening to you, maybe you should hear what's going on'. It made me feel more like a person, less like a chunk of meat". Evidently it was a well-judged decision on the part of the doctor to allow this lady to listen to herself. She seems to have found the exercise helpful. Relating to her murmur was not unduly disturbing for her and she responded well to being able to share in the diagnostic practice from which she had previously been excluded. Listening to her own murmur helped the patient override the sense that she was simply an object of medical curiosity without real involvement in what was going on around her. The potentially negative process of medical objectification described in the previous chapter was counteracted by sharing the stethoscope with the patient. At the same time, she was brought closer to understanding how her diagnosis had been reached. She was able to hear the whooshing sound which the doctors had identified as being abnormal, and was able to reference that sound to her physiological problem. The murmur, contextualized through a field of medical investigation, became an element of her subjective understanding of her illness.

In this case, then, the patient benefited from listening to her own heart sounds. However, in general the doctors I met adopted the position that for patients to experience their own murmurs in the immediate way which is created by auto-auscultation might prove upsetting, and that patients would prefer not to become involved in such direct encounters with their own organs. While offering the patient

the stethoscope might constitute an important symbolic gesture, in general they felt that patients preferred the stethoscope to be in the hands the doctor.

The other auto-auscultation

I have suggested that auto-auscultation presents particular contexts in which a listener engages with his or her own body. This is an acoustic engagement which is structured by medical knowledge of the ways in which sounds articulate physiology. Indeed, in the example given above the patient becomes a kind of medical student, learning how the sound allows her condition to be recognized. There are, however, some instances in which a kind of auto-auscultation occurs where heart murmurs are clearly audible to patients prior to their being formally medicalised. In these circumstances, sounds create a primary engagement with and experience of the body. They become one of the means through which patients experience themselves as ill or diseased.

Dr Harold Segal introduces this type of 'auto-auscultation', in which a person hears sounds emanating from his or her own body, in a letter to the editor of the *American Heart Journal* (1976: 269). He points out, like Ackerman, that it is a common experience to hear one's own heart sounds while lying in bed on the left side with the chest and the ear on the pillow or mattress. However, he adds that 'in some rare instances, patients hear heart murmurs while they are in sitting or standing posture' (ibid).

Segal cites a case study by William Osler who in 1880 published his observations on 'a remarkable heart murmur heard at a distance from the chest wall' (Osler 1880 cited Segal 1976: 269). The patient was a twelve-year-old girl, referred to Osler by one Dr Buller who 'had noticed a remarkable whistling sound while examining her eyes' (ibid). On auscultation the murmur could not be heard while the child was sitting up in a chair. When she stood, however, Osler observed that 'a loud systolic murmur is heard at the apex, high-pitched, somewhat musical, of maximum intensity in [the] fifth interspace; it varies a good deal, being loud for three or four beats, and then faint for one or two succeeding ones, due to the influence of respiration. On removal of the ear from the chest wall, the murmur can be heard at a distance of several inches' (ibid). Olser noted that on causing the girl to lean forward and relax the chest 'the murmur was heard with greatly increased intensity. It was

distinctly audible at a distance of three feet two inches by measurement, and could be heard at any point on the chest and on top of the head' (ibid).

Following Osler, Segal goes on to introduce his own case study of a young woman of twenty-three who first heard a noise emanating from her chest when she was twelve years old. Segal writes: '[s]he remembers that one day when at home, seated in the company of several friends, she became aware of a particular "squeaking, grating noise", a rhythmically recurring noise emanating from her chest' (ibid: 272). Though she heard the noise at times over the next ten years she did not consult a doctor until she was eighteen when she complained of (what she felt to be) unconnected irregularities in her heart beat. The doctor she saw reassured her, but over the following years the noise began to reappear with increasing frequency until it became noticeable several times a day, at which point she sought further medical advice. Segal continues: '[s]he has never heard it while in bed or otherwise recumbent. In search of some correlation with a particular activity she has noticed that it tends to come on when she is standing in the kitchen and vigorously stirring a mixture of food she is preparing. Emotional excitement also tends to elicit the noise' (ibid). Segal notes that eighty-five years separate Osler's case from that of his own, but speculates that the two cases had the same or similar underlying physiology, 'a mid-systolic buckling of the mitral valve' (ibid).

Osler's case study also acts as the background to an article by Fiddler and Scott (1980) entitled 'Heart murmurs audible across the room in children with mitral valve prolapse'. These doctors give case studies of three patients in whom unusually loud heart murmurs have been detected. In the first, a ten-year-old girl is described as having 'a one-year history of an intermittent sound emanating from her chest in time with the heart beat. The sound was never present when she visited her family doctor, but was loud enough to be tape recorded at home by her parents…The recording revealed a high pitched whooping sound' (ibid: 201). In the second case, a girl of twelve had 'noticed an intermittent noise from her chest during the previous three months and on several occasions it had been heard by her parents in the same room' (ibid: 202). The third case study was a boy of ten who was admitted to hospital with pericarditis, and, 'while straining to vomit, suddenly became aware of a squeaking noise coming from his chest. The noise was also heard by his parents on entering his bedroom and caused them great concern' (ibid).

Fiddler and Scott point out that although several reviews mention patients who are aware of their own murmurs, only seven, including Osler's famous case, have ever

been described in detail (ibid: 203). However, as the title of their article suggests, they act with some conviction in attributing the cause of these extraordinary murmurs to mitral valve prolapse. This condition is thought to occur when the two leaflets of the mitral valve, instead of closing cleanly together as the left atrium pumps blood into the left ventricle, billow back into the atrium. The loud murmur is created by the rush of blood through this prolapsed valve under the strong 'pumping' pressure created by the heart in systole.

These cases of somewhat extreme auto-auscultation are interesting precisely because they are so unusual. In general the body contains its sounds in such a way that they are at most distantly audible. But when the sounds of the body become audible to a person and even the people around them, the experience is evidently an uncomfortable, embarrassing, even frightening one. In her book *Skin: on the cultural border between self and the world*, Claudia Benthien (1999) details the manner in which cultural developments have shaped the meaning of the skin and, as a consequence, the hermeneutics of the body in its relationship to selfhood. She engages with Bakhtin and his effort to track the transition from a baroque 'grotesque' body to the neat, tightly-demarcated body imagined in modern thought. She writes:

> In the grotesque body, the boundaries between body and world and those between individual bodies are much less differentiated and more open than they are in the new body canon: the very boundary of the grotesque body reveals the intermingling with the world in that protruding body parts (the nose or stomach for example) are understood as projecting into the world, and the inside of the body comes out and mingles with the world (ibid: 38).

Her description of the grotesque body resonates closely with the body as created by these very loud murmurs. Their volume renders the individual boundaries of the body permeable. The sounds of the organs protrude. The inside of the body projects into the world in strange auditory forms. The murmurs constitute 'a problem to the borders of the self' moving across what are perceived to be the boundaries of the body in powerful and unsettling ways (Bubandt 1998: 65). These loud heart sounds play with the accepted boundary between interiority and exteriority.

In his book *The Foul and the Fragrant: Odours and the Social Imagination*, Alain Corbin (1994) explores changing attitudes towards smells in European thought. He describes how in France in the first half of the eighteenth century odour became

the focus of anxiety around ideas of health and bodily constitution. Smells were, as they are now, considered to be strongly indicative of corporeal and moral health or decay. Foul smells in particular emanated from the body, diffusing themselves into the air and hence into shared public space. Through smell, it was perceived that 'the body's cement was volatile in nature' (ibid: 17). The body and its diseases could pass through the air, meaning the body was not conceptualized as a self-contained entity, but as a dissipating flux. The examples given above suggest that sounds also create the body as diffuse and shapeless, its physicality seeping into the air and into the perception of others.

Julia Lawton introduces the concept of the 'unbounded body' in her study of contemporary hospice care (1988: 127). She identifies the frequent incidence of symptoms which 'caused the surfaces of the patient's body to break down' among those admitted to the hospice in which she conducted her fieldwork (ibid). The symptoms to which she refers include incontinence of urine and faeces, fungating tumours and limbs weeping from the development of gross oedema. Lawton suggests that the hospice serves as a space which allows the disintegrating body to be set apart from mainstream society, enabling ideas of the hygienic, sanitised and bounded body to be symbolically enforced and maintained. The unusually loud murmurs described above might also be conceptualized as causing the surfaces of the patient's body to break down, creating 'unbounded bodies'. At the same time, the fact that the patients whom they affect are coded as medically abnormal or diseased enables the norm of a quiet body to be reinforced.

During my fieldwork I did not meet any patients with murmurs so loud that they could be heard across a room. One patient I saw in Dr Coltart's outpatient clinic had a very loud murmur known as a 'shunt', caused by blood rushing through a small hole in the septum (the muscular wall separating the vessels of the left side of the heart from those of the right). A roaring sound could be heard with the naked ear at about six inches from the chest. However, I did meet several patients who had had the experience of being able to hear their own heart sounds, usually because of a serious underlying disorder. In one case a particular auto-acoustic experience caused a frightening distortion of normality.

The patient in question had been admitted to the hospital with terrible headaches, joint stiffness and pouring sweats. He worked on the river Thames, and had a small tick bite mark on his arm which was thought to be connected to his illness. I was introduced to the man by a teaching doctor because the pulse he showed

was medically interesting. His was a collapsing pulse. When feeling a normal pulse in the wrist, although there is a tangible build-subside, there remains a constant pressure in the blood vessels of the arm around the wrist. With a collapsing pulse, however, the fluctuation is far more severe. It feels almost as if the blood is rushing up, and then being quickly sucked back down the arm with each pulse. Holding a thumb across the inside of the patient's elbow and lifting the arm it is possible to feel the blood knock against the thumb as it falls back down the blood vessels. The collapsing pulse is also known as a 'water hammer pulse' or 'Corrigan's sign'. It leads to the expectation of an early diastolic murmur in the aortic area as the aortic valve is not closing properly and the blood, when pumped up the arm, is not kept at pressure by the closing valve. Instead it flows back into the ventricle through the valve, creating turbulence and a significant murmur as it does so.

This patient turned out to be friendly and happy to talk. He was actively researching his own condition and had a stack of papers by his bed which he had printed off the internet. Although the (equally friendly and talkative) doctor in charge of his case did not agree with him, the patient thought he had contracted Lyme's disease. Rishi began writing a case report on this patient, which meant he and I were able to talk to him often. The man described how one night, as his illness was just beginning and his temperature was running high, he was lying on his bed at home and heard a strange rustling noise. The room was dark and he could see nothing, so he chose to ignore the sound at first. When he lay down again, however, he heard the sound a second time. He still could not think what the sound was, but assumed that a cat must have got into the room through an open window. When he got up he could find no sign of it. Suspicious of his sanity because of his high fever, he tried to sleep once more, but soon heard the sound again. This time he got up quickly, convinced there must be a burglar in his flat. A former boxer, he moved around the room throwing punches into the darkness, literally shadow-boxing. But having thoroughly searched and found nothing, he lay down once again. As he rested his head on his arm he realized that the noise was coming from the raging flow of blood inside his body.

Another patient who could hear his own heart sounds had recently been diagnosed with pancreatic cancer. It was very upsetting to see him, as he appeared to my untrained eye to be in good health. He was sitting up in bed and spoke in a lively manner, but he had been told just two days before not to expect to live more than another three years. He was being kept in hospital for an operation on his pancreas which was expected to take place in the next two days. He was able to hear his heart

murmur squeaking, he said, when he rested his head against the pillow. This patient had a particularly loud ejection systolic murmur which does indeed make a squeaking sound. Several other patients also reported being able to hear their own heart murmurs. They became particularly audible when the patients were lying down and the ward was quiet, for instance when going to sleep at night. Patients who had undergone valve replacement surgery were also told to expect to be able to hear their new metal valves clicking in the weeks following surgery as the heart's contractions forced the metal ball of the artificial valve against its metal cage, creating a click with each heart beat. They were told that they could expect themselves to 'tune out' the sound after a number of months. It was certainly the case that many patients who had had prosthetic valves put in place reported hearing the clicking, and several said that they were almost driven to distraction by it.

For these patients, the sounds were arguably disturbing because hearing them was involuntary. As Schafer observes, '[w]e have no earlids. We are condemned to listen' (2003: 25). The patients were unable to shut out the sound, and instead had no option but to endure it until they became so accustomed that they no longer noticed it. Their engagement with the sounds was not intentioned listening, a deliberate auditory self-examination, but was a kind subjection to auditory self-exposure. At the same time, the fact that the sound was emanating from inside their bodies and was not produced, as it were, by the outside world, seemed to suggest that the sounds might be a kind of hallucination. Jonathan Ree explores the capacity of the sense of hearing to delude in his book *I See a Voice* (1999). He suggests that '[s]ounds, being intangible and unverifiable, make ideal raw material for the work of delusion formation' (ibid: 49). The sounds the patients heard, however, were usually confirmed by doctors listening from outside, meaning their reality was verified by other people.

Clearly for the patients described above, sounds became a prominent part of their illness experience. They were highly conscious of the sounds which they could hear within their own bodies. Although the sounds only indicate underlying physiological problems and are not in themselves damaging, they are nonetheless closely associated with specific infirmities and are one of the ways in which the particular conditions from which these murmur patients suffer manifest themselves. These loud heart sounds, murmurs audible through auto-auscultation, are woven into the patients' experience of themselves as 'sick bodies'.

Acoustic 'hexis'

In her article on the ultrasound scan, Janet Draper explores the manner in which foetal ultrasound has shifted the dynamics of the pregnancy experience. In making this claim she draws on Duden's concept of 'hexis' which might be defined as the habitual state in which a person finds him or herself (Duden 1993 cited Draper 2002: 781). Draper suggests that prior to the rise of foetal ultrasound a woman's pregnancy hexis was characterized by hapsis, which she describes as 'knowledge accumulated about the world and experience through perception and touch' (ibid). She continues: 'A haptic hexis, therefore, was woman's embodied experience of her pregnancy gained through touch, feeling and being and was available only to her' (ibid). When ultrasound was introduced, however, women began to see images of their unborn babies. These images did not belong uniquely to the mother. Unlike the haptic hexis, the images of the foetus were shared with the technician operating the scanner, and could also be distributed to partners, family, friends and so on. The uniqueness of the woman's pregnancy experience was therefore disrupted, and the fundamental axis of the pregnancy shifted from a haptic hexis to an engagement with a visual image. I would suggest that Draper slightly overstates her case; after all, the ultrasound scan does not erase the hapsis of pregnancy altogether. Nor does the ultrasound scan render entirely obsolete the tactile and auditory skills through which midwives and lay experts have traditionally engaged with pregnancy. Draper does make the important point, however, that techniques of perception have the capacity to radically affect the way in which people engage with their own bodies and bodily events.

In chapter three I introduced the idea of a bodily soundscape. This soundscape of the body might also be understood to constitute part of the haptic hexis. A person is aware of his or her body sounds through notions of touch, feeling and being, as much as through purely acoustic experience. To use an obvious example, a person running fast may be conscious of the sound of his or her heart beating. However, that person will also experience the heart, to use a cliché, pounding in his or her chest, or feel the sensation of blood pumping in his or her ears. In a similar way, a person may distinctly hear his or her stomach gurgling but at the same time will be aware of vibrations rippling through his or her gut. The body sounds, even when distinctly heard, remain intertwined in the haptic hexis.

The examples of auto-auscultation given above suggest contexts in which the body sounds become particularly pronounced, or receive definite emphasis in the sensory interplay through which the experiential reality of the body is created. Of course, the medical students and some patients listen to their bodies in brief, if concentrated spells. Their sudden awareness of their own heart sounds may be intense, but is not enduring. Auto-auscultation draws attention to a particular dimension of the bodily hexis, it introduces a new sense of bodily possibility, but the students in particular can choose when to listen and in the vast majority of cases find healthy heart sounds. In the case of the murmur patient lent the stethoscope by her doctor, auto-auscultation allows her to recognise the heart murmur as an expression of her physiological condition. This acoustic event is assimilated into her illness experience but does not bring about a kind of acoustic re-organisation of that experience in its entirety. Those patients who suffer the rather disturbing examples of auto-auscultation described above, however, find themselves engaged in much more dramatically 'acoustic' or 'sonic' 'hexis', a sonically-marked sense of the body-as-self. The patient's auto-auscultatory experience is implicated in, and even formative of, their particular experience of disease, and their plight as hospital patients.

