Documenting Dreams:
Patient-Centered Records versus Practice-Centered Records

by

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ABSTRACT

This thesis explores how doctors and nurses use documents to share theirknowledge within and across healthcare settings. In addressing this question I draw on a15-month, multi-sited ethnographic study in several pediatric health care settings,following patients from primary care clinics, to emergency rooms, and in-patient units. Theanalysis focuses on the practices that go into documenting patients’ histories and care,which include recordings on various on-line systems, preprinted forms, and whiteboards.

By combining the previously distinct lenses of 1) knowing in practice, 2) time-space analysis of social interaction, and 3) communicative genre and genre systems, I suggest that doctors and nurses employ various types of document genres to manage, not only their distributed knowing about patients’ care, but also their own movements across time-space. I outline a perspective on documents and knowing which attempts to highlight the role of human practice in how people use documents to coordinate their activities,share their capabilities, and get things done in complex distributed organizational work.

The data suggest that doctors and nurses use medical documents as maps anditineraries to organize their distributed work practices. Doctors and nurses record patients’histories many times in different documents, with each document serving as a map anditinerary for a different constituency of people. Each of these documents is rarely used inisolation from other documents. Doctors and nurses constantly recombine the documents they use, which allows them to both appropriate documents from other settings into theirlocal organization of work and build unique local combinations of documents. I introduce theconcept of “re-localizing” to describe how doctors and nurses use documents to share their knowing within and across healthcare settings. Re-localization involves manyhealthcare professionals’ parallel rewriting of a patient’s history based on a recombination of each other’s maps and itineraries and the patient’s own accounts. By integrating theconcrete case and the maps and itineraries based on those cases the notion of re-localization overcomes the dichotomy between the abstract and the situated, the local and global. Documents are not seen as mere vessels for abstract representations, but integralparts of distributed knowing within and across settings.

Keywords: documents, information systems, knowledge management, distributed work,communication, genre analysis

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Chapter 1 – Introduction

"Give us a hundred years and we will have [an electronic record system]."

- ER nurse at Kilham Hospital

As the title of this dissertation suggests, I am addressing a technology dream that one finds in the healthcare community, most clearly articulated in the medical informatics field. It is the dream of the universal patient-centered record – placing all relevant information about a patient’s history at doctors’ and nurses’ fingertips. This is not an easy dream to realize according to the emergency room nurse quoted above, who, during a staff meeting, offered her assessment of the time it will take to develop and implement a proposed hospital wide electronic record system. The nurse’s opinion points to a tension between the promises of the universal patient-centered record and the problems realizing this dream. The problem speaks a larger theoretical question of how people use documents and information systems to coordinate their activities and knowing about patients within and across settings. More generally, the question becomes how organizations best support viable information systems that sustain their members’ capabilities to operate effectively both within and across temporally and geographically distributed settings.

My research is motivated by a theoretical conundrum, which I first encountered while working at Xerox PARC and studying at UC Berkeley, where I was exposed to the notion of situated knowledge (Lave, 1988; Orr, 1996; Suchman, 1987). This notion suggests that some types of knowledge are tied closely to specific social situations. Lave (1988), for instance, demonstrated that supermarket shoppers in LA were able to perform complicated mathematical calculations in a shopping situation, but when posed with the same problem in formal mathematical terms, they could not come up with a solution. Their knowledge was not some abstract entity that individuals possess, but a knowledge-in-practice. It was a situated knowing, constituted by the person’s socially and contextual embedded activities. Along the same lines, Suchman and, later, Orr, showed that the mastery of Xerox copiers was embedded in the social organization of work around the
machines (Orr, 1996; Suchman, 1987). However, the framework did not address the question of whether people could share their situated knowledge beyond the contexts in which it was embedded.

More recently, one finds an increasing interest in knowledge within the organizational field, and a push to differentiate different types of knowledge. A special issue of *Organization Science* on knowledge illustrates this debate (Grandori, Kogut, & Lewin, 2002). Here, situated and embedded knowledge seem to have become an accepted part of the general discourse. However, as Orlikowski (Orlikowski, 2002) points out, situated knowledge is often depicted in opposition to what is considered explicit and abstract knowledge. For instance, Polanyi’s (Polanyi, 1983) distinction between tacit and explicit knowing is usually used to typify other dichotomies, such as local versus universal, know-how versus know-what, formal versus situated, canonical versus noncanonical (Orlikowski, 2002: 253). One pole treats knowledge as abstract representations, a perspective that has informed studies of managerial cognition (Walsh, 1995; Walsh & Ungson, 1991). In the medical field this would represent the abstracted, explicitly represented and codified knowledge taught in medical schools. The other pole approaches knowledge as local, that is, as context dependent, and emerging from interactions and practices in particular contexts. This would be the knowledge involved in the practice of medicine within specific healthcare settings with changing collaborators and unfolding care for particular patients.

Such a polarizing approach to knowledge is reflected in views on documents and information systems. Documents are often depicted as containers for abstract, formal, homogeneous knowledge that can be easily transported across settings. In turn, these containers are not capable of capturing and disseminating local, messy, heterogeneous, and concrete knowledge. Taking a step back, one could argue that this framework addresses the question raised above, whether people can share situated knowledge beyond the context in which it is embedded. And, the answer is no. People share abstract codified knowledge – not situated and contextually embedded knowledge.

The distinction is problematic, however, as it divides knowledge into two separate types. One is formal and abstracted that allows for the detachment of knowledge from its
local context without losing its essence. The other type of knowledge simply pertains to the local and richly textured empirical world. Knowledge is depicted as either abstract, static, and separate entities or stable dispositions embedded in practice.

In other words, documents and the knowledge represented in them are pictured as hovering above the realm of the empirical and contextual. Two opposing discourses about the organizational role of documents and information systems easily follow (M. Berg, 1997). On one hand, we find the position perceiving the power of information systems and formal tools as residing within their ability to capture and detach knowledge from its context without losing its essence. The document provides a mode of transporting abstract knowledge across settings. An opposing discourse argues that formal and abstract knowledge captured in documents represents an impoverished version of the richness of the empirical world and situated knowledge. Abstract models cannot but delete the details of the heterogeneous work that they represent. This creates inflexible systems that will inevitably result in improper functioning when the information system is implemented (Ibid.:405). The first could represent the dream of the universal patient-centered record, the second would find support in the ER nurse’s distrust in the viability and timely implementation of large-scale medical information systems.

These positions seem too entrenched, and the foundations too essentialists. I attempt in this dissertation to articulate an approach to documents that overcomes the dichotomy between abstract and concrete, tacit and explicit, and local and universal knowledge. Following the lead of Lave (Lave, 1988), Orlikowski (Orlikowski, 2002), and Giddens (Giddens, 1984b), I adopt a view of knowledge that ties it to practice. The emphasis is on “knowledge-in-practice” or rather our knowing. Our knowing emerges out of our actions as we enact our capabilities. In practice the abstract and concrete merge. In practice we interlock abstract maps or models with our ongoing situated work, and in the process new competences emerge, higher levels of complexity can be reached, and activities can be coordinated across time and place. In other words, the universal and the local become mutually constitutive in the process of knowing.

The question remains: what role does people’s use of documents play in their active knowing? And equally important, if documents do not serve as mere containers for
abstracted entities, how do people use them to coordinate their activities, share their capabilities, and enact their knowing across settings? In short, taking my point of departure in this notion of knowing I raise the important question: How do people use documents to share their knowing within and across settings?

**The Universal Patient-Centered Record: An Unrealizable IS Dream?**

To motivate the dream of the universal patient-centered record medical informatics researchers often draw on a hypothetical story. The story goes like this: Mr. Jones is on vacation in Florida. His wife goes to the beach and Mr. Jones decides to play golf. At the third hole he collapses and is taken to a local emergency room. In the ER the doctors cannot access his medical record or information about his heart condition. Without knowing his history and what medications he takes, they cannot help him to the same degree as his own doctor. Mr. Jones either dies or suffers from his collapse depending on the morbidity of the narrator.