Sonic happenings

In a plenary session at a recent conference entitled *Sound and Anthropology* held at the University of St Andrews, Tim Ingold (2006) explained that anthropologists resort too quickly to the term 'embodiment' in their discourse. They use the word in a very loose sense to imply anything experienced with and through the body (arguably all of experience). Anthropologists, he suggested, should take more care to define the particular kind of experience to which they refer when speaking about 'embodiment'. By way of example, Ingold's particular interest in the environment had led him to consider the experience of the wind. While it may be all very well to refer to the embodied experience of the wind in a person's being buffeted about, cooled or warmed by a strong breeze, he argued that in fact it would be truer to say that it was not the wind which was embodied, but the person who was 'en-winded', he or she being caught up in a movement, a constant flux of air.

Applying these remarks more specifically to sound, Ingold suggested that anthropologists should pay more attention to the medium of sound than to the signals it conveys, namely sounds themselves. Sound moves through the air, cocooning a

person in a particular acoustic environment in which he or she dwells, and through which he or she moves. Just as a person may be 'en-winded', a person listening or hearing is immersed in sound, 'en-sounded' rather than obtaining embodied knowledge of sound through experience.

Ingold's position, then, is orientated towards the perception of the environment. It is constructed around the premise that the environment surrounds the person who experiences it. There is an assumption that sounds are always external. In the instances of listening which are produced through auto-auscultation, however, sounds are produced internally. Ingold suggests that anthropologists should pay more attention to the medium of sound, namely air, than to the sounds themselves. In the case of auto-auscultation, however, the medium of sound is only a current of air in that, for the students in listening to their own hearts with the stethoscope, air conducts the heart sounds from the diaphragm to the ears. The heart sounds in fact originate in and are conducted through the substance of the body, through muscle, tissue, blood. The heart sounds have their origin and their medium in the very materiality of the body. 'Sound inhabits the subject just as the subject might be said to inhabit sound' (Bull 2000: 2). The 'ensoundedness' to which Ingold refers must be understood as a condition of a person's physical embodiment, emerging from within as well as becoming present from without.

Specialists in psycho-acoustics have long been conscious of the origin of sounds from within the body itself. Barany (1938) points to the internally-generated sounds which are produced by the creaking of joints and muscles attached to the skull and the flow of air and blood. Tonndorf writes on how 'trans-lational' waves of sound may be conducted through the body from within, passing through the interior of the skull (1972: 233). He suggests that the ear requires a means of filtering out or minimizing these sounds. It contains the three smallest bones in the body, the *malleus* (hammer), *incus* (anvil) and the *stapes* (stirrup). These three bones are known collectively as the 'auditory ossicles'. Their function is, in part at least, one of lessening the effect of bone-conducted sounds by passing internally-generated sounds across a number of fluid-filled membranes. The ear, then, has constructed a means of screening out sounds from inside the body so as to make the hearing of the outside world possible. In a similar way, Ackerman suggests the ear had to be designed to shut out internal sound, otherwise the sound of a person's own blood flow 'would be as deafening as sitting in a lawn chair next to a waterfall' (1990: 189). Carpenter and

McLuhan also refer to the need for ears to filter out 'the continuous Niagra of sound…in the circulation of the blood' (1960: 68).

During the same *Sound and Anthropology* conference at which Tim Ingold made his remarks on 'ensoundedness', I presented my findings on auto-auscultation using the ethnographic examples given here. Referring to the paper, Tim Ingold suggested that auto-auscultation had important implications for concepts of the body. He argued that it would be mistaken to describe a body experienced acoustically in terms of an 'entity'. The body encountered through auto-auscultation was not a thing. It did not represent for those listening a distinct object whose depths and limits were carefully delineated and from which perception was detached. Rather, the body was constituted as a collection of movements, of happenings – sounds among them. For Ingold, the best metaphor to describe the body which auto-auscultation created was as a 'hive'. The body is a hive of happenings. Ingold's point resonates closely with that made earlier in this chapter that the sounds of the body do not allow it to be considered as a clearly demarcated or bounded space. Instead the body is defined through the spatiality and temporality of its events. The sounds of the body, intertwined with the haptic hexis, are happenings through which the body is made present.

In his introduction to *Framing and Imagining Disease in Cultural History*, Rousseau (2003) posits two distinct spheres of thought which come into play in diagnosis. There is a medicalized disorder, framed in medical terminology, and an imagined disorder which is generally held in the consciousness of the person diagnosed. But this chapter suggests that the two categories which Rousseau identifies, the 'medicalized' and the 'imagined' disorder are intertwined, and may be elided. In each of the ethnographic examples given above sounds are implicated in the listener's understanding of and engagement with his or her body. Sounds, objectified as signs of the body's functioning or malfunctioning, also become integrated into the subjective experience of the body itself. In the case of those suffering from severe murmurs, sounds become integral to their experience of themselves as sick or diseased.

Importantly, this chapter has suggested that sound represents an important consideration not only in diagnosis (as has been a point of focus earlier in the thesis) but also in relation to concepts of illness and suffering. Sound is shown to be implicated in the construction of fear and anxiety in relation to the body. This anxiety operates both at a societal level (in the medical reinforcement of the acceptable

acoustic limits of the body) and in the experience of sound as a symptom of illness. While sound has been problematized within medical anthropology in relation to medical environments, in particular, hospitals (Armstrong 1995, Rice 2003), little consideration has been given to its role in the phenomenological experience of illness. This chapter makes a gesture towards generating research in that area.

Chapter Seven: The Heard and the Unheard

In this chapter I explore how auscultators, and particularly students learning the skill, are challenged by the subjective isolation of listening. Because the sounds of the body can only be accessed sequentially, one listener following another, there is little potential for that listener to be certain that he or she is hearing exactly the same sounds as are other people. At the same time, the lack of vocabulary to describe sounds means that it is difficult for listeners to explain to one another what they have heard. The establishment of the consensus upon which diagnosis depends is therefore difficult, especially when murmurs are subtle. The seniority of the doctor becomes an important factor in his or her ability to 'fix' a diagnosis. Importantly, cardiac ultrasound or echocardiography is increasingly used in decision-making on heart murmurs. The ultrasound machine creates detailed information as to the physiological basis of heart murmurs. It allows the valves to be visualized, for blood-flow measurements to be taken and for the function of the heart muscles to be examined through accessible images. The sensory politics of this change suggest that the authority and validity of auditory knowledge, in particular as held by those proficient in auscultation, is threatened by the encroachment of visual technologies such as echocardiography.

Defensive medicine

In his play *Jumpers*, Tom Stoppard (1972) refers to a phenomenon known as 'cognomen syndrome', by which people take on the characteristics of their surname. I was surprised to encounter many examples of this syndrome at St Thomas'. For instance, I met Nurse Nicky Nurse, Nurse Lee Patient and an occupational therapist named Sarah Heals. Another example of cognomen syndrome I encountered was Dr Chambers. He was a cardiologist specializing in echocardiography, a technique used to create images of the chambers of the heart. It was Dr Chambers who introduced me to Major General James Alex Jonse, a military doctor, one of whose responsibilities was to determine whether or not the heart murmurs detected at military medicals were

sufficiently serious to render recently-enlisted cadets unfit for training. I was told there would be "murmurs galore" at his clinic, and that the Major General was known to be an expert auscultator. On the day I attended, the Major General came to meet me at reception. Though (as I later learned) seventy years old, he was an intimidating man, broad and strong with a firm military handshake. He seemed to look down at me even though I was easily taller. His eyes had the look of one well used to scanning inferiors.

"One feels that most young doctors are incompetent auscultators", he said when we had sat down in his consultation room. "They don't do it properly. In fact, the medical profession in general is not good at auscultation – they are bad auscultators. Most students are not taught to auscultate properly. They don't feel for the femorals, they don't time the murmur against the pulse, they don't listen to the carotids". He explained that as a medical student and doctor in Edinburgh he had "cut [his] teeth on congenital heart disease and rheumatic heart". Congenital heart disease involves deformities in the valves which often cause murmurs, while rheumatic heart disease is caused by rheumatic fever which can damage the heart valves causing them to become stiff and/or misshapen. The flow of blood through these misshapen valves creates heart murmurs. Rheumatic heart disease is still seen in Britain, though with much less frequency than in the past. As the Major General put it, "The disease has virtually died out". It is still relatively prevalent, however, in many developing countries. Auscultation, the Major General explained, had been very important in his student days and when he began to practise medicine in the early sixties. It was effectively *the* major technique for the diagnosis of these prevalent conditions. Indeed, he described auscultation as being "more or less on its own, and as a consequence taken extremely seriously" both in teaching and in practice. The Major General suggested that the lack of rheumatic fever and the clinical signs which it generates has made auscultation less important as a clinical technique, an idea I explore further in chapter eight.

I asked the Major General about the nature of the clinic he ran. He explained that its purpose was to investigate heart murmurs which had been identified 'further down the line'. They might have been detected at the medical which cadets must undergo before training, or previously identified by doctors in the cadet's childhood, requiring closer scrutiny now given his or her embarkation on a military career. Cadets are, of course, put through arduous training which puts a great deal of stress on the heart. Murmurs may imply heart defects which could render cadets vulnerable

during strenuous activity. Also, the military authorities are anxious not to be rendered liable to compensation claims from cadets or the families of cadets who are injured or die during training. A thorough investigation of heart murmurs detected in new recruits is therefore essential to ensure not only that the cadet is sufficiently healthy to endure training, but also that the MoD has sufficiently protected itself against the logistical and legal contingencies of heart problems in its personnel. Appropriately for a clinic run by the Ministry of Defence, this is known as 'defensive medicine'.

Clearly keen to move the clinic along, he said that I could stay to observe it. His tone was neither warm nor cold. He simply stated the fact. He picked up a telephone and asked the receptionist to send in the next cadet. Shortly there was a knock at the door, and the doctor opened it. A nervous boy/man entered the room. I could see him trembling as he took a seat next to the Major General's desk. The Major General spoke to me as though the cadet was not there. "This is fairly typical of what we get in here", he said, passing over a piece of paper. It was a referral letter from the military doctor who had given the cadet his introductory medical. The doctor had detected a soft, grade II ejection-systolic murmur at the boy's left sternal edge and wanted it to be investigated further (volume is sometimes evaluated on an approximate scale of I-VI, grade I being barely audible and grade VI being audible to the naked ear). The Major General took a brief history from the lad as I read the letter, asking him his age (sixteen), how he occupied his time (he had left school and worked as a baker), was he a drinker or a smoker and so on. Then he told him to take his top things off and lie on the couch. The Major General's tone and actions were brisk and efficient. Voicing concern once again that medical students today are not taught auscultation properly, he explained each stage of the examination as he performed it. To begin with, he said, one should inspect the hands and skin. In this case the boy's hands were rough. The Major General said he thought this was eczema, at which the cadet exclaimed "No it's not! That's hard graft!" The Major General looked unconvinced and continued to demonstrate that proper auscultation meant feeling each of the femoral arteries (which are found in the thigh where the tape measure is held if an inside leg measurement is being taken) while taking the pulse, to check that the blood is circulating evenly all around the body. One should then observe the veins in the neck and palpate the chest for 'heaves' and 'thrills', which are vibrations in the heart, sometimes referred to as 'palpable murmurs'. Next, one should feel the pulse in the wrist and then auscultate the heart and the carotid artery in the neck. Asking the boy to sit up and take deep breaths, the Major General then listened at three points

down his spine, during which, he said, he was listening for sounds from the lungs which might indicate asthma or breathing problems. Finally, asking his patient to lie over on his left side, the Major General listened again to the mitral area of the heart with the bell of his stethoscope diaphragm, better for detecting low, rumbling sounds. He gave no reassurance to the boy he was examining, and commented aloud on the acne down his back. He then gestured to me. I put on my stethoscope and approached the cadet to do the same examination. I observed in chapter three that each doctor has his own particular style of conducting auscultation. The Major General's style was characterized by a rigour and physicality I had not seen before but imagined was typical of military doctors. I wanted to impress him by doing it in exactly the same way, so I began by reaching for the femoral artery in the cadet's right leg. The Major General tapped me on the shoulder. "Good start", he said, "but you've got your earpieces in the wrong way round".

After I had fumbled my way through the examination the Major General told the boy to "dress up", and to go upstairs for his echocardiogram. Echocardiography or cardiac ultrasound is a procedure in which beams of ultra high-frequency sound are directed at part of the body (in this case the heart) using a small hand-held transmitter. As the transmitter is moved across the skin over the heart, the beams of high-frequency sound 'bounce' back off the tissues, or are deflected by the turbulence in the blood-flow. Receiving the reflected sound waves and noting tiny differences in the times at which they return, or noting the absence of refracted beams, a sensor relays information to a computer allowing images to be built up which show not only the shape of the organ, but also the blood-flow and the movement of the heart muscles. The resulting images are incredibly detailed, able to show the workings of the valves and allowing measurements to be taken of, for instance, muscle thickness and blood flow across the valves. If a patient is diagnosed with a murmur it is increasingly standard (though not yet universal) practice to give him or her an echocardiogram.

Echocardiography has had an enormous impact on the practice of auscultation. Rather than being solely dependent on their ears, doctors are now increasingly able to refer to the visual images produced by echocardiography to determine the severity of valve damage. I will return to the discussion of echocardiography's impact on auscultation in chapter eight. For the moment, I want to show that the echocardiogram is used to confirm the opinion which the doctor forms through auscultation. In the case of the Major General's patient, the murmur, despite being identified and confirmed by two doctors, still depends on what the Major General described as

"paper proof" before its existence is certified. The echocardiogram confirms the opinion of the Major General, who confirms the opinion of the military doctor, who is often confirming the opinion of a general practitioner. It is as if initially the murmur floats free, unsubstantiated, a little cloud of uncertainty, becoming fixed and solid, taking on substance and gravity as each doctor listens, confirming the opinion of the previous doctor. This opinion becomes validated beyond all doubt by the evidence of the echocardiogram.

The Major General wanted to know whether or not I had heard the murmur in the cadet's chest. I replied that I thought I had heard a pan-systolic murmur in the area described in the doctor's letter. I was pleased at having heard the murmur at all, and I was convinced I was right. The Major General wrinkled his nose and said "Hmm. It was a scruffy little murmur". He went on to explain that although the murmur was only slight, he could not describe the cadet's heart as clinically normal. However, he suspected that the echocardiogram would show the heart to be 'normal enough' for the Major General to pass him. When twenty minutes later the results of the scan came back, the two words printed at the top of the paper did indeed read 'normal scan'. The detail reported normal functioning on each valve except for 'trivial tricuspid regurgitation' which as the Major General had said, was not sufficiently serious to warrant keeping the cadet out of active service. The doctor, the major general and the echocardiogram, then, were in agreement.

The next cadet was seventeen years of age, and had recently won a place to read law at Oxford provided he secured his 3 'A' offer, which he believed he would. The army had agreed to fund him and he was keen to join the Royal Signals Regiment on graduating. Like the last cadet, he was so nervous he was visibly shaking. His voice, also, seemed to tremble. The Major General passed me his letter of referral. The boy's GP had written to the army explaining that there was a history of heart problems in the cadet's family, and recommended a thorough medical prior to his admission. This doctor had not detected any signs of disease on examination, and there had been normal auscultation of the heart. However, he wanted his findings to be confirmed by a military doctor. As in the previous instance, the Major General asked the boy to strip to the waist, and he conducted a thorough examination, indicating that I should also do an examination when he had finished. I did, and the boy was sent for an echocardiogram.