Apart from concerns for patients’ well-being, a majority of medical informatics researchers typically introduce their conference presentations with a brief reference to the present state of US healthcare and its changing organizational landscape. Two striking changes in the marketplace for healthcare services stand out: the consolidation of buyers of healthcare and the consolidation of healthcare providers. First, the number of collective purchasers has increased in both the public and private sector. This consolidation of buyers allow them greater leverage and bargaining power for the services of health care providers. Secondly, one also finds consolidation among care providers in recent decades, and these often emerge as reactions to financial pressures from buyers.

Starr (1982) finds both a vertical and horizontal integration among healthcare organizations. The vertical integration involves a shift from single-level-of-care organizations, such as acute-care hospitals, to organizations that embrace the various phases and levels of care. Most major teaching hospitals have, to various degrees, merged or formed alliances with private practice groups, nursing facilities, rehabilitation centers,
homecare organizations, and community hospitals, as well as financial and administrative services. By developing such satellite clinics and outpatient facilities they assure themselves a steady stream of referrals (Bazzoli, Shortell, Ciliberto, Kralovec, & Dubbs, 2001; Budetti et al., 2002; Shortell, 1997a, 1997b).

Horizontal integration marks the decline of freestanding institutions and the rise of multi-institutional systems with a shift in the locus of control from hospital or community boards to regional and even national health care corporations. In short, we see a geographical dispersion of care in these new integrated health care networks. Not only may a patient present for different services at several sites, a provider (typically a physician or nurse) may work in several different settings. This creates new cross-contextual relationships as providers face incentives to make referrals to in-network specialists. The medical informatics community (with many administrators and legislators) hope that global patient-centered information systems will link all these heterogeneous settings, allowing them to freely and effectively exchange information at a low cost for the benefit of administrators, patients, doctors, and nurses.

For the last two decades, the field of health care informatics has worked on developing “universal” patient-centered records linking distributed healthcare providers across organizational and departmental divisions. To date these efforts have proven remarkably unsuccessful. Researchers on the American Medical Informatics Association mailing list regularly have discussions on the topic of failure rates in healthcare information systems (IS). Though impossible to verify, many quote 80% failure rates for the implementation of medical information systems.

The exact percentage aside, today one finds that individual settings, departments, and sub-disciplines have implemented their own information systems. For instance, emergency departments will often have one electronic record system, the Intensive Care Unit (ICU) another, outpatient care a third, and nurses (in some hospitals) yet another nurse-use-only online record system; rarely do these systems communicate. Each hospital, department and occupational group has tended to purchase proprietary systems or to contract with a single data-processing company, partly out of fear of security breaches (Kelty, 1997, 1998). Equally often, physicians with a bent for computing brew their own
systems out of discontent with the products offered by vendors (Szołowitz, 2000). In the words of Paul Starr:

"even departments within the same hospitals or clinic often . . . acquired incompatible systems, creating "islands" of information that led not only to redundant data but also to duplicate tests and procedures, thereby negating potential efficiencies from computerization" (Starr, 1997: 94).

I found this to be true in all the hospitals and clinics I visited in the course of this research. For instance, during a pilot study in an emergency room I came across four patient record system side by side: a larger "legacy" test result and discharge summary system, a nursing on-line system, a web-based system combining the test results and discharge summaries of two old legacy systems from two newly merged hospitals, and a traditional paper-based patient record system. All of which were used daily. Four years ago the hospital, in the process of merging with another hospital, decided to scrap the old systems and buy a network-wide commercial product built by a world-renowned computer maker. After several years of development the company eventually decided to kill the project due to the rapidly increasing importance of the web in medical informatics, a development they had failed to envision. It left the hospital with its old mix of systems and no easy way to share patient records across hospitals.

One may wonder if this fragmentation among information systems merely reflects a disjointed US healthcare system governed by private institutions and under weak national oversight. Recent experiences in Northern Europe suggest that this may not explain the current situation. In Denmark, for instance, a nation of five million people all covered by a nationalized healthcare system, the state has spent millions of dollars on the development and implementation of a global, patient-centered record system. In 1999 the healthcare system failed to meet a deadline set by the government requiring 50% of all patient beds to be served by an electronic patient record. In 2002 less than 10% of hospital beds fulfill this requirement. The deadline has now been pushed to 2006. Lamented by the press, the investment of taxpayers’ money has lead to 62 disparate, electronic, patient-centered record systems, few of which can communicate with each other (Berge & Mørch, 2002a, 2002b, 2002c, 2002d, 2002e). The head of the Danish physicians’ interest organization representing all physicians in the country puts it this way: “The level of IT in healthcare is
very low. It’s surprising how much work people still do with paper and pencil” (Berge & Mørø, 2002e).

In its current stage the quest for a universal patient-centered record seems to be an unrealizable IT dream, or in the words of Judith Gregory: “an incomplete utopian project” (Gregory, 2000). Following the debate of medical informatics researchers, the discourse now appears to be driven into a dead end where dichotomous sets of solutions present themselves: Should developers emphasize flexibility in their systems or homogeneity? Should confidentiality and privacy concerns come before cross-site access and proliferation? Is centralized governance preferable to decentralized governance? (Kelty, 1997, 1998; Teich, 1998). One way to back the debate out of this alley may be to study the current state of affairs on the ground and in situ. How do doctors and nurses share their knowing about patients? How do they use records? How do they deal with colleagues within and across settings? In short, the lack of a universal patient-centered record raises the question: how do doctors and nurses use records/documents to share their knowing about patient care within and across distributed healthcare settings?

An answer to this question should inform not only our understanding of how knowing is shared across settings, but also of how information systems are designed within the medical field and beyond. Let me turn to Sophie’s case.

**Sophie’s Many Histories**

Sophie is a 10-year-old girl having a bad asthma attack. When I meet Sophie for the first time, she is lying in a hospital ward bed with an oxygen tube in her nose at 10:30 on a Thursday morning. Two doctors and a medical student are simultaneously leaning over her, three stethoscopes pressed to her chest listening, eyes turned to the ceiling. The medical student and the two doctors, an intern (Donna) and a senior resident (Lucy), take notes as they interview Sophie and her mother about her asthma attack and previous history. Among other things, they learn that Sophie has been hospitalized once before, two years ago. As a toddler, Sophie frequently suffered from bronchiolitis, which was later diagnosed as asthma. This is not the first time today that Sophie has had her history taken.
Actually, she has had her history taken repeatedly in the past 24 hours as illustrated in Figure 1.1.

**Figure 1.1 – Repeated History Taking**

Sophie’s current asthma attack started the previous afternoon – the first cold autumn day in school during the lunch break; Sophie uses her inhaler several times but it does not help. Sophie’s mother calls their primary care clinic and talks with the nurse. The clinic nurse asks and records a series of questions including: Sophie’s name, when the breathing problems started, when she had her previous asthma attack, what medication she has taken, what doctor she normally sees. The nurse asks them to come to the clinic for a sick visit.

Sophie’s mother parks their car outside the Cildra’s Health Care Clinic located on a corner of a shopping center, sandwiched between a housing project and a gentrifying neighborhood with coffee shops, restaurants, and a couple of bookstores. Children and parents fill the waiting room with a hustle of activity. Three boys play with a few Lego blocks at a small table in the corner. A toddler squishing her snotty nose against a big
aquarium meets eye to eye with a seahorse. Parents and children line a large, slightly faded wall mural depicting tropical fish, sharks, turtles, and a scuba diver on a sea green background. Sophie’s mother makes her way up to the registration desk where a younger woman hands her a sheet to fill in Sophie’s full name and time of arrival. The receptionist asks if this is a sick visit. Sophie’s mother nods and hands her their insurance card. The receptionist pulls out a preprinted form with the heading “Sick/Follow-up Visit” and enters Sophie’s full name, date, time.

The receptionist asks which doctor Sophie’s normally sees. The mother hesitates as they often get assigned a new primary care doctor. She gives the name of the doctor who saw Sophie last time, Dr. Roth. The receptionist makes a note of it and inquires what the problem is today. Asthma, the mother explains. Sophie is wheezing quite a bit and was sent home with a note from the school nurse. “When was her last visit?” the receptionist asks. The mother does not quite remember but Sophie does. It was when they took out the old Christmas tree. The receptionist notes “December/January” and closes the history taking: “It will be a co-payment of $10.”

Handing over the money, Sophie’s mother inquires how long they can expect to wait. “It’s pretty busy but we should get you in soon.” After 20 minutes an elderly clinical assistant, Lydia, calls Sophie’s name and brings her to an examination room where she asks when the attack started and what may have triggered it. Lydia writes this on the “Sick/Follow-up” Encounter Sheet started by the receptionist and then measures Sophie’s temperature and weight. To Sophie she says: “You feel crummy, sweetie. Did you measure your peak flow number?” Sophie and her mother give a unison “no.” “The one you gave me broke,” Sophie explains. “I’ll see if I can find you a new peak flow meter then.”

Turning to the mother: “You may have to pay for it.” The clinical assistant asks Sophie to blow in a new peak flow meter to measure how well her lungs can push air out. Lydia adds the number to the Encounter Sheet and tells Sophie: “You are pretty tight today. I’m going to give you a nebulizer treatment while you are waiting for the doctor.” Before Lydia leaves, she starts the nebulizer treatment. Sophie is inhaling a fine mist of medication through a mouthpiece connected to a pump humming on a table next to her. The medication will decrease the inflammation and swelling of her bronchiole making it easier
for her to breath. After finishing the nebulizer treatment Lydia returns to take Sophie to an examination room. Sophie wants to rinse her mouth to clear out the bad aftertaste from the medication. “I hate it! I hate it!”

After 15 minutes Dr. Roth enters the room with Sophie’s medical record in hand. He glances at the Encounter Sheet: “Sounds like an asthma attack to me. “When did you last have problems?” Sophie’s mother recounts that she really has not had a problem since January when they took out the Christmas tree. That was pretty bad though. Dr. Roth flips through the medical record and pointing to a page: “Oh yes, and I was the one you saw. Let’s take a look at you.” Dr. Roth listens to her lungs and moves through a quick physical exam. He asks what they think started it and inquires if Sophie took any Abuterol (which relaxes tight muscles in airways) today. She did not. Sophie’s inhaler was empty and they needed a new prescription. Dr. Roth asks Sophie to blow in the peak flow meter once again. To Sophie’s mother he concludes while pointing to Sophie’s chest: “She is still pretty tight.” The clinic is closing soon and it sounds like Sophie will require a bit more attention. He suggests that they go directly to the emergency room at Kiltham Hospital. Sophie’s mother sighs and off they go to the emergency room.

The nebulizer treatment did help a little, but on their way to the ER, Sophie sitting in the back seat, is still wheezing heavily. She looks tired and coughs now and then. They do not talk. As they enter the hospital area they pass under a banner pronouncing. “#1 children’s hospital in the nation for the fifth consecutive year.” An ambulance arrives at a docking station as Sophie and her mother enter the sliding doors leading into the emergency room. A security guard asks to see their hospital identification card. On the other side of the sliding glass doors they face a triage nursing station. A couple of families are already lined up to talk to one of two nurses seated in adjacent booths. After a few minutes Sophie and her mother are called forward. The nurse asks: “Why are you here?” Immediately she pulls out a preprinted form with the heading “Asthma Flowsheet” from a rack with four different, clean, preprinted forms. She rapidly runs through a long sequence of questions and enters one or two words for each answer: Name, age, other complications, have you been hospitalized for asthma before, when, are vaccinations up to date, any medications, other medications, regular primary care provider, allergies. The triage nurse
leans over the triage desk to listen to Sophie’s chest with a stethoscope. Then, she
measures the oxygen level in Sophie’s blood by attaching a small clip to Sophie’s finger. A
father leans over the triage desk demanding to know how long his son has to wait. The
triage nurse assures him that they will call his son in as soon as possible. The father insists
that at least three other children who arrived after them have already got called in. “We are
doing the best we can,” the triage nurse reassures him and glances at a line of angry scowls
seated in the first row of chairs.

The triage nurse sends Sophie and her mother to the registration desk. “Come back
over here when you have registered.” The waiting room is packed. In the back of the room
a women wearing a multicolored Dr. Suess hat plays guitar to a group of six children
seated at small chairs. A small boy keeps banging his dinosaur into a play table. Sitting at
the edge of a chair Sophie fixes her eyes on a large TV screen while her mother waits to
talk to the registration clerk. A black woman seated next to a computer screen asks if she
has been here before. Sophie’s mother confirms. “Do you have the blue hospital ID card?”
Sophie’s mother apologizes. She forgot it but has her insurance card. The receptionist finds
Sophie in the system and asks if they are still living at the address listed. They do not and
Sophie’s mother gives their new address and phone number, then answers a sequence of
questions that the receptionist enters into the system. “Are you the carrier of the
insurance?” “Where do you take the kid for healthcare?” “Did the doctor send you here?”
What brings you here?” “Is there a religious affiliation?” Sophie’s mother answers
patiently before signing a consent sheet handed to her. Meanwhile, the receptionist
switches from a hospital wide system to the ER online system on her terminal, reenters
Sophie’s record number and imports the information, then enters the triage nurse name as
it appears on the flow sheet. “The nurse will call your name when it’s time to go in.” As
Sophie’s mother turns around to leave the receptionist prints out a new hospital
identification card and adds it to the paperwork.

Back in the triage station a clinical assistant takes them into a small narrow
examination room. The clinical assistant in his blue hospital scrub measures Sophie’s
temperature. “I want to see how big you are.” He continues with Sophie’s weight, height,
listens to lungs and belly with a stethoscope, and has her blow in a peak flow meter. It all
gets entered into the flowsheet. Back out from the small room, the triage nurse seats Sophie on a chair behind the triage desk next to a box with small family guidebooks for asthma management. She places a mask over Sophie’s face and starts the nebulizer treatments. Twenty minutes later the triage nurse returns, places the blood oxygen measure on Sophie’s finger and listens to her chest. “Your breathing sounds better. How do you feel?” Sophie shrugs her shoulders and pouts a little. Her mother: “She is a little better. She was supposed to sleep over at a friend’s house tonight.” The nurse sends them to the general waiting area explaining that they should check back up with her in 45 minutes if they have not been called into the emergency room. “We may have to give you another nebulizer treatment out there before you get a room. But we’ll try to get you in as soon as possible.”

A nebulizer treatment later, Sophie’s name rings over the waiting room intercom. Sophie’s mother jumps up. It’s 9:40pm. They make their way though a double door which brings them to the back of the registration desk where a nurse awaits them. “We have a room for you,” the male nurse smiles to Sophie. “You are going to get your own TV. What about that?” They walk down a hallway with patient rooms on one side. You see a string of faces as families watch TV screens mounted above the door inside the rooms. Sophie and the nurse turn a corner and pass a glass wall framing a narrow room filled to the brim with younger men and women in white coats seated or standing around computer terminals and light boxes with X-rays. Opposite the glass wall a large whiteboard takes up the entire wall between two examination rooms. Five nurses stand in front of it, two of them using a trash bin as support while writing notes on flowsheets. There is a constant hum of people. The male nurse carries the flowsheet started by the triage nurse. He leaves it in a bin outside an examination room at the end of the hallway. “Your nurse will be with you shortly,” he says and heads back towards the five nurses where he adds Sophie’s name to the whiteboard.

After a brief exchange with the male nurse, Ann, a registered nurse (RN) in her fifties, signs her name on the whiteboard under Sophie’s name. She pauses outside Sophie’s room quickly glancing over the flow sheet in the bin. “Hi sweetie – I’m Ann, your nurse. Wheezing tonight?” Sophie eyes barely leave the TV screen mounted above Ann’s head. “I have to ask you a few questions and measure you oxygen level and listen to
your chest, sweetie. I know you have had a rough day.” Sophie blinks several times and swallows. Mixing her interview with comments on the TV show above their heads, Ann goes though a physical exam. Her questions overlap with those asked by the triage nurse but Ann probes for more detail. “Do they have any pets?” “Does anybody smoke at home?” Sophie’s mother asks how long they will have to stay. Ann: “Make yourselves cozy. It’s a busy night.”