When he had left we discussed his case. The Major General thought the GP had done the right thing. The history was of concern. The army was worried in

particular about HOCM (pronounced 'hokem') or 'Hyper-Obstructive Cardio-Myopathy' which occurs when the muscle of the left ventricle grows inwards in such a way that it obstructs the outflow of blood. There are no symptoms other than sudden death, meaning that the condition is sometimes referred to as 'sudden death disorder'. The condition is notable in the physically fit, and fatal attacks may be triggered by exercise. On occasion, unknowing sufferers die during sexual intercourse, a fact which forms the basis of the warning jingle 'If you've got HOCM, don't poke 'em'. Auscultation reaches its limits here, as the condition rarely causes a murmur. Echocardiography, however, allows for information to be gathered which can indicate the abnormal heart muscle growth characterizing HOCM. The technique can specify the exact area in which the growth is occurring, the volume of blood passing through the heart's chambers and the functioning of the valves. It can also identify the effect of any abnormality on the overall function of the heart muscle. In this case, the general practitioner wanted his opinion that there were no sounds to be confirmed by the Major General, and the clinic to organize an echocardiogram to rule out HOCM.

I remarked that both the cadets we had seen were nervous, and the Major General replied that this was to be expected. Not only were the cadets in a strange place, but they were in the presence of a person whom they knew was high-ranking and had a great deal of power over their immediate progress into the forces. Furthermore, the majority of the patients he saw knew they were being examined because of their heart murmurs, and the Major General was quite willing to accept that this was worrying for them. Indeed, throughout the remainder of our meeting he repeated the point that the diagnosis of a heart murmur was a cause for distress five times. The cadets' distress was intensified by the context in which they were being examined. For the most part, their livelihoods were in some way linked to their acceptance into the forces. Many had given up jobs; others, (like the second cadet) had funding for courses linked to their service careers. However, when the heart murmurs were detected, the possibility of enlisting and the financial security which accompanied their doing so were threatened. The murmurs jeopardized their futures, their hopes for a career and a life-path. Furthermore, many cadets had waited months for this appointment at which their murmurs were to be investigated, and the Major General thought that the anxiety which had accumulated over that time was bound to peak at the appointment.

I was particularly interested in what the Major General had to say about the cadet's reaction to being diagnosed with murmurs because I had been struck by the

fact that they could be found in young, fit individuals. I explained to the Major General that I was keen to find out more about how the cadets reacted to their diagnosis. I wanted to know whether it would be possible to speak to some of them about it. The Major General agreed that it would be interesting to know their responses, but explained that the clinic was run on a private basis. Though I could write for permission, he thought it was unlikely the authorities would grant it as they would not be keen for any potential criticism to emerge of the way in which they ran the clinic. Besides, the clinic was a "good gig" for the Major General himself. He was "well remunerated" for a few hours of relatively easy work, and was not keen for his clinic to become the object of scrutiny.

I stayed at the clinic to watch as the Major General investigated heart murmurs in three more cadets. In one of these cases the Major General was highly sceptical as to the presence of the murmur indicated by a military doctor. When my turn came to listen I thought I could hear a soft murmur, a kind of thickening of the first heart sound, but the Major General was unconvinced and shook his head. He said he didn't think there was a murmur, and if one was present it was so small as to be insignificant. The echocardiogram, he said, would indicate a normal scan. Indeed, when the result came back it did give a normal report. It seemed completely natural that in this instance of disagreement over the murmur the Major General's opinion prevailed over that of the other military doctor. As the most senior doctor involved, the Major General's evaluation carried the most weight. It was also interesting, though again it seemed entirely natural, that he ultimately validated his diagnosis through the findings of the echocardiogram.

The solitary listener

Murmurs – like other signs and symptoms – are consolidated through confirmation by other doctors. In the case of the Major General's clinic he would confirm (or otherwise) the opinions of the doctors further 'down the line' whose patients were referred to him. He would listen as the doctor's letter indicated and decide whether he agreed or not as to the presence and character of the murmur. After he had listened, the echocardiogram offered a means of clarifying the diagnosis beyond all doubt.

During the teaching sessions in which I took part during fieldwork, however, it seemed that in auscultation, reaching an agreement on what was heard presented

particular difficulties. Auscultation was recognized as a strangely solitary, isolating perceptual experience. When using a stethoscope, the earpieces fit into the ears in such a way that the sounds of the outside world disappear. Speaking or listening to conversation becomes impossible. Ones eyes tend to be diverted, disengaging the visual attention. Though the sensory engagement/disengagement which listening requires may only last a matter of seconds, and though it is possible to talk to other people moments later, for that perceptual moment one is isolated within a particular sensory space.

Also, because each doctor or student must take his or her turn at listening to the patient, the sound of the patient's body is not shared by the listeners in the same way that, for instance, music played over a stereo might be. It is true that the body sounds are shared in the sense that each person has a turn listening to them, but in fact they are experienced separately, rather like a number of people eating the same food in the same room sequentially, one after the other. The sound is not shared in an immediate sense. As a consequence it is difficult to ensure that each person is listening to exactly the same sound. Teaching stethoscopes have been developed to tackle this problem. These instruments have one large central diaphragm and two sets of tubes and earpieces leading off it, enabling a teaching doctor and a student to listen at the same time.

Figure 8: A teaching stethoscope

There are even stethoscopes in existence which have ten tubes and earpieces leading off a central diaphragm, meaning that ten physicians, or a doctor and nine students, can all listen to the same sound at the same time. These instruments, however, are

rare. Auscultation normally involves a doctor on his own, listening through his or her stethoscope to a sound which no one else is able to hear at that precise time. Once again, the doctor is isolated within a particular perceptual moment.

The students with whom I worked were highly conscious that listening with a stethoscope created a solitary sensory engagement. This, I think, is what Harjit, one of the medical students, was driving at when she remarked: "It's hard to compare what you are hearing to what other people are hearing. What I hear might be different to what somebody else hears. It's very difficult to get a concrete perspective. It's not a quantitative thing and it's hard to make sure that somebody is hearing things properly". One's own experience is removed from that of others, and there is no obvious way to bring those experiences closer. Harjit experiences a brief but intense subjective isolation.

An additional problem inherent in listening is that one cannot easily explain what one has heard to another person. This problem has been identified in relation to auditory phenomena in general. In his foreword to Chion's book *Sound on Screen*, Walter Murch argues that Western culture has 'never developed the concepts or language to adequately describe or cope with sound' (1994: xvii). While other cultures, for instance the Kaluli described by Feld (1996), have developed sophisticated acoustic languages, for Western cultures the capacity to think with or through sound is restricted by a lack of available terminology. Murch considers Chion's book to be an attempt to rectify this conceptual and linguistic shortfall. Stephen Feld (1996) adopts a similar aim. He argues that the descriptive power and vocabulary for sound must be developed in order to allow for the proper exploration of sonic knowledge. In fact, he considers the term 'acoustemology' to be his first addition to existing acoustic vocabulary, a gesture for others to follow (ibid: 97).

The difficulty of communicating the nature of a sound is a particular problem in teaching auscultation. During classes Dr Coltart would try to explain the kinds of sounds we should be hearing by mimicking them. "It's the 'Ush, ush, ush' sound I want you to be hearing", he might say, or the "Lup-dup-shh, lub-dup-shh". The ejection systolic murmur of aortic stenosis, for instance, occurs when the aortic valve has become stiffened so that it does not open fully enough to allow blood to flow easily through it. The blood is, as a consequence, forced through the narrowed valve. The result is a harsh, sometimes squeaky murmur. On several occasions I saw Dr Coltart act out this murmur by saying "Eek, eek, eek", accenting the noise with an upward gesture of his fist to indicate the effort which was required of the heart to push

blood through the narrowed valve. He would also try to tap out the murmur out with his fingers or the flat of his hand on the desk, and would attempt to make the students demonstrate that they understood him by tapping out the noise they heard with a foot.

Dr Coltart insisted that cardiology was "the only scientifically precise branch of medicine". "What is cardiology?" he would ask, addressing us as a firm. "The only scientifically precise branch of medicine!" we learned to reply in chorus, being asked to repeat this maxim several times at each teaching session. Dr Coltart was asserting the superiority of his chosen specialization over all others, something which most consultants did for their particular area of medical practice. Interestingly, though, Dr Coltart chose to do this by suggesting that it was cardiology's strong scientific basis which made it superior. It seemed strange that Dr Coltart could boast of cardiology's scientific precision when he had to be so expressive and performative in communicating the sounds we should be hearing and when he was using a slightly comical kind of onomatopoeic language instead of a technical medical vocabulary. One registrar who instructed us in auscultation would also attempt to enact heart murmurs. Using her forearms with hands outstretched she would mimic the movement of the valve, making accompanying noises as she did so. While I have conceptualized teaching and learning within medicine in terms of 'practice', which might be understood to make 'performance' integral to explaining techniques to medical students, these rather conspicuous demonstrations did seem out of context.

The students would also struggle to describe what they were hearing to one another. During his clinics, after Dr Coltart had asked the patient if he or she would mind if the medical students had a listen in to the heart, we would line up with our stethoscopes. As the students at the front of the line finished listening and went to sit back down in their chairs discussions over the nature of what had been heard would begin. They would involve our trying to describe the murmur we had heard to one another. It felt quite silly as we all made whooshing and rasping noises, particularly when our efforts to communicate the sounds were little more successful than are the written descriptions I have presented here. The sounds which we made were a gesture towards breaking down or destroying the subjective isolation of listening, re-inventing the auditory experience as a shared and communal one. I often felt that these discussions in onomatopoeia were rather insensitive, however, as the patients and sometimes the friends or partners who had accompanied them to the clinic could hear what was being said. Their faces often took on looks of fright and concern when they

heard the various sounds we were attempting to describe and which were emanating from inside the patients' bodies.

Evidently Rene Laennec, the French doctor credited with the invention of the stethoscope, also experienced difficulty in formulating a language of body sounds through which doctors could generate a shared sense of what they were hearing. Laennec had to grant others a means of recognizing those sounds which, his extensive research had shown, inferred pathological conditions. He was, of course, obliged to couch these sounds in language. Jonathan Sterne suggests that Laennec's *Treatise on the Diseases of the Chest and on Mediate Auscultation* might be considered 'one of the first attempts to develop a meta-language of sound, a set of descriptions for the shape and texture of sounds that was independent of subjective experience' (2003: 208).

It will have been noted in chapter one that, after listening to the chest sounds of his patient Marianne Levas, Laennec described hearing 'a tinkling similar to that of a small bell just ceasing to ring, or of a fly buzzing in a china vase'(1846: 320). Elsewhere he described how the thickening of the bronchial tubes created by pneumonia caused a sound which sometimes resembled the snoring of a sleeping person and sometimes the cooing of a wood pigeon or the rubbing of a bass string (Marks 1972: 71-2). He thought the prolongation of what would now be recognized as the second heart sound due to atrial contraction sounded like a file on wood (*bruit de rape*), or if slightly softer, like bellows (*bruit de soufflet*). These sounds, he noted, were sometimes accompanied by vibrations (now known as 'thrills') which Laennec likened to the purring (*fremissement*) of a contented cat (Fleming 1997: 89). Laennec, then, chose simile as the device though which to describe the sounds he heard.

But this strategy proved largely unsuccessful. Indeed, Sterne considers that Laennec's efforts to create an acoustic lexicon of the body were a 'spectacular failure' (2003: 208). His typology of sounds was criticized for its inaccuracy and lack of specificity. Flint later attempted to better Laennec's lexicon using a musical system. He suggested that heart sounds and murmurs should be identified in terms of their pitch, intensity and quality. Pitch referred to the sound's musical pitch, intensity to its volume or perceived degree of force, and quality to the sound's tone. However, Flint went some way towards proving the inadequacy of his own system by also considering sounds in terms of their duration, and eventually, completing the circle, their resemblance to other sounds. He had set out in a different direction from Laennec and ended up back at the same place.

In the contemporary vocabulary for engaging with the sounds encountered through auscultation, simile is still one of the devices used. There is, for instance, one heart sound which is still frequently referred to (presumably as a legacy of Laennec) as a 'bellows murmur', or, if that same murmur has become so harsh as to take on a musical quality, it is known as a 'seagull murmur' because of its similarity to the bird's cry. However, as Sterne suggests: '[t]he analytical language of sound remains incomplete to this day. While all sorts of aspects of visual phenomena can be described in abstract language… there exists no commonly used equivalent to describe the texture, shape, density, timbre or rhythm of sound' (ibid: 215).

But though it may be problematic to communicate what has been heard to medical students new to the language of auscultation, part of learning the diagnostic skill involves developing a set of descriptive terms which, while not capturing the uniqueness of the sound, allow some of its parameters to become established. When two trained and experienced doctors come together to discuss a murmur they share a vocabulary through which to identify and categorise it. For instance, in the letter from an army doctor to the Major General described above, reference to 'a soft, grade II ejection-systolic murmur at the left sternal edge' describes the sound in terms of its comparative tone, volume, place in the cardiac cycle, and area of the chest, leaving relatively little scope for the confusion created by attempts to relate the actual sound of the murmur. This description tells the listener where to listen and what to expect. Evidently, though, as I will show below, the capacity to frame sounds through this set of reference points has not entirely resolved or eradicated the problem of establishing consensus on what has been heard.

The sociality of heart murmurs

The Major General's clinic illustrated that in order for the presence of a murmur to be ascertained it must be confirmed by other doctors. Indeed, a consensus of opinion is necessary in order for the murmur to be acknowledged as objectively present. Husserl, one of the founders of phenomenology, set out to explore the constitution of objectivity. Preoccupied at a philosophical level by the perceptual flux of consciousness, he wondered how consciousness could attain ~~to~~ objectivity. How could it satisfy itself that objectivity had been, or could be, achieved? Husserl, as Moran explains, 'recognized the inter-subjective communal grounding of the knowing activity' (2000: 61). He 'saw objectivity as the achievement of inter-subjective

confirmation and acceptance' (ibid). Husserl, then, argued for an objectivity-born-of-inter-subjectivity.

As described above, the establishment of an inter-subjective consensus in auscultation may be difficult. The perceptual isolation of the practice of auscultation, and the complexity of articulating the particularities of heard sounds, tends to make it difficult to compare subjective positions. However, it is clear that auscultation became influential because practitioners found it possible to obtain an inter-subjective consensus over at least some of what they heard. Although during the years in which auscultation was in its infancy there was much disagreement on *how* particular sounds were caused, the lexicon of auscultation was sufficiently clear to allow the heart sounds and common or distinctive murmurs to be identified and established as objectively present.

In its excerpt on 'the heart sounds' *The Oxford Handbook of Clinical Medicine* states that: '[t]he first and second sounds are usually clear'. However, it continues: '[c]onfident pronouncements about the other sounds and soft murmurs may be difficult. Even senior colleagues disagree with one another about the more difficult murmurs' (Longmore, Wilkinson and Torok 2001: 80). These authors, then, emphasize that 'objectivity born of inter-subjectivity' is relatively easy to establish with simple heart sounds. However, it is notoriously difficult to acquire, even, and perhaps particularly, among experienced auscultators where more subtle murmurs are concerned.

At the Major General's clinic, cadets would arrive with murmurs which had been identified by doctors either at an initial medical or a prior examination. In the majority of cases these murmurs would be confirmed by the Major General, and an assessment of their severity and expected impact upon the cadet's fitness would be made. In a similar way, GP's who had identified murmurs in their patients would send them to Dr Coltart's clinic. He would in general confirm the presence of the murmur. In these instances an inter-subjective consensus would be reached and the objective presence of the murmur established.

In his book *Science in Action*, Bruno Latour (1987) examines what he describes as the social construction of scientific facts. He devotes attention to the authorship of scientific articles, and notes that this kind of text is made 'for attack or defence' (ibid: 61). One important strategy of defence, Latour explains, is to bring 'friends' in, launch many references, build up a body of support through connecting one's argument to those of others. Thus, if someone wishes to refute the position

adopted in an article, he or she will have to go back and also refute all those whose work has been incorporated into it (ibid: 44). Academic writing is, of course, similar to this. Academics are renowned for relentlessly quoting the work of others in order to reinforce their arguments – indeed, I do so in this very paragraph, an irony which would not be lost on Latour. However, the key point Latour seeks to make is that the more a piece of scientific literature draws on the work of others, and hence, the more scientific or technical it appears, the more 'social' it is – because it draws on associations and connections with other people in making its position unassailable (ibid: 62).