Sophie’s mother has been out getting sandwiches from a Starbucks in the lobby. Sophie is not hungry. They are on to their second sitcom. A teenage girl’s voice bellows from a room down the hallway, a young security guard sits motionless outside. A young doctor enters Sophie’s room with a smile: “I’m Dr. Samer Beuf. I’m here to make you feel better.” He shakes the mother’s hand and pats Sophie on the head. “I’m going to ask you a few questions.” Armed with a preprinted form with the title “Temporary Note” he starts a lengthy interview: When did the asthma attack start, when does Sophie normally get asthma attacks, has she been hospitalized before, when was that, what is her medication, who is her primary care provider? Was she born prematurely, does she have any siblings, a twin, do they suffer from asthma; who lives in the household, carpets on the floor, house plants, any pets, did they travel recently, anybody smoking at home?

Samer raises his eyebrows and stops his note taking when the mother admits that Sophie’s grandfather, who lives with them, does smoke. Sophie’s mother assures him that the grandfather never smokes in the house. Sophie also has a rabbit. Sophie adds: “I’m not allowed to bring my rabbit into the house. It’s in the garage.” Samer launches into a long monologue about asthma and the most frequent triggers of asthma flare-ups, among which smoking and pets are top candidates. Sophie and her mother look like they have heard the story before. Samer draws a pair of lungs on the white hospitals sheets covering the examination bed, explaining how the bronchial tubes becomes swollen when an asthma flare up happens, the swollen airways produce mucus and become narrow, which causes wheezing, coughing and trouble breathing. He draws the small muscles lining the outside of the bronchiole and illustrates how the Albuterol relax those tight muscles around the airways so that more air can flow into the lungs making it easier to breathe. The steroids reduce the inflamed lining of the bronchiole. Sophie’s mother assures him that they will do
something about the smoking. Samer examines Sophie thoroughly, listening carefully to her lungs, heart, check her eyes, ears, reflexes, etc.

Another nebulizer treatment passes. The mother has been out trying to interpret the whiteboard and flowsheet before calling her husband. Ann has been in checking a couple of times listening to Sophie’s chest. “How do you feel sweetie?” To the mother: “The attending doctor should be in soon. Then we will have a decision. You should brace yourself for a night here.” To Sophie: “Then you can order your favorite food for breakfast.”

A little past midnight the attending doctor, a middle-aged man with a tie and shirt under his white coat, announces his entrance. Efficiently, he moves through a physical exam, asking a few pointed questions about Sophie’s past hospitalization, when the attack started, how often she suffers from asthma attacks. Addressing Sophie’s mother: “We had hoped to be able to send you home tonight but her airways still sound tight and her oxygen level is also on the low side. We are going to have to admit her for the night. It also makes us a little apprehensive that she was admitted for her asthma before.” He assures Sophie’s mother that she will be fine and they may be able to go home tomorrow. “Any questions?” Sophie’s mother shakes her head – looking like she has resigned herself to the situation. “Dr. Beuf will give you the details,” which he does 15 minutes later. They are going to 10 East where most of the asthmatics get admitted. “They know a lot up there and will take good care of you. We will try to get you up as soon as possible but you have to talk to the doctor from up there first. She will be here soon. I just talked to her.” Not long after, a young tired looking woman enters the room. She introduces herself as Heidi, the doctor in charge of in-patient wards tonight. She will admit Sophie and makes sure that she gets a good night’s sleep before the day team takes over. Half reading from a sheet in her hand she retells the history Dr. Samer Beuf gave her, then asks if there is anything she missed and scribbles on her sheet. Sophie’s mother corrects the months of Sophie’s previous hospitalization and stresses that her grandfather never smokes in the house. Heidi examines Sophie. “The nurse will give you one more neb and then an orderly will bring you up.”

Well past 1AM, an orderly wheels Sophie out of the room and pushes her through a set of automatic doors in the far back of the ER. The pastel green walls of the ER give
away to a nondescript elevator lobby. At the 10th floor they exit onto the heels of a bright yellow and orange linoleum giraffe that stretches its neck down the floor of the corridor. From the giraffe’s head they step onto a happy linoleum parrot pointing them down a dimly light hallway with dark patients rooms on one side. A mirage of animals and other happy creatures occupy the walls. Sophie sees none of this, her head hanging to one side. Several clusters of balloons attached to the doorframes bob gently in the draft from air ducts in the ceiling. A nurse, with hundreds of tiny teddy bears smiling from her uniform, greets them as they pass the nursing station at the bottom of the corridor and turns left. “Put her in room 5,” the nurse directs a clinical assistant dressed in plain dark blue scrubs. “I’ll be there in a second.”

In a double room the orderly helps Sophie into a bed. A light snore seeps through a set of clown-patterned curtains blocking the view to another family. A dark TV monitor sits overhead and a remote control attached to a cable lies in the bed allowing the child to regulate the bed and TV. The night nurse enters and jovially addresses Sophie’s mother: “You need some sleep. I’ll be quick.” Sophie’s mother sits in a soft chair as the night nurse stands with a Data Base Assessment sheet, Communication Checklist, and Management Plan in front of her on a small table next to Sophie’s bed. In a hushed voice she starts interviewing Sophie’s mother: Who does she live with, do both of the parents live there, siblings, other family members, pets, carpets, house plants, home phone, primary care provider, does she remember the phone number, does Sophie go to a outpatient asthma clinic, school and grade, allergies, does she take any other medication, previous hospitalization, what unit, religious orientation, does any other family members suffer from asthma? Short answers follow promptly from Sophie’s mother. The night nurse examines Sophie; listen to her chest, measuring her temperature and oxygen level. Sophie moans softly as the night nurse handles her. The night nurse shows the mother how to operate the call light. “I’ll make sure that day nurse goes through all the logistics. Do you need anything? You can fold out the chair and I have left a blanket for you here. There’s a small kitchen four doors down to the right if you get hungry or thirsty. I’ll be checking on Sophie.”
At 7:30am, a Long Stay unit nurse at 10 East makes her initial round. Sophie and her mother are still sleeping soundly. The nurse does not wake them up but simply glances quickly through a Flowsheet located in a bin attached to the wall just outside Sophie’s room. She signs her name on the Flowsheet. She will check on them again in half an hour. By the time the two doctors, Donna and Lucy, and medical student enter Sophie’s room a couple of hours later, Sophie and her mother have described Sophie’s medical history eleven times, and each time, the doctors, nurses, clinical assistants, and receptionists have documented her history at least once. If Sophie had suffered from a more complicated or less familiar disease, her history would have been taken even more times and in more detail.

Outline of the Dissertation

I first met Sophie in the inpatient ward and based on her history I could tell what primary care clinic she came from and what staff had cared for her along the way. Based on my observations of many asthmatic children in each of the settings she traveled through, I have reconstructed Sophie’s trajectory and the repeated documentation of her medical history.

Based on Sophie’s case, it is not difficult to understand the motivation behind the dream of the universal patient record. Healthcare is an immensely complicated social system. Hundreds of nurses and physicians are constantly on the move. They collaborate with colleagues within a clinic, across departments, and across institutions. They coordinate their activities across the places that the patients, like Sophie, travel. They coordinate their activities across time to make sure that there always will be somebody to care for Sophie and patients like her. Having all the information they need, at their fingertips, would presumably save them and the patients from reporting and documenting their histories again and again. Nevertheless, a closer look at work activities of doctors and nurses and in particular, the practices that go into documenting patients’ histories, fundamentally questions whether the universal patient record should be the ultimate goal. In this dissertation, I take such a close look at nurses’ and doctors’ use of documents in dealing with patients’ histories.
The reminder of this dissertation is organized as follows. Chapter two builds a framework for understanding the use of documents as tools for the sharing of knowing within and across organizational settings. Distributed hospital work offers a useful environment to develop this perspective for a number of reasons which are discussed in Chapter three. The choice of research site and a multi-sited ethnographic method used to collect data are also discussed, along with a brief description of my right of access to the sites studied. Chapters four, five, and six present the ethnographic data at the core of this thesis. Chapter four provides a descriptive overview that serves as the basis for the following analysis. I compare primary care clinics, emergency room, and inpatient wards in terms of their temporal and spatial structure, use of documents, and typical work rhythms of doctors and nurses.