In a similar way, doctors attempt to consolidate their diagnoses through confirmation from other doctors. Approval by a colleague gives weight to his or her findings and makes a diagnosis firmer. Latour suggests that in making arguments and drawing on the supporting work of other people, scientists produce 'social' documents. It could also be argued that in drawing on the confirmation of colleagues, doctors produce 'social' diagnoses, in this instance, 'social' murmurs. The more doctors reinforce a particular finding the more 'social' it becomes. Highly 'social' arguments are in general 'strong' arguments. Highly social murmurs are generally 'definite murmurs'. Where a murmur is acknowledged and has been confirmed by many other doctors, the diagnosis holds firm. But although Latour's argument clearly applies to medical practice, it is important to point out that medicine and academia also differ in important ways. For instance, medicine requires continuous responses to the changes and developments within the body not only through diagnosis but through therapeutic action. Medical decisions are therefore located in a dynamic field with the patient at the centre, whereas Latour suggests that academic knowledge is much more distantly linked to experimental action and research.

Latour suggests that the building up of social texts acts as a way of defending a particular argument or position. He points out that if a person who is not a high-ranking scientist finds he disagrees with a particular statement or idea, registering that disagreement becomes almost impossible because he or she is immediately faced with a huge body of opinion generated by the author of the article. It is practically impossible for that person to go about dismantling each of the arguments expressed by this army of allies. It is simply easier for the dissenter to accept the author's position and hope his own thoughts soon lead him elsewhere. In a similar way, if, for example, a medical student believes he or she hears something different than has been recorded in the established diagnosis, it is difficult to register that difference of opinion. Indeed,

the student is likely to try to persuade him or herself that his or her own opinion is wrong rather than contradict the opinion of a group of more senior doctors. The interpretation which that particular student gives to what he or she has heard is adjusted to conform to what has been heard by a more qualified and experienced group. Of course, the student is in a position in which he or she is expected to do as he or she is told. Challenging a teaching doctor's position might well be construed as a misdemeanour. Yet in a subtle but significant way, the auditory reality of that student comes to be defined by the 'official' diagnosis. The student's own auditory reality is shaped through the consensus which has been reached by others so that he or she is ultimately obliged to acknowledge having heard the same thing. The social determination of sounds is a powerful concept which applies not just to murmurs, but to auditory phenomena in general. What a person hears may be defined by what those around him or her (particularly those people in authority) acknowledge it is possible to hear. Individual acoustic experience is thus shaped by a wider collective acoustic consciousness.

Listening and authority

One doctor I spoke to explained that, in his team, while Senior House Officers and Registrars might carry out examinations on patients and discover murmurs, those murmurs were only speculative diagnoses until the consultant had listened and decided that he agreed with them. He had the final say, as well as the final listen, on deciding whether or not a murmur was present. In some cases, as has been explained, both the Major General and Dr Coltart would disagree with the findings made by more junior referring doctors. In these cases, as more senior doctors, their own evaluation of the murmur was carried forward. More experienced and better-qualified, they commanded the authority to dictate what was heard.

In a similar way, when Dr Coltart asked his students to listen to a patient's murmur they would spend minutes discussing and debating with one another as to what they had heard. Small groups of consensus would form, but usually some students thought differently from the others so that two or three different opinions on the murmur would emerge. Only rarely was complete agreement established. When Dr Coltart asked for an answer as to what kind of murmur the patient presented he would generally ask one student, and then, when he or she had answered, go on around the group until each student had given an opinion. Dr Coltart would then

announce the correct answer and there would be a little gesture of celebration from, if there was one, the student or group of students who had got the answer right. Dr Coltart would send those who had got the murmur wrong back to have another listen.

When it came to the identification of a murmur, then, Dr Coltart's opinion was taken to be factually correct. If Dr Coltart said the patient had a late diastolic murmur of mitral stenosis, the patient had a late diastolic murmur of mitral stenosis. Dr Coltart could 'fix' the murmur. Having read the letter of referral from the GP, and having seen the patient's notes, he was in a position to state through a diagnostically well-substantiated thought process the fact of the murmur's existence. The students did not doubt his accuracy, but also they were in no position to dispute his view, he being vastly more experienced and trained in this area than they and even most other doctors were. Also, as I have suggested, because they were in a teaching situation, Dr Coltart had the authority to dictate what was heard while the students were obliged to accept his judgment. But it was interesting to note that even when they were trying to decide which murmur they thought was present between themselves, groups would form around a student whose judgment was respected because he or she had got a murmur right in the past, or had shown him or herself to be someone who generally got answers correct. Even within the firm, then, some students had more authority than others.

As the extract from *The Oxford Handbook of Clinical Medicine* cited above suggests, senior doctors may disagree on subtle murmurs. In these instances, authority becomes particularly nuanced in the establishment of a diagnosis. Yet, as has been illustrated by the example of the Major General's clinic, a different kind of authority is ultimately invoked in making decisions about heart murmurs. The echocardiogram, and the analysis of the technician who operates that technology, has become increasingly important as a final arbiter, the voice of objective 'truth' in establishing what is really going on inside the heart. The social structure of reaching a diagnosis changes, the ultrasound technician becoming an important party in determining the patient's condition.

On one occasion during fieldwork, Rishi and I went to see a lady whom he had met on a ward round in the St Thomas' Hospital Lupus Unit. The lady was isolated in a side ward because she had acquired MRSA (Methicillin-resistant Staphylococcus aureus, better known as the 'hospital superbug'). She was clearly very unwell, but said she felt reasonably good that day. One of the latest developments in her condition had been the discovery of a heart murmur which had been detected by one of the

doctors charged with her care – a microbiology specialist. This doctor had said it was a soft, pan-systolic murmur and added that he believed the lady to have contracted endocarditis (a bacterial infection) which was now affecting one of her valves. Another more senior doctor had then listened and described the murmur as 'only *very* soft'. He had referred the patient for a TOE (trans-oesophagal echocardiogram, a procedure in which the patient is given a sedative and an ultrasound transmitter is passed down the throat to a point at which it is able to produce detailed images of the mitral valve). A third, senior doctor who had also conducted the TOE said there was no evidence of any stenosis or regurgitation. He felt the valves were normal and that there was no evidence to substantiate the microbiologist's claim.

The patient told us that she herself had been suspicious of the microbiologist's diagnosis. She said she felt he was 'using' the murmur, "hearing things" as she put it, in order to secure control over her treatment. She said, when I asked her about the murmur having been found, that she did not feel worried or uneasy, she was simply suspicious about its being there, and, quite frankly, doubted it. She said she knew the two senior doctors to be experts in their fields, and felt that the other doctor was "comparatively young, inexperienced and self-interested". The point this patient is making is an important one. She suggests that what is heard depends on who is listening. In this case she believes the first listener is influenced by his own desire to take responsibility for her treatment through his own particular medical specialization. His agenda seems to be clear, he wants to treat her as a microbiology case and "hears" the murmur in order to strengthen his argument for that course of action. In a similar way, it is easy to see the potential for other doctors to be tempted, to 'hear' heart sounds which would bring the patient's diagnostic signs in line with a particular course of treatment. Each listener is influenced, sometimes perhaps subconsciously, by his or her own inclinations of the ear. Auscultation is not a 'transparent' technique. The subjective isolation referred to above can mean that decisions based on auscultation may be inaccessible to others.

In this instance of the patient with a 'dubious' murmur, however, the first doctor is obliged to offer his opinion on what he has heard to a second, more senior doctor. Interestingly, this doctor half agrees and half disagrees with what the first doctor says he has found. The murmur 'is only *very* soft'. Indeed, it is almost as if he is trying to give his own opinion that there is no murmur without offending the first doctor. On the basis of the auscultation of the two doctors, then, the murmur has only a flimsy existence, it is given half-presence and half-substance through their uneasy

half-consensus. The situation also demonstrates the influence of figures of authority on deciding what has been heard. The first doctor cannot make a definitive statement, but is obliged to involve a second doctor in order for the accuracy of his diagnosis to be certified.

Ultimately, the patient is sent for an echocardiogram. It is the result of this test which is taken as the definitive statement on the presence or absence of the murmur. Having carried out the echocardiogram, the third doctor reports that the valves are normal, and that if there is a murmur present it is not a significant one. The third doctor also is very senior and an expert in the field of echocardiography. The findings of the echocardiogram suggest the valve is functioning normally, and, having reported that finding, the murmur effectively evaporates. The evidence of the echocardiogram and the opinion of the echocardiographer are given complete authority.

The sensory dynamics of authority

On many occasions, after listening to a patient's chest, Dr Coltart would send him or her to have an echocardiogram. As the patient left the consulting room he would turn to us and say: "It's just going to tell me what I know already". Similarly in the Major General's clinic, when he sent the first cadet away for an echocardiogram, he knew the 'scruffy little murmur' would not be sufficiently serious to keep the cadet out of the army. However, as he points out, he is involved in an exercise in defensive medicine, and the army must provide evidence of its rigour. There is also an element of self-defence or 'self-defensive medicine' here, as the Major General knows the echocardiogram will provide tangible evidence of his own conclusions, covering him in the event of future legal action.

It is important, however, to emphasize the sensory dynamics which are at play in this diagnostic procedure and the professional interactions through which diagnosis is negotiated. After the collation of different opinions based on auditory knowledge and auditory findings, what is finally needed to confirm those opinions is essentially a visual technology. In the earlier days of medicine, as the Major General points out by reference to his training, auscultation was taken very seriously as it was the only diagnostic technology available. Now, given the development of echocardiography, the authority of the auscultator comes second to that of the echocardiogram and the opinion of the technician who operates it.

It seems that auscultation has essentially become a type of 'triage'. Triage was a system of 'sorting' initially used in dealing with war casualties. The wounded were examined briefly and then placed into categories, for instance, those who were injured but could wait for attention, those who needed immediate help, and those who were so severely hurt that treatment was futile. Triage allowed for limited medical resources to be allocated efficiently and effectively. Auscultation seems to be used in a similar way to sort healthy hearts from those showing abnormal clinical signs such as murmurs. Those patients exhibiting murmurs can then be examined more closely, perhaps with attentive auscultation, but also with other techniques such as echocardiography. The necessary action towards treatment can then be taken depending on the findings of these more probing examinations. While prior to the invention of echocardiography, for instance in the days when the Major General was a medical student, auscultation stood alone and was the most precise and detailed means through which the heart could be investigated, it has now become just the first line of inquiry with echocardiography taking the secondary role. In relative terms, auscultation is now a cursory technique.

It could be argued that the auscultation's 'cursory' nature is one of the reasons it remains valuable. It is very quick to use and costs nothing. The doctor is also able to carry the stethoscope around with him, using it whenever and wherever it becomes necessary. He can diagnose immediately, at the bedside or in the consulting room. Echocardiography, on the other hand, is relatively slow, a full echocardiogram taking perhaps fifteen minutes. It is also expensive and involves the use of sophisticated technology. In addition, at the present time, in the vast majority of cases, the patient must be brought to the ultrasound equipment rather than vice versa. The images which the echocardiogram produces must then be stored and maintained. Ultimately, though, these images have a higher diagnostic value than findings obtained through auscultation.

It could be argued that the echocardiogram holds greater authority because it creates more 'objective' evidence than the auditory information collected through the stethoscope. The images provided by the echo generate clear proof of what is going on inside the heart, making consensus much easier to establish. As Jonathan Ree suggests, sounds do not generate evidence, a characteristic which he argues (as explained in chapter six) makes them the stuff of hallucination, delusion and insanity (1999: 49). The sounds which are the focus of auscultation are nebulous and

insubstantial. Although there may be an element of subjective isolation with any perceptual experience, the visual evidence created by the echocardiogram is concrete.

But as suggested throughout this thesis, I am wary of imputing inherent characteristics to particular sensory phenomena and in doing so, reifying the senses. Jonathan Ree may capture a well-established idea of the nature of sounds when he suggests that they are 'naturally' evanescent and somehow not proof of their own existence. But as Alfred Gell (1995) suggests, the capacity of sounds to generate evidence is relative. In his article 'The Language of the Forest: Landscape and Phonological Iconism in Umeda' he describes how, for the Umeda, an audible but invisible object was entirely 'present' in a way difficult for Westerners to grasp. Gell writes that 'for us, invisible objects are deeply problematic, but not for the Umeda who defined objective distance in terms of audibility, not visibility' (ibid: 238). It was sounds which were used to provide proof in what he describes as Umeda 'conflicts over evidence' (ibid). As was shown in chapter five, in certain contexts within the hospital, sounds were also regarded as providing 'proof', concrete evidence of material changes in the body. They could be accepted as objective signs, producing clinical facts in examinations of the patient. Evidently there is ambivalence towards sounds and their role in diagnosis. They may be regarded as providing at once both definite and indefinite signs. But the same could be said of the images produced by echocardiography. While providing proof of a particular heart problem at one level, at another the images are also open to interpretation. They may become the subject of differing opinions and, like the heart murmurs heard through auscultation, their meaning must be negotiated by the various parties involved in reaching a diagnosis. Echocardiography is a powerful technology, but it is important not to regard it as somehow generating undisputed facts purely because it creates visual images.

Draper points out that there is a paradox implicit within echocardiography, namely that: 'sound is used to give light to the bodily interior' (2002: 777). It might be argued that this sonic illumination of the cavities of the body is precisely the function of auscultation. As Foucault imagines it, auscultation allows for the visualization of the hidden interior of the body (1973: 165). It becomes possible, through particular sounds, to imagine or envisage the internal workings of the heart. But echocardiography differs in that a process of conversion or transcription takes place. Sonic information is used to create actual, rather than anticipated, visual images. The body is made immediately accessible to the eye, rather than the mind's eye. Sonography means 'drawing in sound' and this is what takes place. Sounds are

no longer appropriated in anticipating the gaze, but represent its direct ideological fulfilment.

As has been described in chapter one, western biomedical knowledge was developed around the principle of the gaze, the body and the pathology of its diseases being opened up to the inquisitive eyes of medical men. Biomedicine as a system depended on visual evidence in order to secure disease as 'knowable'. While auscultation represents an indirect means of visualizing the bodily interior, it is clear that cardiac ultrasound belongs more immediately to what Duden calls medicine's 'visual command performance' (1993: 21). Embodying the visual orientation of medical culture, echocardiography allows the rigour and probity of the gaze to be exercised to ever more powerful effect.

Within Western medicine and the legacy of the gaze, there is the implicit assumption that vision permits access to the objective truth. The gaze has been naturalized a way of providing objective facts about the body. Jenks holds that 'there is no transcendent and naturally given reality which may be accessed by the eye: reality is constructed through sensory practice' (1995: 6). Similarly, I have argued that there is not a pre-existing body waiting to be seen by the medical eye, rather, the body has been constructed through a strong link between seeing and knowing within medical culture. The extent to which the gaze is embedded or taken for granted is exposed in the exploration of medical authority given above. Listening may be used to extend the gaze, and is implicated in gazing as a means of constructing of the body. Indeed, where it is not superseded by a visual technology the stethoscope may be considered a definitive instrument of medical authority. But as a consequence of medicine's ideological investment in vision it is with echocardiography as an explicitly visual technology, rather than auscultation as an auditory one, that diagnostic authority rests once echocardiography arrives in medical practice.

In opening the present chapter, I introduced Dr Chambers and Major General James Alex Jonse. One is a specialist in echocardiography, the other an expert auscultator. One is at the peak of his career, the other is approaching retirement. Their own biographies could be said to reflect the biographies of their respective skills. Echocardiography is still a relatively 'new' technique, the popularity and distribution of which is expected to increase dramatically. Auscultation remains useful, and is employed every day by thousands of doctors. It is still a compulsory skill for new medical students and is taught to more advanced students at a high level. But though it remains important within the medical profession, its validity as reflected in the

authority it commands in medical investigations is waning. There are murmurs in the hospital corridors about the demise of the stethoscope. The rumour is everywhere.