In Chapter five I pinpoint types of document genres used in these settings. Based on analysis of how doctors and nurses use each document to navigate healthcare’s many temporal rhythms and locales, I build a taxonomy of document genres, an important element in understanding how nurses and doctors share their practical knowledge and coordinate work within and across healthcare locales. I find that nurses and doctors use medical documents as maps and itineraries. I have chosen the term “itinerary” carefully as it implies people’s coordination across time and place. It allows me to emphasize the temporal and spatial structures guiding doctors’ and nurses’ work within and across healthcare locales.

Chapter six points out that each document is rarely used in isolation from other documents. Doctors and nurses constantly combine and recombine the many documents they use as part of their daily work. I introduce two major types of document recombination. First, doctors and nurses routinely recombine documents in folders, charts, and racks, or they recombine documents by moving among them. Secondly, staff members routinely sequence their document genres, in the sense that they use one document genre to produce another document genre. Based on these analyses I argue that each setting can be described in terms of a unique set of document combinations that gives texture and structure to the local work. This in turn creates opportunities and constraints when sharing documents within and across locales.
Chapter seven returns to Sophie's case and asks what happens to patients as they travel across healthcare settings. I introduce the notion of "re-localization" to describe the process of sharing across distributed healthcare settings. I argue that patients moving across locales are continuously made a part of the temporal and spatial structures of doctors' and nurses' work practices. This serves as a summary of the key issues raised by the dissertation. I conclude by drawing implications for our understanding of and practical approach to electronic documentation in healthcare and the universal patient-centered record. I argue that the field of medical informatics should approach its object of study as first and foremost practice-centered records, and only secondly as patient-centered records.
Chapter 2 – Theory: Using Documents to ‘Go on’

Introduction

Sophie’s case raises the question: How do doctors and nurses use documents to share their individual and collective knowing about patient care across distributed healthcare settings? The purpose of this chapter is to take this question apart and look at its different elements, and in the process to outline a framework that guides further analysis of Sophie’s case as seen from the perspective of the doctors, nurses, and clinical assistants caring for her along the way. One can break the question up into three parts: 1) How do doctors and nurses share their individual and collective knowing about patient care? 2) How do they share their knowing across healthcare settings? 3) What role do documents play in this sharing of knowing? The approach taken to address these three sub-questions is grounded in practice theory. I elaborate this perspective by drawing on literature that takes as its point of departure the temporal and spatial organization of work practices. Let me start by turning to the first sub-question, the issue of knowing.

Sharing and Knowing in Practice: ‘Going on’

A practice theory grounds me in what it is doctors and nurses do every day to get their work done (Orlikowski, 2002). I take my definition of knowing from Giddens. He defines knowledgeability as “inherent in the capability to ‘go on’ within the routines of social life (Giddens, 1984b: 4). Knowing is not static or abstract representations contained in the head of individuals or well-defined rules or abstract models with intrinsic features (Rorty, 1979; Walsh, 1995). Rather this ability to “go on” is embedded in our human agency and ongoing social accomplishments, produced and reproduced in our everyday practices. If we extend this notion of knowing to groups of people, one can define the sharing of knowing as the ability to “go on,” not only for the individual, but also for the participants involved in the sharing of these capabilities. Hereby, I draw on the intransitive, rather than the transitive, meaning of the word “share.” According to The Universal
Dictionary of the English Language (1989) the transitive definition of the verb “share” connotes:

“1. Share out, to distribute, apportion, hand out in shares: to give out food and clothing to the poor. 2. Share with, to give a share of to (another person) and retain a portion for oneself: to share one’s dinner with a beggar, one’s purse with a friend. 3. To participate in use or possession of, enjoy in common with others: we had better share the food, profit, glory.” (Wyld, 1989: 1102)

In comparison, the intransitive definition of “share” connotes:

“To have a share; to take, play a part in; to participate in: to share alike in the hope and anxieties of parenthood; Phr. share and share alike, (of several persons) to participate equally in use or enjoyment of something distributed.” (Wyld, 1989: 1102)

The transitive definition assumes the sharing of a thing or object. It assumes that something is being passed between people. Such a definition would be appropriate if we assume that “knowledge as thing” is the guiding idea. However, if we are serious about knowing as “the ability to go on” then we must refer to the intransitive meaning of the word. Paraphrasing the last sentence in the intransitive definition one could ask what instances doctors and nurses use documents to share and share alike their knowing?¹

A number of scholars in cognitive anthropology and organizational learning stress the mutual constitution of knowing and practice. Often referred to as theories of situated knowledge, this literature demonstrates through extensive fieldwork the social and culturally situated nature of knowing in everyday and ongoing work practices (Boland & Tenkasi, 1995; Brown & Duguid, 2000; Carlile, 2002; Engeström, 1999; Hutchins, 1995; Lave, 1988; Lave & Wenger, 1991; Pentland, 1995; Suchman, 1987; Wenger, 1998).

Among these scholars, knowing is perceived to be situated in communities of practice or

¹ It is worth noticing that this conception knowing and sharing as an ongoing social accomplishment, constituted and reconstituted in everyday practice brings it close to the notion of coordination of activities among collaborators. Sharing of knowing includes the effort to coordinate the interdependencies among collaborators in an effort to “go on” with their work. Hutchins’ famous study of a team of quartermasters and their frantic sharing of situated knowledge as they scramble to steer their disabled helicopter carrier in the San Diego harbor illustrates the close ties between the sharing of knowing and the minute coordination among community members (Hutchins, 1991, 1995). Similarly, Pentland has pointed to the close link between knowing and coordination in his analysis of organizational knowing as “moves” (Pentland, 1991). This close tie between the sharing of knowing and coordination becomes particular important as we highlight the temporal and spatial dimensions of doctors’ and nurses’ practices. In the following analysis I stress the notion of knowing and presume the notion of coordination.
activity systems. Such communities or systems are comparatively small and well-defined groups working in relative temporal and spatial proximity. More recently, a number of these scholars have studied the problems associated with the sharing of knowing across communities of practice or activity systems (Orlikowski, 2002). These include the engagement in knotworking (Engeström, Engeström, & Vahahaho, In Preparation), boundary practices (Wenger, 1998), and cross-communal forums (Boland & Tenkasi, 1995), or the use of boundary objects (Carlile, 2002; Star, 1989) and translators and knowledge brokers (Brown & Duguid, 1998). Where these approaches have emphasized the sharing of knowledge across specific boundaries shared by a limited number of communities, little is known about the process of sharing knowing across multiple communities of practice whether within the same or distributed settings. In particular, these approaches have proved effective in calling our attention to the stakes and dependences across specific boundaries and the negotiation of these stakes and dependencies as part of knowledge sharing (Carlile, 2002).

Sophie’s case engages many different communities of doctors, nurses, clinical assistants, secretaries, radiologists, and janitors distributed over three settings in the course of less than 24 hours. These people use a large number of documents as an integrated part of their work. Initially, I approached this fieldwork with a focus on the sharing of knowing within and across communities of practice. I found that nearly all practices could be described as boundary practices, most people routinely served as translators and knowledge brokers, the majority of documents stood out as boundary objects, and daily meeting such as rounds served as cross-communal forums. Even people who share practices to the degree that they examine the same patient at the same time, as in Sophie’s case, can be seen to be part of both the same and different communities of practice.