Chapter Eight: Deathoscope

In this chapter I explore the discourse surrounding the demise of the stethoscope. I suggest that the story of the 'death of the stethoscope' is used by doctors to comment on three key developments within medicine. Firstly, the arrival of new technologies, in particular echocardiographic techniques which are being used with growing enthusiasm and are held to be causing the erosion of listening skills in both doctors and medical students. Secondly, the degeneration of close personal relationships between doctors and their patients due to the increasing use of diagnostic technologies which distance doctor and patient from one another. Thirdly, the story of the stethoscope's demise is used to reference a shift from the doctor being a skilful clinician to becoming a mediator of test results, a development which threatens the value and status of the medical profession as a whole. The death of the stethoscope may well be a reality in British medicine due to changing patterns of illness and new techniques of diagnosis, but the story is used as a fable to warn of the potential repercussions of the changes described above. I go on to suggest that the death of the stethoscope might also entail the disappearance of a kind of auditory knowledge. This thesis could be understood as an effort to document that knowledge before it is gone. Drawing on the experiences of murmur patients, however, I show that echocardiography itself generates a particular acoustic relationship to the body. While one type of auditory knowledge may be under threat by the death of the stethoscope, then, it is possible that another may emerge as a consequence of that death.

Dependent doctors

Over the course of my fieldwork I followed three chest rotations, and noted that Dr Coltart told each group of students about the time he had spent at Stanford University in the United States. He described how at this prestigious medical school he had greatly impressed his colleagues with his bedside diagnostic skills. "How do you know that?" they would ask him after he made a diagnosis. "Have you seen the

test results already?" Dr Coltart said he would reply that he hadn't and didn't need to as the diagnosis was already plain to him. He felt that there tended to be an overdependence on test results in American medicine. Patients were sent for tests which were often surplus to requirement given that in many cases the clinical signs made the diagnosis clear. It seemed that Dr Coltart told his students this story as a kind of fable, urging them to become aware of the importance of clinical skills, to become used to a kind of medical practice which did not entail over-dependency on tests results. I believe his demonstrations of his own skill at auscultation were partly done with the intention of showing that one could become resourceful and confident in one's own abilities.

On some mornings Dr Coltart would tell the students about the interesting cases currently in the hospital which had been made known to him. He encouraged them to see these patients for themselves. When their response was not one of immediate enthusiasm Dr Coltart would express disbelief, and would tell them about the extra hours he had spent on the wards as a student because he wanted to see as many different cases, diseases and procedures as he could. This was not, he insisted, because he *had* to, or because it would gain him marks, but because he was genuinely fascinated by medicine and what he could learn from it. Initially I paid little attention to these small tirades. His students, too, did not look upon them as anything other than a teacher bemoaning the lack of application of his students while holding aloft his own life as the model to which they should all aspire. It was an old rhetorical device which almost every pupil has seen teachers use before, usually too many times before. Dr Coltart remained, however, emphatic that the students needed to establish personal experience of as many cases as they were able, and should use these cases as an opportunity to expand their vocabulary of diagnostic signs, to sharpen and practise their powers of observation. "You need to be confident in your skills", he would say. "You need to be able to trust yourselves". He warned that ultimately the students would find themselves in positions in which they were solely responsible for making important decisions. They would be more confident in making their decisions if they knew they could depend upon their own skill and experience.

I came to realize that the apparent absence of enthusiasm among his students was a real problem for Dr Coltart. After consultations the firm would file out of the room one by one. As I passed his desk he would sometimes stop me, and then, when everyone else had left, continue to express his concern. The son of a Dorset village policeman, Dr Coltart had begun to study medicine at eighteen and qualified at

twenty-three. He was made a consultant at the unusually early age of twenty-eight. He had worked in the National Health Service for thirty-two years and had never, he said, taken a single sick day. He had also established a large private practice. Dr Coltart recognized that he had had, as he put it, "a good life from medicine". But he insisted that he had been driven all along by his own fascination with it. He wondered whether the students he was seeing were really committed in the way he had been, and indeed, remained. While Dr Coltart knew the students to be intelligent and was impressed by the academic standards they had had to attain in order to qualify for medical school, he was worried by their apparent apathy and unwillingness to "get their hands dirty", to engage with patients through those activities which for him constituted the substance of medicine. He felt the students were complacent because they thought most of the work of diagnosis would be done for them by other people and by machines. Personally, having got to know the students well, I felt him to have underestimated the appetite which certainly *some* of them had for their medical training. I had been surprised at the high levels of commitment and zeal which some of them brought to their work, and I told Dr Coltart so. However, he remained worried by what he perceived to be a general lack of enthusiasm and self-application.

The echo meeting

On Friday mornings when Dr Coltart was absent from classes attending conferences and so on, the rotation would be told to go to a meeting held in the cardiology department. The meeting was at eight in the morning but was supported by a pharmaceutical company which provided delicious breakfasts of bacon sandwiches and fruit juice, so a larger number of students than might ordinarily be expected would manage to attend. The only students present at these meetings would be those from Dr Coltart's rotation, the other people being doctors of varying degrees of seniority from the cardiology department. The meeting was known as the 'echo meeting', and was presided over by Dr Chambers, a consultant introduced in chapter seven who was an expert in echocardiography or 'cardiac ultrasound'. Doctors from the cardiology unit would present cases in which certain findings had proved particularly interesting or unusual. Dr Chambers ~~then~~ would give his opinion on what he saw, asking questions of the doctor in charge of the patient's care and opening a discussion on the problems the case presented. In the darkened room, the moving

images of the heart muscles and valves created by the echocardiogram were projected onto a screen as if in a small cinema.

This meeting offered a good opportunity to see what Goffman (1971) describes as the 'backspace' of the medical profession. All those present were doctors and so there was no need to exercise the diplomacy necessary when patients were in the vicinity. Some doctors would make jokes about their patients, or remarks which had a straightforward and rather brutal honesty. I am not suggesting these to have held any kind of malice. They were merely statements of plain, if sorrowing, fact. For instance, "This man's going to die fairly soon, isn't he?" The echocardiogram in this particular case was that of a thirty-six-year-old man. It was often strange to meet patients on the wards having overheard conversations about them at the echo meeting, and after having seen these peculiarly graphic images of their hearts.

Prior to first attending the echo meeting, the students had been given a brief history of echocardiography by Dr Coltart. They were told that the echocardiogram operated on the same principle as the 'sounding' devices used by sub-mariners during World War II. At that time, ultrasound waves were beamed through the water. When the waves encountered an object with a different density (for instance a submarine) some of them were reflected back. The remaining waves moved through the object and reached the back boundary between solid and water, where more of the ultrasound waves were reflected. These reflected waves could be collected and analyzed to create a sense of the dimensions of the object which they had encountered. The technology was developed for use in medical contexts by two Austrian brothers, Karl and Friedrick Dussik, who used ultrasound to map ventricular spaces in the brain. However, its use spread into other areas of medicine. It found application in obstetrics in the 1950's and 60's, and is now routinely employed in creating scans of the foetus. Indeed, Janet Draper suggests that the ultrasound scan is 'now fully integrated into the normal pregnancy package and is part of the Western pregnancy ritual' (2002: 778). The echocardiogram is also very well integrated into cardiological medicine, though it has not yet come to define the chest examination. That 'definitive' status is at present still held by auscultation – just.

The echocardiogram produces images of the heart in striking detail. In those examples projected onto the screen at the echo meeting the working valves could be clearly seen from a variety of angles. Even the chordae, the strings of tissue which connect the valve leaflets to the muscle wall of the heart, were perceptible. Where present, what the cardiologists described as "cabbages", vegetations or bacterial

growths on the valve leaflets, could also be seen. The blood flow through the valves was shown using colour-coding so that areas of turbulence showed bright yellow or white, in some cases creating brilliant flashes and colourful swirls in the heart's vessels and chambers. At times the images were so large and so clear I felt I was actually sitting inside the heart.

The only way in which patients became present at the echo meeting was through the 'Patient Name' box at the top of the echocardiogram, or in the descriptions of the case given while the echocardiogram was being screened. It struck me how different this was from the sessions with Dr Coltart in which we would be grouped around a patient lying in a bed, would be introduced, ask questions, make observations, feel for and take pulses, apply the stethoscope and listen. The echocardiogram entailed a different level of interaction. It seemed much more abstract and impersonal, the actual patient being several hundred yards of corridor away.

Of course the echocardiogram does require a close and careful tactile engagement with the patient. It involves knowledge of where to place the transducer, of how to move it across the chest in order to produce different views of the heart. Though Dr Chambers, the consultant who presided over the echo meeting, was an expert in using as well as interpreting the results created by the echocardiogram, however, this particular skill was generally the domain of a technician. While the other doctors present at the echo meeting would have carried out a preliminary examination of the patient and doubtless several other more careful examinations, and while he or she may have ordered other diagnostic tests, the actual echocardiogram would have been carried out by a non-doctor. The results would be passed back to the doctor on a summary sheet and the doctor would interpret the results, taking the necessary action towards treatment. Echocardiography itself, however, is not generally within the doctor's area of expertise.

It could be argued that prior to the development of echocardiography the doctor alone was responsible for making a diagnosis. He or she may have drawn on the opinions of other doctors in consolidating it, but the network of people, the social relationships through which a diagnosis came to be substantiated, consisted of doctors. Following the introduction of echocardiography, however, a technician was introduced whose work became factored into the decision-making process. The doctor is no longer reliant only upon his own diagnostic skills but draws on those of a technician in reaching a decision. The position of the doctor has shifted. He or she no longer has to reach independent decisions based on his or her own judgment, but

instead has become dependent on collating and interpreting test results generated by a person with different skills.

This situation may be set to change. The machines required to perform echocardiograms at St Thomas' were relatively large, requiring a computer and monitor. Although there was one mobile echocardiography unit in the hospital, the others were permanently housed in purpose-built rooms. Echocardiographic techniques are, however, increasingly being made light and 'easy to use'. I heard doctors talking about hand-held echo machines which have become available, making echocardiograms less time-consuming and less administratively complex. These smaller machines do not require qualified technicians. It is said that doctors will soon be able to learn to operate them themselves so that they can be used in consultations and at the bedside. Although he had never used one himself, Dr Coltart had heard company representatives talk about these devices, and had seen advertisements for them in medical publications. There was also a plethora of advertisements for them on the internet. The students, too, had heard of these gadgets, and expected that although it might be a long time before the mini-echocardiogram was introduced in Britain, it would probably be in routine use before the end of their own medical careers.

While at present the echocardiogram may fall outside the domain of the doctor, then, it is possible that in future this domain boundary will dissolve. The ability to operate the transducer and simultaneously interpret the findings of the echocardiogram may become part of the basic repertoire of skills commanded by a doctor. At the time of writing, however, and in the discourse of the 'dying stethoscope' which I explore below, the echocardiogram was set up as a kind of antithesis to the skills possessed by the doctor. Indeed, while the stethoscope was taken to be emblematic of the embodied skills required in the practice of 'doctoring', echocardiography tended to be portrayed as representative of a technology which is thought to be forcing these skills into decline, and turning doctors into dealers in technologically-mediated abstractions.

The dying stethoscope

The echo meeting demonstrated that considerable enthusiasm for echocardiography existed within the cardiothoracic unit at St Thomas'. Dr Coltart, however, seemed to position himself carefully in relation to echocardiography. He would often remark that the echocardiogram would only tell him what he already

knew after carefully examining the patient. It would only give weight to the findings he had already made. Of course, Dr Coltart recognized echocardiography to be an extremely useful technology, one which had been influential in improving the precision and efficacy of cardiological medicine. But there was a sense that he felt it at times to be an ornament, and even an administrative hoop. While he was fully cognizant of its power, recognized its utility and welcomed it into medical practice, he would always maintain that good clinical skill should form the real basis of diagnosis. Echocardiography might be used as a follow-up, a way of finding out more.

During my fieldwork I found that, aware of the growing availability of echocardiography, some medical students and even some young doctors I spoke to tended to regard the stethoscope as simply an instrument which they might use in order to check whether a heart was normal or not. Were they to detect an abnormal sound there would be no need to try to identify it any more closely or to describe it in particular detail. They knew the patient could simply be sent for an echocardiogram. Indeed, it would even be expected of them that a referral for echocardiography be made. There was a sense that the echocardiogram spared students and young doctors the need to auscultate carefully and thoroughly. In my first rotation at the hospital one of the medical students told me a joke. He asked "Who are the nicest people in a hospital?" I said I didn't know. "The *ultrasound* guys" came the answer. 'Sound' is a term used to describe a person of whom one approves. A man described as 'sound' is a 'good bloke'. The pun works well. But it also seems that cardiology students have good reason to like those working in cardiac ultrasound. The 'ultrasound guys' spare them the need to learn to listen. The pressure on their diagnostic skill is eased.

The students' attitude fits into a wider discourse of concern that the availability of technologies such as echocardiography is causing an erosion of clinical skills in general and listening skills in particular. In chapter seven I related Major General James Alex Jonse's comment that "most young doctors are incompetent auscultators". His opinion chimes with a number of voices on the pages of medical publications. An article in the *Journal of the American Medical Association* warns that 'New doctors have dangerously poor stethoscope skills' (Mangione and Nieman 1997). At the same time, the website of the American College of Physicians carries an article announcing the 'death of the stethoscope' reflected in the 'mediocre physical diagnosis skills' of students (Kirsch 1998: 1). Both these articles blame the current lack of clinical competence on the proliferation of technology in areas of medicine which previously relied solely upon the doctor (or student's) judgment.

But is this any more than senior doctors shaking their heads and sighing over what they consider to be the sorry clinical skills of the younger generation? Surely the older generation always seeks to belittle the younger in the same way that 'A-levels are not as hard as they used to be' and 'young people these days don't know the meaning of the word 'work'? The concern over declining listening skills may simply be an expression of nostalgia or a tendency to idealize the past through favourable comparison with the present. In an article entitled the 'Death of the Stethoscope' Dr Babu writes that 'in fairness to current day physicians it must be stated that a lack of proficiency with the stethoscope is not unique to them' (1999: 1). Referring to the preface of *Clinical Auscultation of the Heart* written by Samuel L. Levine and W. Proctor Harvey in 1954, he writes: 'the authors were impressed with the fact that a great many physicians…were not applying all the information that can be obtained from simple auscultation' (ibid). Even fifty years ago, Dr Babu suggests, doctors observed a decline in the proficiency of stethoscope skills. This lament for listening is perhaps a perennial murmur, rather than one which has only been heard in recent years.

However, Dr Babu continues by pointing out that today's medical students are suffering in that they are not being taught auscultation well. He argues that this is because they are obliged to learn from doctors whose own skills have suffered through a culture of over-investment in diagnostic technology within medicine. He writes: '[s]ince the 1970's, with the explosion of new technology, physical diagnosis has suffered from not-so-benign neglect. Medical students and house staff suffer the consequences today, as there is no one around to teach them the finer points of physical diagnosis' (ibid). Dr Babu's comments echo Major General James Alex Jonse's remark given in the previous chapter that: "Most students are not taught to auscultate properly". Dr Kirsch also blames what he describes as the 'technology creep' for declining standards in listening (1998: 1). It is important to bear in mind, however, that Drs Kirsch and Babu are both writing as American doctors and are commenting on students at American medical schools. As suggested by Dr Coltart's story from Stanford University, American medicine is considered to have a bigger culture of investment in technology than British medicine. Although the concern over deteriorating diagnostic skills was evident during fieldwork at St Thomas, this anxiety may well be more pronounced in America.

Earlier in this chapter I described Dr Coltart's story about his having surprised his colleagues in the United States as a 'fable'. It was a way of alerting the students to

the value of clinical skill and the possible dangers of over-dependency on test results. Similarly the story of 'the death of the stethoscope', while reflecting very real concerns on the part of the doctors cited, could be said to be a fable which warns of the dangers of a decay in clinical skills, especially listening skills. But as I hope to show below, the 'death of the stethoscope' serves as a fable of other qualities which are considered to define the work and role of the doctor. A lot more than just listening skills is at stake in the imagined 'death of the stethoscope'.

The stethoscope and the 'bedside manner'

Roy Porter notes a long tradition of the doctor being a practitioner of 'bedside medicine', an idea which he traces far back into medical antiquity (1999: 10). He notes that the ideal of an intimate physician-patient relationship was fostered even in the medieval West (ibid: 9-10). The doctor was, and still is, imagined as a man involved in close, face-to-face contact with the patient. He is directly implicated in the patient's suffering, or at least, as Berger suggests, bears witness to it (1967: 106). Porter points out that much is made of the significance of this personal touch in medicine, the face to face relationship even being considered 'essential to the office and alchemy of healing' (1999: 628).