In an effort to understand the sharing of knowing that takes place as Sophie moves across these settings I will try to avoid privileging one boundary over others. To allow for the possibility that a doctor or a nurse may engage in more than one community of practice in the course of their work, I will, for the purpose of this analysis, refrain from situating knowing in communities of practice, but instead return to the basics: knowing as the ability to “go on.” I will take this “going on” rather literally and turn to a set of practice theories
that approach everyday work activities as the unfolding of people’s movements or paths in time and space.²

**Time, Space, and Social Interactions**

Over the last couple of decades there has been a convergence between geography and the other social sciences, in which social geographers, drawing on established traditions of social theory and in particular practice theory, have contributed to social thought by defining new areas of inquiry relating to the globalization of social relations and systems. At present one finds an abundance of research laying out the temporal and spatial dimensions of social practice (Bird & al., 1993; Gregory, 1994; Gregory & Urry, 1985; Harvey, 1989, 1996; Massey, 1994; Pred, 1985, 1990; Tuan, 1977).

To narrow my focus within this large body of literature, I focus on Hagerstrand's time-geography, which has served as a stepping-stone for many of the more recent time-space analyses of social activity. Time-geography offers a framework for the analysis of human actions across time-space. Hagerstrand takes as his point of departure the routine character of daily life. He connects these routines to the means of mobility and communication that people have to shape their daily and long-term trajectories and interactions. Based on research in a Swedish parish, which boasted comprehensive population statistics, Hagerstrand traced all the individuals who had lived there and move in and out of the area for about a hundred years. He then maps out the typical patterns of movement as cycles of routine activities. In other words, time-geography explores how actors develop specific and habitual time-space paths (Giddens, 1985b; Gregory, 1985; Gregory, 1994). Time and space are resources on which individuals draw in order to realize particular projects. These projects are subject to constraints. Hagerstrand's main concern is to identify sources of such constraints over human activity as given by the human body and its means of mobility and communication. In particular, there is an

² Notions of time and place rest at the core of Giddens’ social theory of structuration and knowing, and permeate some of his most prominent publications (Giddens, 1979, 1981, 1984a, 1984b; 1985; 1985; 1990, 1991). Giddens argues that any pattern of social interaction is situated in time and space. In order to see patterns in social practice we need to study interactions over time and place. The routines that comprise social practices gain their ‘routineness’ only in so far as they persist in time and over space. Social practices have beginnings and ends that must be managed by the participants.
emphasis on the physical context in which activity occurs. These constraints specify the
general limits to behavior across time and space. Hägerstrand outlines three constraints,
which are elaborated by Carlstein (1982), Giddens (Giddens, 1985b), Gregory (1994), and
Nandhakumar (Forthcoming): capability, coupling, and authority constraints. "Capability
constraints" are limits set by the physical constitution of individuals, such as the
indivisibility of the body, which means that people cannot be in two places at once. Some
affect primary time distribution, for instance, our need for sleep or food, which ensures
certain limits to the structuration of daily activities. Medical residents, routinely working
more than 90 hours a week, can attest to this constraint, and policy changes instituted this
year (2002) limits their duty period to 80 hours a week. Most recent debates about medical
failures, finding that mistakes in US hospitals kills 44,000 to 98,00 patients a year, argue
that many mistakes can be explained by fatigue among doctors and “crummy
communication” (Grant, 2002). Fatigue relates to the capability constraints of doctors. The
“crummy communication” relates to Hägerstrand’s second constraint, coupling constraint.
"Coupling constraints" refer to those limits that condition activities undertaken jointly with
others. The volume of time-space available to an individual in a day bounds the pursuance
of projects. The boundaries of those capabilities are strongly influenced by the means of
communication and transportation available to agents. Documents and other information
systems become important here, as we will see shortly. "Authority constraints" refer to the
limits set by social power relationships, including the pretermission to perform certain
activities or be in specific places (Nandhakumar, Forthcoming: 4).

Subjected to these constraints, an individual’s typical movements can be
represented as cycles of routine activities across days, or longer spans of time-space. We
wake up at a particular time and place, later we may leave our home to mingle with other
people at designated times and places only to return home later in order to prepare for the
repetition of the day’s cycle.

The French social scientist de Certeau, in his book on the practice of everyday life,
promotes a comparable rendering of practices as time-space paths (de Certeau, 1984).
Daily lives can largely be seen as people orienting their practices as they travel through
time and space. He takes a step further and argues that in our own recounting and
representation of our practices we most often describe these in terms of a travel or series of activities in time and space, not merely as statements of detached activities or places. Even when people describe physical spaces they predominantly do so by describing the movement or path through them rather than mapping out each element’s position in relation to another. Referring to a study by Linde and Labov of the descriptions New York residents gave of their apartments, he distinguishes two types, which he calls the “map” and the “tour.” The first is of the type: “the girls’ room is next to the kitchen.” The second: “You turn right and come into the living room.” In New York only three percent of the descriptions are of the map type. The remaining 97 percent are of the tour or path type (de Certeau, 1984: 119). In other words, we organize not only our practices but also our representations of places and activities as paths or movements through them.

Generalizing Hägerstrand’s idea to groups of people, we can trace the points in time and space where people convene and depart. Social interactions from this point of view involve the coupling of paths in social encounters, or what Hägerstrand calls "activity bundles" (Hägerstrand, 1975). Such activity bundles occur at definite "stations" - buildings, departments, or clinics, where the paths of two or more individuals coincide. These encounters dissolve as the actors move off in space and time to participate in other activity bundles. The result becomes a portrayal of social activity as a weaving dance through time-space. The important point here is the image of social activity as the coordination of movements in time and space. Interactions can be seen as the coupling of time-space paths. Hägerstrand's "time-space maps" provide a graphic representation of the general idea.

The diagram in Figure 2.1 depicts the idea in its simplest guise. Two individuals, say Sophie and her primary care doctor, live a mile apart in a neighborhood. Their time-space paths during the course of the day bring them into contract in a short encounter during Sophie's visit in the clinic, after which their activities again diverge as Sophie travels to the ER and the primary care doctor goes home to his family after spending some time catching up on his paperwork. A typical path of a patient like Sophie with a bad asthma attack can be drawn as a trajectory through a number of healthcare stations including the primary care clinic, the ER, and the inpatient ward.
The encounters individuals engage in through their daily paths are subject to the constraints indicated above. Hägerstrand acknowledges that agents are not mere mobile bodies but intentional beings with projects and purposes. To realize these projects, individuals have to shape their time-space paths to overcome the specific capability and coupling constraints they confront.

**Figure 2.1 – Time-Space Map**

If we shift focus from the individual to organizations we can argue that many important organizational transformations follow precise planning and execution of coordinated time-space paths. Taylorism, as an example, involves the engineering of subtle variation in the timing of bodily movements among coworkers, machines and materials. In a recent study Nandhakumar (Forthcoming) presents a study of a software development organization producing executive information systems. Based on participant observation of the software developers’ daily work practices he uses time-geography to map out who does what, where and when and their time-space paths. His analysis depicts how software developers spend time on a broad range of projects and activities, which introduce several different temporal frameworks into their daily work. The software developers manage their individual time-space paths by collectively creating formal and informal social spaces used
at specific times. This allows them to coordinate their activities and manage the complex
workload characterized by many interruptions. Nandhakumar contrasts his research
findings to formal time and project management tools routinely prescribed for IS
development and used by the software developers he studied. The time management tools
propagate a monochronic clock time and leave out the spatial aspects of IS development
all together. Instead they treat each development project as decomposable into discrete
activities with estimated duration and interactions. They become unable to describe why
most IS development projects overrun time limits often related to the complex interactions
among several projects posing capability and coupling constraints on software developers -
issues that can only be seen when analyzing the ways software developers struggle to
manage and overcome the constraints imposed on them and pack their time-space paths to
the brim.

As Nandhakumar illustrates, time-geography allows us to describe the time-space
constraints facing organizational members as they package their daily activities and
coordinate them with each other. More importantly, he points to how people's interactions
can be described as convening in bundles of activities often designated for particular
activities. In other words, Hägerstrand formulates a rudimentary conception of the
situatedness of activities as seen in terms of time and space and how actors move among
different settings (i.e., stations) in their daily routine activities. He provides some
indispensable conceptual clues for my analysis. Nevertheless, time-geography has some
distinct shortcomings. It cannot serve as the sole basis for analysis of doctors' and nurses’
movements and coordination within and across settings. Let me summarize my main
reservations. These will also structure my further conceptualization in the following
section.