Porter argues that a good bedside manner was, for much of medical history, the chief asset of any doctor (ibid: 675). It is only in the last two hundred years that he or she has become capable of providing effective cures and treatments for a myriad of serious infections and afflictions. Prior to the nineteenth century a doctor may have been able, for instance, to set bones and lance boils, to offer potent (though not necessarily effective) tonics, but there was little reliable help he could offer the seriously ill. The bedside manner was important, however, in giving solace to the suffering. Porter suggests that this manner was even cultivated in a self-seeking way by doctors in nineteenth century Britain. They recognized that by showing concern and appearing attentive they could win the appreciation, approval and custom of wealthy clients (ibid: 672).

In the early eighteenth century, as suggested in chapter one, medicine underwent a radical change. The body and anatomy became the doctor's primary preoccupation. Medical men were trained in pathology and became proficient at clinical diagnosis. They pursued an enthusiasm for scientific medicine. Doctors were aided in their observations by new medical technologies, for instance the

opthalmoscope, the laryngoscope and, of course, the stethoscope. But as a result their scientific approach, doctors was perceived to have lost sight of the fact that patients were social beings as well as sick bodies. Medical technologies were perceived to foster clinical detachment, disengagement with the patient-as-person. Ironically, then, 'at the very time that medicine was improving, a decline in the physician-patient relationship was taking place' (ibid: 683).

Medical technologies have continued to proliferate within the Western medical setting, and, as I show below, concern over their impact has risen correspondingly. I do not necessarily agree that technologies created by a scientific turn within medicine either inevitably or invariably generate an experience of detachment or separation between doctor and patient. Yet there appears to be a widely-held sentiment from within the medical profession that technologies bring about a neglect of the patient as a human being. Doctors become so preoccupied with the disease that they lose the capacity to relate to the individual. For Dr Kirsch 'technology threatens important humanistic elements of the doctor-patient relationship. Our embrace of medical technology has taken us too far away from the bedside' (Kirsch 1998: 3).

I have suggested that the stethoscope was initially recognized as iconic of the shift within medicine which enabled the establishment of objective distance between doctor and patient. As such it should represent precisely the kind of clinical detachment which Kirsch associates with the 'medical technology' he feels is driving doctors and patients apart. But evidently doctors in the present day regard the stethoscope with a kind of nostalgia. It is associated with contact between doctors and patients. The stethoscope has been referred to by several authors as the 'umbilical cord of medicine' uniting doctor and patient (Gerchufsky 1995, Salomon 2001). For Salomon, the stethoscope connects the two in such a way that 'the rumbling, hisses and crackling of one body can enter the auditory portal of another' (ibid: 56). As the citation from Salomon suggests, this contact is not solely a diagnostic space, but is one in which an intimate physician-patient relationship may develop.

The stethoscope, then, once regarded as the acme of perceptual distance, is now regarded as creative of valuable intimacy between doctor and patient. It has been superseded by technologies which are perceived to allow much wider gaps to open up between the doctor and the patient in diagnosis. As I indicated in the description of the echo meeting given above, cardiac ultrasound means that doctor and patient need not be in the same room. Indeed, they cannot be, because at present the echocardiogram must be performed by a technician, the doctor only receiving the

result afterwards. Relative to echocardiography, for instance, auscultation might be understood to represent a medical practice in which doctors and patient are brought close together.

Kirsch goes on to claim of auscultation that: '[a]lthough no words are spoken, a message of caring and concern is communicated' (1998: 1). He suggests that the stethoscope should serve as a tangible reminder of the importance of the doctor's bedside presence. He writes: 'Patients want a doctor to whom they can talk. They beseech us to listen to them. How can we learn to do this better? Perhaps the stethoscopes dangling round our necks or stuffed into our pockets can remind us of this mission. The stethoscope, after all is a listening instrument. Let it show us doctors again how truly to listen and not just to hear' (ibid: 3). For Kirsch, listening is a process of attending to the anxieties and sorrows of the patient. It cultivates a deep understanding of the patient's problems unlike what he refers to as 'hearing', which is less attentive and does not lead to recognition of or empathy with the patient's plight. Kirsch urges, then, that the stethoscope may serve as an emblem of the doctor's wider purpose as counsellor and confidant. He also seems to be arguing that patients may consult doctors for psychological or ritualistic purposes, not purely reasons connected to diagnosis and treatment. Indeed, he feels these considerations to be fundamental to the role of the doctor and essential to the well-being of the patient. For him, the death of the stethoscope represents the simultaneous death of a range of skills which allow the doctor to address the patients in a holistic sense, as a 'human being', rather than a clinical case.

I do not necessarily agree with Kirsch's assumptions about the manner in which new technologies impact upon the doctor-patient interaction. He does not, for example, conceive of the possibility that a hand-held ultrasound device might also provide a means of bringing doctor and patient close together and might serve as a reminder of the need to attend closely to the deepest, most heartfelt concerns of the patient. Also, I do not feel it to be acceptable to position the stethoscope as somehow outside the technological realm. I am, however, struck by the manner in which he argues that the stethoscope might serve as a reminder to the doctor of the importance of a good bedside manner and a consideration of the needs of the patient as a whole. The death of the stethoscope once again is presented as a fable, this time giving a warning that both doctors and patients may suffer if the value of bedside skills is not acknowledged or ceases to be thought worth acquiring by doctors in the future.

The death of the doctor?

At the beginning of this chapter I mentioned Dr Coltart's telling us how impressed his students and colleagues at Stanford were by his clinical skills. I suggested that the story might be a kind of fable, urging that good clinical skills would always stand the students in good stead, giving them confidence in their own decision-making. They should not need to depend on test results like those American students who appeared helpless and baffled without a laboratory at their disposal. The discourse of the 'death of the stethoscope' represents a similar fable warning of the loss of important skills which may result from an over-investment of faith in technologies such as echocardiography. This warning, however, applies not only to the individual doctor but to the medical profession in its entirety.

I have described above how echocardiography moves diagnostic decisions beyond the sole jurisdiction of the doctor. While the technique may provide him or her with accurate images and measurements on the basis of which to make diagnoses and administer treatments, he or she is no longer completely self-sufficient in providing the medical knowledge and expertise through which a particular patient is diagnosed. I have suggested that doctors may soon be able to use hand-held ultrasound devices themselves, and will not require technicians. At the time of my fieldwork, however, with the exception of Dr Chambers, I did not meet any doctors who performed their own echocardiograms. The doctors were to a considerable extent dependent on the skills of the technician.

It could be argued that the doctor's dependency on the skill of other types of medical professional is not new. Doctors have for a long time used, for instance, the results of blood tests, X-rays, cultures and so on in reaching diagnoses. But the fact that this dependency is not new is one of the points which make it so problematic. Because medicine is becoming more and more technology-orientated there is a growing anxiety among doctors over what is known as 'deskilling' (Haug 1988, Lupton 1997, Williams 2001). There is concern that the doctor is no longer necessarily the key locus of medical expertise, but becomes a person who collects and organizes data gathered by other means, a piece of medical technology in his or her own right.

Although not explicitly described as 'deskilling', I encountered the sentiment that the doctor was being rendered simply a 'link' in a technological 'chain' on a number of occasions during fieldwork. For instance, after one of the echo meetings I

began chatting to a registrar over the breakfast trolley. He asked me about my research, and after I had explained my project to him asked whether doing fieldwork at St Thomas' had made me interested in becoming a doctor myself. I cautiously responded that my fieldwork had made me "*more interested in medicine*". He laughed, I think to let me know that he could see I was being evasive, but also because he found it strange that I was implying that medics were somehow 'unusual' enough to merit sustained anthropological attention. He went on to say that, although he did not regret his decision to go into medicine, it was not in the end how he had imagined it would be as a medical student. While at medical school he had envisaged situations in which, once qualified, he would be obliged "to apply [his] practicality to problem solving". Now, though, he said he felt that he was "mainly useful as a go-between". He felt his job consisted of gathering the results of tests which he had ordered for his patients and keeping nurses, Senior House officers, House officers and Consultants in the know about what had been shown. He described his job as "essentially administrative".

I met with the same complaint during a teaching session with another registrar, this time working under Dr Coltart. A student named Rishi, who as I mentioned in chapter two was a very enthusiastic medical student, had asked this registrar if she would be happy to give him some teaching on a day on which it was not officially scheduled. She agreed, and suggested he follow her as she visited patients that afternoon. Rishi suggested I come along to ease the pressure of a one-on-one interaction with a senior doctor, and so I went. During the afternoon, the registrar took us to a room off one of the wards in which computers were housed which allowed the doctors to access each patient's medical test results through a central database. As we followed her in she said "You might as well see this. It's what you really spend most of your time doing once you're qualified anyway". Rather than engaging with patients and carrying out procedures, she suggested medicine chiefly involved collecting data from the computer.

Arguably these remarks are simply modesty or self-deprecation. The two doctors may be playing down the importance of their roles within the hospital. I certainly saw the second registrar quoted here performing several hands-on examinations and procedures which required a great deal of skill. The seniority of these two people may also be relevant. Being high up in the medical hierarchy (immediately below consultants) it may have been that their positions of responsibility require them to spend much of their working day coordinating, rather than

administrating care. Furthermore, it is important not to overlook the fact that most people moan and complain about their jobs to a certain extent. It is very uncommon, and even socially unacceptable for a person to declare that they love their work wholeheartedly and without reservation. However, both registrars suggest that as doctors they are not actually involved in the kind of medicine which they had imagined themselves doing, or which they imagined that Rishi and I would imagine them doing. Rather than dealing closely with patients in situations which were constantly testing their clinical skills, they were far more occupied with the results of findings generated by machines.

Marie Haug (1988) suggests that deskilling in the medical profession has been a subject of discussion for almost twenty years, with the sophistication of computers being perceived as a threat to medical judgment. She asks 'If computers play chess, and if artificial intelligence is in the wings, what is the future of physicians' monopolization of medical knowledge?' (ibid: 51) Her question is rhetorical. Rather than being a definite problem which can be located and tackled, she indicates that deskilling is a pervasive but nebulous angst within the medical profession. But concerns over deskilling are not linked to advances in diagnostic technology alone. In her analysis of twenty interviews conducted among doctors from Sydney, Australia, Deborah Lupton (1997) suggests that other factors, including, for instance, threats to the autonomy of physicians created by the state, are also implicated in the problem. Increasing dependence on diagnostic technologies, however, remains a common worry among the doctors in her study.

On one occasion I asked a patient who had been listened to by five groups of medical students in the same day whether he minded being subjected to repeated examinations. He replied that he did not mind, but rather would be concerned when doctors ceased to listen to him and, as he put it, "listened to machines instead". Perhaps this man was saying that he appreciated the contact he received when being listened-to, and did not wish that contact to be lost. But I think that in fact he was suggesting that he would be concerned should doctors become too much preoccupied with hi-tec diagnostic measures and cease to trust their own judgment. There was a suggestion that his confidence in medicine might be undermined were doctors to become dependent on machines to 'know for them'.

Dr Coltart seems to be making the same point in his Stanford story. He is concerned lest technologies become the real holders of medical knowledge, and the clinical independence of the doctor is lost. Of course, the stethoscope is a technology

of a kind, but it is a technology which implicates the doctor in a practical engagement with the patient body, and which requires that he or she become the locus of knowledge. The story of the death of the stethoscope makes the same point as the Stanford story at the level of the entire profession. If the doctor becomes a mediator of technologically-generated test results, the importance of his or her role and that of the entire profession falls. The doctor is no longer invaluable as a clinician with knowledge and experience in mediating a patient's engagement with his or her sickness, but becomes a more arbitrary figure in the administration of medical knowledge.

The death of (certain) diseases

The story of the death of the stethoscope, then, articulates several concerns audible within medical practice at the time at which my fieldwork took place. But in describing the story as a fable which issues a number of key warnings about the state of medical practice I have perhaps suggested that the death of the stethoscope is not actually taking place. I have implied it is merely a story. Below, however, I consider how changing patterns of illness, and changes in the diagnostic technologies used to investigate those illnesses, affect the degree to which auscultation is used and valued. These changes make the death of the stethoscope a realistic possibility.

In chapter three I transcribed part of an interview with Consultant Nurse Elaine Coady in which she described how, through using a stethoscope and not wearing a uniform she was often mistaken for a doctor. Later in the same interview she described how on several occasions she had heard the visiting doctors speaking at the medical school refer to auscultation as "a dying art". There is concern that the stethoscope, for so long a symbol of the medical profession, is becoming *only* a symbol, not a valuable tool any longer. The stethoscope hangs around the doctor's neck by an ever finer thread.

The stethoscope has, however, evidently been said to be dying for a long time. Daniel Shindler points out that, 'its demise has been wrongly but repeatedly foretold over the years' (2004: 51). He mentions 'the old tale of an early twentieth century radiologist who placed a stethoscope prominently for all to see in a coffin-shaped display case. It was his mistaken belief that X-ray of the heart would shortly render the stethoscope obsolete' (ibid). The stethoscope has been surviving for a century amid rumours of its demise. I certainly did not see evidence of stethoscopes being

consigned to drawers or dust-bins at St Thomas, indeed, this thesis has demonstrated that the stethoscope and auscultation still have some importance in the curriculum for medical students. Given that the students I studied with would graduate as doctors in two years time it seems likely that auscultation will form at least part of medical practice for their generation. Although aware of the increasing prominence of echocardiography, they are unlikely to be the doctors who certify the stethoscope dead. Rather, they themselves are testament at least to its ongoing life. However, as suggested above, they knew they would never have to depend on their stethoscopes alone.

Apart from the encroachment of echocardiography, another factor which is heralding the death of the stethoscope is the virtual extinction of some of the diseases in which auscultation is crucial to diagnosis. One of these is rheumatic heart disease. In the previous chapter I described how Major General James Alex Jonse explained that he had "cut his teeth" as a doctor on "rheumatic heart". Auscultation had been important in detecting and examining its characteristic murmurs. Rheumatic fever, however, is itself dying out in the UK. The disease tends to affect children. It usually causes a high fever lasting an average of two weeks and triggers arthritis in the major joints. While these pass, the sufferer is often left with damage to the heart valves. During my fieldwork, three patients who came to Dr Coltart's clinic suffering from chest pain and problems with mobility were found to have mixed valve disease. Dr Coltart was sure rheumatic fever was responsible. He asked them if they had ever been taken sick with a severe fever and inflamed joints as children. The patients winced as they remembered various childhood convalescences. They identified episodes which they thought with the benefit of hindsight must have been the sickness in question. Each of these patients, however, was elderly. Rheumatic fever became rare in Britain after the 1950's, it is thought due to improved hygienic standards (Longmore, Wilkinson and Torok 2001: 128). Also the treatment, using antibiotics, of the initial streptococcal infection thought to cause rheumatic fever means that the full-blown illness rarely develops in contemporary Britain (ibid). Consequently, doctors working in the UK today encounter rheumatic fever with decreasing frequency. Porter recounts a doctor in 1963 saying that one might wait eight years to see a case of rheumatic fever in a child under the age of fifteen, whereas before the war that was a disease found in every working-class street (1999: 685). The overall sickness picture, then, has changed, and as a condition disappears, the instrument used in its diagnosis becomes obsolete.

At the same time that one disease begins to die out in Britain, however, another emerges and becomes the object of increasing scrutiny. Ischaemic heart disease, for instance, said to be caused by the gradual blocking of the coronary arteries by fatty deposits known as 'atheromas', has become a major focus of medical research and treatment in Britain in recent years. At St Thomas', huge investment was made in acquiring the necessary facilities and equipment to investigate and treat this problem. Dr Coltart allowed the firm to spend time in the "cath labs", or catheter laboratories. We would watch a procedure called 'coronary angiography' being carried out. This is a means of identifying and locating atheromas. A small incision is made in the patient's groin, and a catheter, essentially a long and very thin tube, is inserted into the femoral artery. The catheter is pushed through the arterial system into one of the major coronary arteries. A radioactive dye is then released into the arteries through the catheter. This dye is traced by an X-ray sensitive camera as it circulates through the coronary arteries in such a way that clear images are produced and can be recorded. Because only the arteries become visible, the image tends to resemble a tree in winter, a pattern of black branches against a grey background. These branches pulsate slightly with the beating of the heart.