First, time-geography operates with a rather mechanical conception of the
individual. We seem to come into being independently of the social setting that we
confront in our daily lives. People may have projects but we do not get a sense of their
origin and how they fit into the larger division of labor or organization of a social setting.
This leads to an incomplete conceptualization of the setting for interaction that takes form
around the groups' "bundles of activity." "Stations" as formulated by Hägerstrand are taken
as a given and we do not get a sense of the larger organizational composition, formation and change (Giddens, 1985b). To put it differently, Hägerstrand emphasizes, on the one hand, the temporal and spatial dimensions of the day-to-day experiences and how these are constituted in repetition and the recursive nature of social life. On the other hand, he focuses on the constraints within the life span or life trajectories of individuals. He does not include a conception of the temporality and spatiality as they take shape in organizations and other institutions. In short, we need to further develop our conception of the settings around which people organize their activities. I will draw on Giddens notion of "locale" to flesh out this aspect of my framework.

Second, Hägerstrand concentrates on the constraints facing individuals and their movements through time-space. What he does not articulate is how all constraints are also types of opportunities. He lays out capability and coupling constraints mainly as scare resources. This leaves us with little material to describe how doctors and nurses use these constraints as opportunities in their coordination of work across time and space. For instance, we find no sense of the strategic use of space and time as formulated by Bourdieu in his description of how people produce and reproduce social structure largely through their stretching and bending of time expectations associated with particular social rules or activities (Bourdieu, 1977). Equally important, where information systems and transportation systems are mentioned as part of the shaping of capability and coupling constraints, we do not get a sense of how actors actively use documents and other information systems as ways to not only overcome certain constraints but also to navigate the time-space configuration of organizations to their advantage. In brief, we must articulate doctors’ and nurses' strategic and intentional use of documents as ways to overcome time-space constraints but also as ways to navigate multiple and interdependent time-space configurations.

Third, one can pose a critique of Hägerstrand's weakly developed theory of power. He does talk about "authority constraints." Yet, power is conceived as solely a constraint. He does not see power as generative and posing opportunities, as can be found in Bourdieu's notion of "fields of power" (Bourdieu, 1984) or Giddens’ discussion of power as the ability to perform (Giddens, 1979). In order to focus my analysis in the following...
chapters I will not go into a more detailed discussion of power. Medical sociologists, medical anthropologists, and popular culture have already painstakingly addressed the issue (Abbott, 1988; Anspach, 1993; Becker & al., 1961; Beuf, 1979; Bosk, 1979; Freidson, 1970; Good, 1994; Good, 1995; Heimer & Staffen, 1998; Konner, 1987; Larson, 1977; MacDoland, 1995; Millman, 1976; Shem, 1978; Strauss & al., 1985). However, I my inattention to issues of power in this work is not intended to negate the importance of power as a resource and constraint in doctors’ and nurses’ work.³

**Locales and Regionalization**

Hägerstrand's time-geography emphasizes the integration of temporality into our notion of place and more general into social theory. His description of capability and coupling constraints points to the importance of presence and absence of agents in social settings as the basis for our conceptualization of setting or locales. Hägerstrand does not subject the notions of place or location to a close conceptual scrutiny. Nevertheless, the notions of presence and absence as a basis for the study of social settings have reverberated through more recent literature in social geography and scholars drawing on this literature. A place for interaction comes to life when people convene in that setting at the same time to engage in some form of interaction. Social geographers commonly employ the term "place" to characterize bounded settings for social interaction. However, to avoid the very physical and geographical connotations of the term "place," I adopt Giddens' concept of "locale" (Giddens, 1979). Locales refers to the use of space that provides the setting of interaction and becomes essential for the specification of it contextually or its social and historical constitution (Giddens, 1985b: 271). A locale is not just a spatial parameter, the physical environment in which interactions occur. It is the setting where people mobilize the physical properties and temporal structures as part of their interaction. People draw not only on its physical and temporal properties but also the socially shared expectations associated with that locale. A primary care clinic is grasped as such only if the participants recognize it as a healthcare locale. In this way, these become more than mere stopping

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³ For a discussion of power related to the analysis in this text see (Østerlund, 2000).
places or "stations" where agents' trajectories are arrested for the duration of a social interaction (Giddens, 1985b: 272). Locales become meaningful places for routine interactions. Hereby, one can tie the locale to the larger organizational properties of social life.

Giddens further subdivides locales into "regions" (Giddens, 1979, 1985b). The notion of regions can be compared to the concept of 'zone' used in architecture. Giddens' definition of "region" and the "rationalization" of locales draws heavily on Goffman's use of the term in his early writings on the presentation of self in everyday life (Goffman, 1959) and elaborated in his later work on frame analysis (Goffman, 1974). Goffman also defines these regions in terms of time-space relations. The separation of living space from sleeping space in homes, he points out, is not only differentiated in space but also in time of use. Let us return to Sophie in order to illustrate the notion of region and how locales can be regionalized. Sophie's primary care clinic is a locale, which is a station for a cluster of interactions from 8am to 6pm. The clinic is zoned or divided up into regions. Patients and relatives occupy the waiting room whereas doctors and nurses rarely venture into this place. The registration desk sits in between the waiting room and res: of the clinic, which in turn is sub-divided into a region for patient examination rooms, a region for physicians' and nurses' offices, and a region for tests and procedures. Patients' paths never take them to the physicians' offices nor to the test room, just as physicians' and nurses' paths rarely take them through the waiting room.

The temporal organization of people's paths plays an equally important role in subdividing locales. Zerubavel's study of the temporal organization of hospitals demonstrates this point (Zerubavel, 1979). The regionalization or zoning of doctors' and nurses' practices are to a large extent shaped by the temporal cycles of activities that structure hospital work. Zerubavel analyzes the temporal cycles of the professional career, the coverage system and the doctor's and nurses' routines. He finds that the year, the rotation, the week, the day and the duty period, force both routine and non-routine events and activities into regular and cyclical temporal patterns. This introduces a rhythmic structure to hospital life. Even purely medical events and activities are forced into rhythmic patterns that are dictated by non-medically based schedules (Zerubavel, 1979: 35). For
instance, social conventions around the rhythm of the duty period partly dictate the spacing of medication giving so that they fit into the Nurses Report and change of shift and the doctors' rounds. Likewise, the discharging of patients is timed according to the official 24-hour billing cycles. If a patient stays in the hospital past midnight they enter a new day and will pay for the next 24 hours. Doctors and nurses often time their discharges in accordance to this cut-off time at midnight. Weekly and daily zones are also punctiliously categorized. Many routines occur at specific times of the day. Weekdays are not identical to weekends. Most tests and procedures are only available on weekdays or offered at a greatly reduced schedule during the weekend. Physicians and nurses go to great lengths in order to structure their care so that these activities do not coincide with a weekend. They try to admit as few patients as possible on weekends and to avoid initiating new treatment programs for existing patients.

These cyclical temporal rhythms are often perceived and dealt with as discrete segments of time, though they are merely segments of the temporal continuum, which have been carved out. They are often treated as rigid temporal regions or zones that are for all social purposes "untrespassable" (ibid.: 2). An intern is an intern from the 1st of June to the 30th of July a year later. That means that a dehydrated 3-week old with vomiting and fever showing up in the ER in the late summer needing an IV is likely to go through a lot more poking than a child seen in the spring. More painfully, a child subjected to a spinal tap can expect a different experience depending on the time of year given the cyclical structure of the medical career system and rotation cycles.

The issues of presence and absence prevail in the temporal structure of hospital life. These are not dealt with under some master organization of time-space paths. Zerubavel argues that many social cycles pervade hospital life and involve a multiplicity of levels on which staff is considered "present" there. For instance, the cycles of the duty period clearly define expectations of an intern's presence, as does the rotation. Every four to five week interns move to a new rotation in a new department. Zerubavel describes three patterns of temporal coordination through which doctors and nurses face the problem of capability and coupling constraints, that is, the limits to how much activity one individual can pack into a
certain time-space and the limits for people to come together in the same place at the same time.