The coronary angiogram, then, allows any blockages or narrowings in the arteries to become visible. Where the build-up of fatty deposits is not too severe and there is enough space to push a catheter into the blockage, a process known as 'stenting' can be used to improve circulation. A very thin tube of gauze is pushed into the narrowing and a tiny balloon is inflated within it so that the tube widens, pushing the atheroma back as it does so. The blood can then circulate freely. Stenting is in its relative infancy, and research is still being conducted into how long a stent can remain in place before it needs re-positioning or replacing. Where the atheromas are too severe for stenting, heart bypass surgery may be necessary. This involves harvesting blood vessels from the leg which are used to bypass the atheromas. Evidently, then, in response to ischaemic heart disease, a new diagnostic test and treatment programme has been created and put into operation. But as in the example of HOCM given in chapter seven, auscultation is useless in detecting the presence of atheromas. Ischaemic heart disease, unlike valvular heart disease, creates no sounds. The diagnosis of ischaemic heart disease and the new surgical techniques which have developed around it do not require auscultation at all.

Clearly, the use of auscultation is affected by the types of disease which are prevalent or of particular medical interest in a country or culture. Zani, a young doctor

from Pakistan, was attending St Thomas' Hospital and was being supervised by Dr Coltart in order to sit exams which would allow her to practise medicine in Britain. She explained to me that in Pakistan (as in many countries less economically prosperous and medically well-served than those in the West), rheumatic heart disease is still prevalent. As a consequence, though taught in much the same way as in Britain, auscultation in Pakistan is considered to be highly important and is a much-practised skill, one in which students and doctors must become highly proficient.

Zani also pointed out that there is no National Health Service in Pakistan, and so patients must either pay to go to private hospitals (which tend to be modern and well-equipped) or attend hospitals run by charities (which are much less up to date). Only in the private hospitals is echocardiography available, and even then it is expensive, so echocardiography is not routinely performed as it is in Britain. In many cardiological cases a diagnosis and decisions over consequent treatment must be made on the strength of what the doctors can learn through listening alone. Where important decisions must be made on the basis of auscultation, excellent listening skills are required.

The implication is, then, that in Britain rheumatic heart disease, the diagnosis of which required good listening skills, is now dying out. At the same time, echocardiography has arrived and is in routine use, meaning that future generations of doctors do not require the comparatively sharp listening skills which were demanded of their teachers. As a consequence it seems unlikely that auscultation will continue to be medically important for long in the future. The threatened death which the stethoscope has escaped for a century is inevitable, in Britain at least.

New soundscapes

I have suggested that the death of the stethoscope, as well as representing a fable within medical discourse, is also being brought about in reality by changes both in the patterns of illness which doctors encounter in their day to day practice, and by technological changes in diagnosis. At the same time, throughout this thesis I have positioned auscultation as a technique which requires auditory skill, and the acquisition of a particular auditory knowledge. The death of the stethoscope, while an augury of important changes within medical practice, also threatens the death or disappearance of this type of auditory knowledge. Indeed, as a study of auscultation this thesis might be said to represent an anthropological attempt to document a

particular auditory culture before it disappears and hence constitutes a kind of 'salvage anthropology'.

In chapter seven I positioned echocardiography, the technique held to be causing the decline in listening skills among contemporary doctors and medical students, as a visual technology. Sound waves are converted into images of the heart, allowing detailed insight into its workings. But surprisingly, the technology also has an auditory dimension. While differing from the acoustic knowledge produced by auscultation, I want to suggest that echocardiography can also be productive of an important acoustic engagement with the body. This time, however, it is the patient, rather than the doctor, who listens.

During fieldwork I observed a number of echocardiograms being carried out in small, purpose-built rooms in the cardiology outpatients department. These rooms each contained a couch and alongside it, a desk with a keyboard, computer, monitor and a chair for the technician to sit on. The transducer, a microphone-shaped device which both emits and receives ultrasound waves, was connected to the computer. When a patient came in for an echocardiogram, he or she would be asked to lie on a couch and gel was spread over his or her chest to allow the transducer to move smoothly across it. Once the scan had begun, the technician would pass the transducer over the heart, stopping when he or she found the right spot at which to take particular views or cross-sections.

Part of the ultrasound scan involves what is known as a Doppler examination. The Doppler assesses the direction and velocity of the blood flow through the major chambers of the heart. Other elements evaluate the size, thickness and movement of different parts of the heart muscle. As suggested during my description of the echo meeting, the flow of blood as it makes it way through and out of the heart is presented visually on a monitor. However, the Doppler also produces a series of audible signals which make a swishing or pulsating sound. Annmarie Mol noted the loud sound produced during the ultrasound scans she observed in her own fieldwork at a hospital. She describes their going '[p]shew, pshew, pshew' (2002: 60). These are essentially ultrasound waves which fall inside the audible range of the human ear. The sounds may be clearly heard by both the technician and the patient. They are useful to the technician, helping him or her to gauge the intensity of the blood flow through the major vessels of the heart. One of the technicians I spoke to was keen to emphasize that an echocardiogram is not exclusively a visual technology. When using the Doppler, he said, the sounds act as a guide to the interpretation of the images. The

echocardiogram required him to use, as he put it, "ears then eyes, ears then eyes". There is a certain auscultatory quality to the cardiac ultrasound, with the haemodynamics of the heart being interpreted, in part at least, acoustically, and sound enabling the subtleties of the images to be realized.

During the ultrasound scan the patient is usually asked to lie facing away from the monitor. This is not necessarily so that he or she does not see the images (though that may be an advantage of the patient's lying in this particular position) but because it enables the technician to move the transducer more easily over the heart, generating images from the desired angles. However, the patient can still hear the high-pitched whooshing sounds produced by the Doppler. The technicians I spoke to told me that they tended to advise the patients they were scanning that the sounds were unimportant, and that no notice should be taken of them. But it is perhaps not surprising that the patients could not help but listen to the sounds and infer their meanings. After all, the sounds are loud, and seem to emanate from the patient's own heart. For the patient, the sounds of the Doppler become prominent features of their experience of the echocardiogram.

As explained in chapter six, it is comparatively rare for patients with heart murmurs to be able to hear those murmurs themselves. When I spoke to patients on the ward, however, I noticed that many of them said they had heard their murmurs before. When I asked how, they would say that they had listened to them during the echocardiogram. Even when told by the technicians that the sounds they could hear were not important, then, the patients believed that they were hearing their own heart murmurs. For instance, one young man I spoke to was in hospital for an infection which had damaged his mitral valve. This patient had been for an echocardiogram and had heard the sounds during the scan. He took these sounds to be the murmur to which he had heard the doctors referring previously. "It sounded pretty loud," he told me. "I'm glad they've decided to do something about it", by which he meant to operate and replace the valve.

An elderly lady I spoke to on several occasions had been for a number of echocardiograms over the years to monitor her aortic valve as the murmur worsened and the leak became more and more pronounced. This lady also believed she had heard her murmur during the echocardiogram. She said:

> On the echo you can actually hear it and it's not very nice. You can actually hear what's going on inside your body. That was something I'd never heard

before. You don't realize what's going on inside your body. You just take it for granted. It was like a gushing of water, if I had to describe it, like water pouring through a door. I saw a film once with a ship sinking and the door of the engine room bursts open and the water gushes and pours through. That's what it sounds like.

One day on the cardiothoracic wards I got into conversation with another elderly female patient. She seemed extremely tense and I asked her if she was worried about being in hospital. She replied that she was not really worried about herself. Her life had become less important to her after her husband died, four years ago. "He was a wonderful man", she said, "very caring and intelligent. One of the things we most enjoyed was to sit in our lounge and listen to classical music. That's what my heart sounded like on the echocardiogram, actually. It reminded me of *Fingal's Cave* – I can't remember who wrote it – but he heard the water spilling through the caves and was inspired by it. When you listen to the music you can see what is in his mind, and that's what it sounded like to me. That's what I got in my mind when I heard the murmur". Later that day I walked to Oxford Street and bought a recording of *Fingal's Cave*, a movement of Mendelssohn's 'Scottish Symphony' composed in 1829. Returning to the hospital, I went to Beckett Ward and asked to see the lady. We spent a while listening to *Fingal's Cave* through the headphones of a personal stereo. In an age which did not value the audience's subjective response to music, preferring the meaning of a piece to be determined by the composer, Mendelssohn apparently defended the validity of the individual's interpretation. I couldn't help feeling that he would have approved of this highly original take on his composition.

I do not wish to generalize too widely about the responses which patients made to the sounds which they heard during their echocardiograms. Indeed, I would like to make their reactions the impetus for further research. Clearly, though, even when advised not to, the patients undergoing echocardiography interpret the sounds of the Doppler as in some way reflecting or expressing the condition of their hearts. The Doppler creates an acoustic projection of that particular organ. The patients actively appropriate the sounds created by the echocardiogram into their understanding of the functioning of their own bodies. In chapter six I suggested that auscultation is a 'formal' kind of auditory knowledge belonging to doctors and medical students. The patients' engagement with their heart murmurs through auto-auscultation represented an 'informal' auditory knowledge. But the sounds of the echocardiogram are shown to

produce a further means by which some patients are able to engage acoustically with their own corporeality. The hospital, then, constitutes an environment in which various different types of acoustic knowledge of the body, both formal and informal, co-exist.

Earlier in this chapter I described the anxiety within medicine over a decline in listening skills narrated in terms of the 'death of the stethoscope'. This death would also entail the loss of a body of auditory knowledge held and reproduced by doctors. But the body, it seems, would not be silenced by the death of the stethoscope and the ceasing of auscultation. While cardiac ultrasound may be predominantly a visual technology, it is not a silent one. The Doppler section of the ultrasound scan creates distinctive sounds which may be interpreted by both patients and technicians. While the echocardiograph may be held responsible for the death of the stethoscope and for the acoustic knowledge associated with auscultation, it also furnishes the prospect of a new kind of acoustic relationship to the body.

Conclusion

In his introduction to William Carlos William's book *The Doctor Stories*, Robert Coles refers to 'the busy doc who yet could be spellbound by what he chanced to hear, and knew to keep in mind at night when the typewriter replaced the stethoscope as his major professional instrument' (1984: xi). I am interested in Cole's juxtaposition of these two objects. During fieldwork they became my 'instruments' too. I do not pretend that I had any of the skill which Williams brought to his work with either of them – but my fieldwork was often a question of putting down one and picking up the other.

Clifford argues that anthropologists should allow themselves to respond in an immediate way to the objects they encounter. They should not insist that the value of an object lies simply in its quality as evidence, or as a beautiful, original or authentic piece. Neither should they position objects as things which only become meaningful through production and display. Instead, anthropologists should accord them an intrinsic 'power to fixate' (1985: 244). Perhaps I have taken Clifford too much at his word, but I hope that I have not fetishised the stethoscope in this thesis. I have concentrated on how it was used in the hospital where I conducted my fieldwork, and produced an ethnography in which the stethoscope is integral to the writing and analysis of the material as much as the generation of that material ~~on~~ in the first place. The stethoscope acts as the conceptual model for this thesis because it is intellectually constructive 'to follow the adventures of its metaphors' (Ellman 1993: 15).

In concluding, I identify key areas of anthropological thought to which the fieldwork and my subsequent analysis have contributed. Using the same subject headings as in my introduction, I shall summarise the major conceptual threads which have run throughout the ethnography. I shall then go on to identify themes which warrant further research. I suggest that the study of auditory knowledge is, for anthropologists, in its relative infancy.

The anthropology of the senses

In 2000 I conducted a study at the Edinburgh Royal Infirmary in Scotland, exploring how sound influenced the patients' engagement with the hospital. I found

that patients actively appropriated the soundscape of the ward in determining their position within the social order of the hospital. In this study I emphasised the importance of auditory knowledge in a Western and hence supposedly visually-orientated cultural context. Similarly, in this thesis, I have highlighted the importance of knowing through sound, not only within a Western cultural context, but within a medical knowledge system which is widely considered to be dominated by the visual gaze. Importantly, however, I have not set up vision and hearing as sensory opposites any more than has been made necessary in revisiting a body of literature which polarizes these two ways of sensing. I have indicated the value of auditory knowledge within Western medicine while at the same time showing the importance of sensory interplay and collusion in that medical system.

I have attempted to create an understanding of how listening is an important dynamic of social life within the hospital. As such, I have added to a wider body of ethnographic literature providing in-depth explorations of sonic knowing. Key ethnographies in this field have been produced by Gell (1995), Weiner (1991), Leach (2003) and of course, Feld (1996). These studies, however, are all based in Papua New Guinean contexts. The thesis extends the reach of anthropological knowledge on sound into a Western context. Also, while the ethnographers listed above all describe the importance of sound in rural situations, my own focus has drawn attention to the use of listening in an urbanized and technologically advanced setting.

This ethnography might be understood as a response to Paul Stoller's call for anthropologists to incorporate the 'sensuous body' into scholarly practices, to draw the intelligible and the sensible into their writing (1997: xv). During my fieldwork I involved myself in the training undergone by medical students, and in the written thesis I endeavoured to highlight the experiential dynamics of listening, making the sensory implications of learning to auscultate present to the reader. I hope I have brought the perceptual subtleties of the practice close, and in doing so have made obvious the relevance of sensory experience to my particular consideration of practice.

David Howes holds that the multi-sensory dimensions of social life are suppressed or transformed in the making of texts (1991: 70). Ethnographies are static documents. They are disengaged from the dynamics of lived reality and as such are unable to communicate auditory phenomena. From this perspective, the thesis might be construed as a sadly ironic academic endeavour. In my attempt to discuss and describe a realm of vivified and animate sound, I have produced merely a flat, lifeless

surface. Peek points out that media have been available for some time which would allow recorded sound to be included alongside or inside text, stating: '[t]he technology is available to augment the silence of print' (1994: 489). Ten years later this statement is truer than ever, and indeed there is a strong movement from within composition and ethnomusicology which echoes Peek when he states that '[w]e should no longer accept "silent" publications on sound' (ibid: 488). Stephen Feld, for example, in an interview article entitled 'Doing anthropology in sound', argues that recordings should be encouraged in ethnographic representation. As well as being thought-provoking, they also provide a basis for analytical interpretation (Feld and Brenneis 2004: 471). I agree that recorded sound may have a great deal to contribute to anthropological discussion. However, as I explain below, I am not persuaded of the fundamental incapacity of the text to provide a platform for discussion on the senses.

While Howes adopts a pessimistic and dismissive view of the apparently a-sensory nature of the text, Stoller (1989) is more optimistic. He holds that stylistic changes in the writing of ethnographies could open possibilities for the exploration of the multi-sensory world. He considers that sensory experience can be adequately presented to the reader through rich description and metaphor and he advocates a 'sensualisation' of ethnographic writing, a re-immersion of distanciated, intellectualized text into 'the realm of sensual sentiment' (1989: 11, 4). Stoller considers his own writing to be a gesture in this literary direction, giving the reader 'a taste of ethnographic things' (ibid: 11).

Personally, I am by no means convinced that a leap onto Stoller's richly-adjectivized bandwagon offers either a likely or a constructive means of re-sensualizing the text. I am not comfortable with the notion that changes in literary style might shake loose the bonds of a supposedly repressive visualism within ethnographic writing. Instead, I hope this thesis represents a gesture towards a widening and deepening of the conceptual structures available to ethnography in its engagement with sensory experience. Using the stethoscope as a conceptual tool, I have demonstrated how ethnographic attention might be directed towards the body and its sounds. I have also pointed out the manner in which the stethoscope as an acoustic device may be used in structuring relationships between doctors and patients. The idea of the stethoscope provides a focal point and a means of channeling or directing anthropological attention towards sound and the body. As Back and Bull point out in their introduction to *The Auditory Culture Reader*: '[t]hinking with the ears offers an opportunity to augment our critical imaginations' (2003: 2). I feel that it

is in animating the stethoscope as a conceptual, ~~and~~ well as a diagnostic tool that this thesis makes its most important contribution to the 'anthropology of the senses'. I hope the research constitutes an 'epistemologically provocative model for how researchers can take sound seriously' (Feld and Brenneis 2004: 61).

Sound and the body

The concept of 'soundscape' has been used to draw attention to the acoustic properties of space and place. Feld's (1996) work on Kaluli use of soundscapes in Bosavi, Papua New Guinea ignited my own academic interest in sound, and inspired the study of hospital soundscapes which preceded the present project. In this thesis, however, I have moved the soundscape concept itself into a new space, using the idea of 'bodily soundscapes' to draw attention to the way in which, on the wards of St Thomas' Hospital, sound may be implicated in the experience and conceptualization of the body.

While it might be argued that 'scapes' have proliferated within academia to the extent that the suffix has become ubiquitous, I feel that it remains productive, following Appadurai (1996), to widen the scope of 'scape' through sound. Appadurai uses the term combined with various prefixes (such as ethno-, media-, techno-, finance- and ideo-) to suggest an alternative spatial framework, one that is not static as a typical landscape might be, but which is amorphous and flowing (ibid: 33). For Appadurai, a 'scape' should be thought of as a conceptual space in which the imagination is structured such that 'the individual actor is the locus of a perspectival set of landscapes' (ibid). Appadurai considers 'scapes' to be the 'building blocks' of larger imagined worlds through which, for instance, concepts such as ethnicity, finance and technology are experienced in contemporary, global society. The term 'scape', then, does not refer to an external landscape which a person beholds or through which he or she moves. Instead, a 'scape' is an imaginative space which the agent constructs him or herself.

I position bodily 'soundscapes' as imaginative spaces. Patients' individual interpretations of heart murmurs, or what they hear as heart murmurs, are woven into their wider illness experiences. These individual responses form part of a broader framework of patient engagement with the diagnostic procedures they encounter in hospital. Patients, then, exercise agency in interpreting sounds used in formal diagnostic practices, shaping their own understanding of their illnesses through them.

Listening has tended to be regarded as a process through which information is gathered about the outside world, or through which the outside world is assimilated in bodily experience. I have attempted, though, through exploring the relationship of sound to ideas of 'feeling' and 'being' articulated through the concept of 'hexis', to show that sounds are bound up in the materiality of the body. They are an element of corporeality. I have also indicated that, rather than simply emerging from within the body, sounds are among the events or happenings which make up embodied experience. Illustrating this point, I have shown how strange or unusual acoustic events (such as very loud heart murmurs) are disturbing for those who experience them. They become part of the way in which disease manifests itself, and through which patients know and feel themselves to be ill.

I have also shown that the phenomenon of 'auto-auscultation' can have important implications for the manner in which the body is conceptualized. Sounds are perceived to pose a threat to the boundaries of the body, causing them to disintegrate. The body sounds spill or seep out, providing a context in which personhood becomes permeable through a body experienced as porous and uncontained. Meigs (1984) describes the manner in which the Hau of Papua New Guinea define personhood through secretions and scents rather than by reference to the anatomy of the body. Similarly, in the Rwandan context described by Taylor (unpublished) bodily emissions are perceived to be extensions of the person. In these instances the body is fluid rather than self-contained. Sounds bring about a similar loosening of body boundaries, highlighting a new 'unbounded' spatiality (Lawton 1998).

The sounds of the body are arguably not in themselves assigned positive or negative value. They are not conceptualized in terms of being waste or dirt. But at the same time, they are subject to discipline in that abnormal sounds are regarded as 'matter out of place' (Douglas 1984: 35). Sounds which may be considered unusual (for instance heart murmurs) are regarded negatively as expressions of underlying disease. They represent a challenge to ideas of bodily order. The stethoscope, then, may be regarded as an instrument of auditory surveillance, enabling an ideology of a quiet and acoustically contained body to be symbolically maintained and reinforced.

Teaching and learning

Throughout the thesis I have returned again and again to the practical nature of medical training. Though students received a good deal of verbal instruction and guidance from teaching doctors, and though they could read up on how, for instance, to conduct a particular examination, they were obliged to learn through 'doing'. They would observe demonstrations and imitate what they saw, practicing their fledgling skills through frequent repetition until they had achieved a reasonable degree of confidence and fluency of movement. Of course, the levels of expertise attained by students varied a great deal.

While learning clinical skills, I have argued that students were at the same time internalizing a versatile set of actions or behaviours through which doctors engage with their work. They were absorbing systematic ways of reacting to and approaching patients. I have suggested that, through their practical training, the students were (albeit subconsciously) absorbing the 'dispositions', the structuring principles of thought and action, of the medical profession. I have used auscultation as an example of one of the skills through which they acquire what, drawing on Bourdieu, I describe as the doctor 'habitus'. Their medical training was an apprenticeship over the course of which they would internalize new identities as doctors.

But in learning how to behave as doctors the students were also reproducing a particular role for the patient. Again, using auscultation as an example, I have suggested that the interaction created by listening positions the patient in a passive role relative to the active doctor. The patient is also often obliged to remove clothes, to assume a particular posture in order to make his or her body more accessible to the doctor who has a position of privileged access. Auscultation also represents a context in which the doctor is a bearer of knowledge and skill while the patient is marked by his or her dependence on the judgment of the physician. I have stated my case here in rather crude terms, and it would be possible, following Foucault, to explore the laying on of the stethoscope through a 'micro-physics' of power in which both doctor and patient negotiate control and agency (1977: 26). However, I wish to avoid the discourse of power in order to make a much more straightforward point, namely that in learning to auscultate the students also become involved in the perpetuation of particular roles (for patient and doctor respectively) within the medical interaction.

Over the course of the thesis I have established that it is not only the relationship between the doctor and the patient with which the third year students become familiar during their training. They are also inculcated with particular codes of behaviour towards other doctors, all of whom are higher up the medical hierarchy than themselves. Of course, the relationship of student to teacher or of apprentice to master is one which the students would have encountered in many other situations, not least at school. However, through their medical training the students were obliged to learn the ways in which, within the medical profession, it was appropriate for junior and senior doctors to interact. The students understood that they should, for instance, show a willingness to observe and imitate. They should be deferential when making points or asking questions. In tuition sessions I often saw a student with a stethoscope listening to the chest of a patient as the teaching doctor looked on or stood over him. The teaching interaction represented a context in which doctor, student and patient were all performing particular roles defined in relation to one another.

I have established, then, that the teaching and learning of auscultation illustrate the practical nature of the medical training in which a student must participate. At the same time as learning to listen, however, the students are also learning how to behave like doctors more generally. They pick up on the nuance of gesture and expression which they see their teachers using when dealing with patients. They draw on the teaching doctor's example in developing their own professional manner. But the students are only ever participating at the periphery of the community of practice which the medical profession represents. They are continually reminded of their low status relative to the teaching doctors.

I have argued that through learning auscultation students also learned to construct 'the patient'. Auscultation was one of the means through which the students were able to conceptualize a patient as a 'case' of a particular disease in which they were able to isolate and identify corresponding clinical signs. In chapter six I noted students' awareness that in practicing auscultation they were often reducing the patient to "two heart sounds and a murmur". Patients themselves were also conscious of being objectified (in negatively-experienced ways) through repeated examinations. They felt that their murmurs were being separated from their bodies, or rather, were being reified as discrete objects inside their bodies. But it is clear that the students, while acknowledging this to be a problem, also accepted that it was part of the way in which Western medicine situates the patient. Auscultation exemplifies the Western medical process of identifying physiological changes and, through them, inferring the

nature of the disease, plotting a trajectory of its progress and addressing treatment to counteract its impact upon the body. As established in chapter one, auscultation was central to the medical preoccupation with anatomy and physiology which emerged in the early nineteenth century. It remains iconic of the same approach two hundred years later.

The stethoscope as a cultural artefact

In his afterword to the book *Objects and Others: essays on museums and material culture*, Clifford cites James Fenton's poem 'The Pitt-Rivers Museum, Oxford' (Fenton 1984: 81-84, cited Clifford 1985: 236). He describes how 'Fenton's ethnographic museum is a world of fetishes, of intimate encounters with inexplicably fascinating objects' (ibid). Entering the hospital and working with doctors and medical students, I felt I too had encountered a world of 'intimate encounters with fascinating objects'. The objects of fascination for me were stethoscopes. But it became clear that they were objects of fascination for the people with whom I worked, also. Indeed, it was the doctors' and medical students' fascination with stethoscopes that made the instruments so peculiarly fascinating to me. Learning the particularities of different designs, their acoustic qualities, and the messages which each kind communicated to other people within the hospital environment allowed me to see that stethoscopes took on a variety of meanings quite independently of their use in conducting sounds to the ear. I have not been solely preoccupied with questions of the senses, then, but also with the stethoscope as a cultural artefact.

For many doctors, their stethoscopes were status symbols. The manner in which the instruments were held and carried allowed them to project a particular self-image, to send indications of seniority and authority to others with whom they worked in the hospital. Fenton's poem describes museum objects as being tied to personal recollection, and it became clear during fieldwork that doctors identified closely with their stethoscopes. Indeed, the instruments came to represent a personal heritage, time spent in the practice of medicine. Stethoscopes were converted from the impersonal commodities which they appeared on websites into personal possessions imbued with memories and associations. Through repeated and prolonged use, stethoscopes became strongly charged with personal identity. They were often what Hoskins describes as 'biographical objects' (1998).

As Dr Michael Kirsch writes: '[n]o instrument is more closely linked to the medical profession that the stethoscope' (1998: 1). Indeed, so integral to the medical persona has the stethoscope become that doctors are sometimes referred to as 'stethoscopes', in the same way that policemen might be referred to as 'uniforms' or businessmen as 'suits'. An example may be found in *The Lancet*, where patients are envisaged as sitting 'wondering who will be behind the next stethoscope that approaches them' (Ofri 2004: 997). Walking down the main corridor of St Thomas' dozens of stethoscopes (in both the literal and the metonymical sense of the term) would move past, worn around the necks and dangling from the pockets of medical staff.

In chapter one I described the manner in which the first patients to encounter the stethoscope were awed by its powers. Now auscultation is practiced with such regularity that many patients pay it no attention whatsoever. Early in my fieldwork I asked a patient what feelings he experienced when doctors took out the stethoscope and went to listen to him. He said: "The first couple of times might have been different, but now I'm used to it, I certainly don't object to it. I don't really have any feelings at all when I see a stethoscope. They're ordinary, part of the everyday. I'm accustomed to them". In this thesis I have adopted the position that '[t]he aspect of things that are most important for us are hidden because of their simplicity and familiarity' (Wittgenstein cited Sacks 1985: 42). One is unable to notice something because it is always right before one's eyes, and hence its power is disguised.

I have asked whether the stethoscope is simply camouflaged among the tourniquets and tendon-hammers which both clutter and compose the consultation room, or whether it is in fact undergoing a more permanent disappearance. The power of auscultation is thought to be evaporating relative to the strengths of new technologies, in particular, echocardiography – a technology which allows the workings of the heart to be visualized in detail. Doctors no longer rely on findings made through auscultation. Cardiac ultrasound, it is widely claimed, is bringing about the 'death of the stethoscope'. This demise has been predicted for decades, and, as the training of contemporary medical students in auscultation suggests, is by no means imminent. Yet the idea that the stethoscope might vanish from medicine altogether meets with an anxious response in medical discourse. The 'death of the stethoscope' is used as a fable to warn of a corresponding loss of precious clinical skills, a reduction in contact between doctor and patient in the clinic or at the bedside, and a devaluation of the doctor as he or she becomes deskilled through the encroachment of

new technologies. I have suggested that the stethoscope is closely identified with the doctor and his or her work in popular culture, the instrument being part of his or her uniform. Evidently the stethoscope is also closely allied with the medical profession's perception of itself, and with a collective vision of the doctor as an attentive, skilled, and valued medical practitioner. The loss of the stethoscope, it seems, would represent the loss of the doctor as imagined by doctors themselves.

Future research

Anthropological interest in sound and listening has burgeoned in recent years. For instance, the publication of the *Auditory Culture Reader* (2003) has brought material from a number of established social scientists (Feld, Sterne and Bull among them) together in a single, accessible volume, while a recent conference on 'anthropology and sound' showed that dozens of studies on various aspects on 'auditory culture' are presently being researched. These will no doubt ultimately result in publications. Anthropological enthusiasm for sound studies is evidently gathering momentum. Here, I point to some specific directions for future anthropological research on sound, building on ideas introduced in the thesis.

This study explored auscultation as a system of acoustic knowledge, but has focused almost entirely on heart sounds and their importance in diagnosis. As suggested in the introduction, there are other areas of medical specialization in which auscultation is frequently applied, with each context having its particularities. Draper for instance, points out the importance of listening to the baby's heart beat during labour (2002: 789). Research into the use of listening in obstetrics and midwifery promises deeper insight into the relationship between sound and ideas of the body and personhood. A study of auscultation's use in respiratory medicine might yield further interesting data, I would suggest, on the relationship between sound and suffering.

My material indicates the powerful effect of perceptual strategies on the ways in which the body is imagined and experienced. It draws attention to the impact of diagnostic technologies not only on the professions by which they are developed and by whom they are employed, but also on those on whom they are used. The thesis highlights the need for further research on echocardiography in order to understand precisely what effects the sounds produced by Doppler scanning have on patients. Findings would develop an understanding of the role of acoustic imagination in the

experience of valvular heart disease, and could potentially be used in developing advice to minimize anxiety and misunderstandings among patients.

The examples given by patients with severe murmurs indicate that sounds and sickness may be closely intertwined. Patients may be made conscious of illness, or are constantly reminded of it, through their heart murmurs. Previous research at the Edinburgh Royal Infirmary also indicated that sound is appropriated by patients in the articulation of pain and uncertainty. Further research is required to explore the role of sound in suffering, and in the narration of anxiety over bodily states. How is sound drawn into the experience of, and narratives of the experience of disease more generally? Gell and Feld indicate the use of sound in the expression of sentiment and nostalgia among the Umeda and Kaluli respectively. The hospital may reveal a further context in which sounds become a resource for the articulation of powerful emotion.

The thesis documents instances in which the concept of 'hexis' may be contextualized acoustically. I have also explored the hospital as an institution which creates opportunities to engage with a 'habitus' produced and reproduced, in part at least, through listening. Broadly speaking, future research is required to examine the way in which listening skills may be implicated in the construction of identities and may structure social behaviour. Yet the thesis has also shown that an acoustic perspective on key anthropological concepts ('habitus' and 'hexis' being examples) might provide ways of uncovering the importance of sound within core areas of anthropological interest. Where, for example, might an acoustic perspective on 'doxa' or 'hegemony' take us? What might be the consequences of an 'acoustemology of gender'? I feel there is a need for a general, as well as highly contextual, acoustic interrogation of social life.

A minute's noise

One day during fieldwork Dr Coltart announced that he would be absent for the next class as he had to attend a cardiology conference in Paris. He said that he would be sure to stop by the Tuillerie gardens, where there was a statue of Rene Theophile Hyacinth Laennec, to pay his respects. He added, however, that he would not observe a minute's silence there. To do so would be inappropriate, as Laennec had been interested in sounds, and had filled his own life and the lives of many doctors with '*bruits*' and murmurs. Through Dr Coltart's remark it is easy to imagine medical history as a noisy history. An 'acoustic archaeology' of illness, re-creating or

imagining disease would animate painful sounds, wheezing, sneezing, hiccupping, screams and sighing (Smith 2003: 129). This thesis goes some way towards showing, however, that the cacophony of the diseased body is still present, and that the sounds of disease are still heard and are powerful in their effect on those who hear and must live with them. At the same time, it has shown that sounds have been used for centuries in understanding the body, in diagnosing its illnesses, and ultimately in ensuring its treatment.

As a study of auscultation, this thesis turns the stethoscope back on the medical profession itself. It shows the way in which listening has been incorporated into the medical imagination of the body, and has been used to create a sense of its physiological structure and function. As a diagnostic technology, auscultation has also influenced the manner in which some patients perceive and engage with their own bodies. The perceptual operation which auscultation involves assigns relative social positions to doctor and patient, perpetuating their respective roles, setting them apart spatially and socially while also bringing them close together. As students new to auscultation learn the skill, they begin to shape and consolidate their identities as 'doctors'. On the St Thomas' hospital wards where I conducted my fieldwork, then, listening is shown to be integral to the construction of both bodies and persons.

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