First, some work schedules are designed as duplicates of others and a shadow role emerges. This pattern is characterized by apprenticeships. Medical students for instance, shadow individual interns. A medical student has to stay on night duty whenever the intern does. Zerubavel calls this "temporal symmetry" (Ibid.: 60). This assures a high degree of presence among people moving in symmetrical temporal patterns. Second, another temporal pattern contrasts the first by designing schedules to complement each other. The distribution of night and weekend duties within a medical team of interns is designed so that one team member always will be on duty. In this way the team creates a continuity of coverage for a group of patients that one person could not accomplish due to his or her capability constraints. Zerubavel names this "temporal complementarity." The third temporal pattern builds on a “staggered coverage.” Nursing shifts’ overlap by about half-an-hour allowing the day nurses to give reports to the night nurses before going home. The same pattern repeats itself in the morning. On the medical teams consisting of a group of interns and one senior resident, the two groups do not start a new rotation at the same time. Typically a senior resident works with one team of interns for two to three weeks before getting a fresh group of interns on the rotation for a week or two before the senior moves on to a new rotation. This temporal rhythm deals directly with the coupling constraints of social interaction as it guarantees that a group of people will be available for a specific duration of time. On the medical team it assures continuity so that a group of patients do not face an entirely new group of physicians at any point during their stay in one locale.

Many of these temporal cycles run independently of one another with little or no attempt to coordinate them. No one person in a hospital has the total view of the many temporal regions and their interdependencies. Not surprisingly these often lead to conflicts. Zerubavel is led to summarize the social structure of hospital work as mosaic-like - a structure that is not planned from above but emerges from below. Equally important, doctors and nurses operate with several temporal frameworks in their daily work. They structure their activities according to multiple time-reckoning and dating frameworks which they constantly switch between, whether it is trying to fit another patient interview
in before grant round or making sure that a one-year-old boy with a urinal tract infection gets a VCUG test performed before or after the weekend. Doctors and nurses thus structure their daily paths in a constant push and pull between different regionalized temporal rhythms. To put this differently, clock time rarely prevails under pressure from multiple other temporal rhythms. Consider the following example. When a mother with a 4-year-old asthmatic son waiting in a primary care clinic at 3 pm asks the front desk secretary how long she has to wait, the answer will often be: "There are two patients ahead of you." This does not help the mother much, with only 45 minutes to go before she has to pick up her 8-year-old daughter from school. From the secretary's perspective, however, this is the most exact and meaningful temporal marker she possesses, specifying the duration before she can let the patient into the exam room. The number of patients serves as a temporal and spatial measure for her work in the clinic. To answer the mother with a clock time interval would at best be a rough guess, to which the secretary would not want to be held accountable. If that particular mother goes to the emergency room after picking up her daughter, the secretary there is not likely to even estimate how many patients are to be seen before her son. It might be 10 patients at the time of the question, and 17 patients half-an-hour later, all depending on the urgency of care required by other children showing up at the triage desk. In this situation, the stakes and activities of the mother and the secretary embody markedly different time-space constraints, one straddling the geographical expanse of a busy parent, the other the unpredictable rhythms of a small primary care clinic or an emergency department.

Returning to Nandhakumar's study, we find that his software developers worked under a comparable pressure of multiple temporalities or temporal rhythms given by the many different projects and routine tasks characteristic to software development organizations (Nandhakumar, Forthcoming). It was often impossible to create any temporal symmetry among these activities. The software developers partly managed the multiple temporalities by regionalizing their activities, where each region operated with its own "group-time budget." For instance, the timing and location of project meetings were institutionalized and partitioned particular activities. Other locales such as the office, foyer, and cafeteria partitioned other routinized social practices. Still, many different activities
were competing for the software developers' limited time and spatial resources and had to
be fitted into and interwoven with a stream of other activities (Ibid.: 9). The software
developers were generally able to switch between different activities throughout the day.
Considerable parts of their work were of necessity improvised and even planned activities
were continually changed. Nandhakumar might as well have used Zerubavel’s notion of
mosaic to describe this improvisational structure but draws instead on Ciborra’s use of

In summary, by coupling the notion of locale drawn from Giddens and Hägerstrand
with Zerubavel's description of the cyclical structures of hospital life we can demarcate
specific healthcare locales defined by their spatial and temporal boundaries. For instance,
Sophie travels through at least three healthcare locales in the course of the first 12 hours of
her asthma attack: primary care clinic, ER, and inpatient ward. Furthermore, we can
regionalize each of these locales by analyzing the temporal cycles emerging out of doctors’
and nurses' attempts to deal with their capability and coupling constraints. This being said,
Zerubabel's analysis does not make the spatial aspects of organizing explicit. The use of
documents and other technologies used to facilitate or mediate temporal rhythms and
coupling constraints remain largely untouched. Let me briefly return to the larger debate
within social geography in order to specify the importance of space in my framework about
coordination across healthcare locales. This leads to a discussion of documents as one tool
used to deal with the problem of presence and absence of collaborators.

**Sharing Across: Extending social relations beyond face-to-face**

Let me pause and recap the theoretical problem at hand. If we accept the basic
description of social interaction as the ordering of individual time-space paths, the notion
of presence and absence of collaborators takes on great importance. In Hägerstrand's
words, people are organizing their interactions in accordance with their capacity and
coupling constraints. Many recent publications coming out of or drawing on social
geography, including Giddens, take this conundrum as the axis around which they build
their theoretical concepts. The questions become: How do social systems extend their
interactions in time and place? How do they deal with the problem of presence and absence
of social actors? How do people coordinate their work without necessarily being in the same place at the same time? Or we can formulate the issue along the lines of the problems facing doctors and nurses: How do they share their knowing about Sophie's care across healthcare locales?

Giddens argues that all social systems develop strategies for extending themselves across time and space. Large parts of the literature on modernity, postmodernity and globalization coming out of social geography, as well as Giddens' publications on these issues, operate with two clusters or basic types of time-space extensions. The one cluster is characterized by social organization primary based on face-to-face interactions, with the second cluster focusing on social relations not primarily based on co-presence but mediated by various information, communication, and transportation technologies. The former type of relation is supposedly organized around a "place," and the latter around "space" (Casey, 1997; Giddens, 1991; Gregory, 1994; Harvey, 1996; Schultze & Boland, 2000). Without getting too much into the details of these frameworks, let me briefly distinguish my conceptual endeavor from this highly influential bipolar conceptualization of time-space relations, which recently has found its way into the literature on the organizational implications of information system and information system design.

Pre-modern societies typically serve as examples when elaborating the notion of place. These social formations are bounded locales with unique qualities. Groups lay claim to the domain or spatial extension as their territory of operation. Giddens terms this "high presence-availability" where we find a limited stretching of social relations in time-space (Giddens, 1990). Place implies that people and things are "implaced," through the participation in face-to-face relations (Casey, 1993; Giddens, 1991). Everything has its proper and rightful place within a boundedness and cyclical time. Events recur in accordance with tradition or other rhythmic repetition of social interactions (Harvey, 1989). In other words, people and events are situated in the here and now. Time and space of social interactions becomes nearly indistinguishable in their tightly interwoven practice. Zerubavel's description of hospital work would fit into the category of implanted and bounded social relations. His description of the cyclical temporal structure characterizes the extension of social relations within the bounded locales found within a hospital.
The notion of space, in contrast, refers to social organization that stretches across boundless, universal times and places. Relations are not bound by circumstances of co-presence. The lifting of social life out of the local place is facilitated by information, communication, and transportation technologies (Harvey, 1989). Practices and social relations do not necessarily have a designated place. People can interact and coordinate their activities beyond the immediate constraints of a given time and place. Giddens characterizes this as a divorce of space from time. Where pre-modern societies exemplify place, modernity stands as the prime example of space. The conquests of industrialism are explained as an organizational form capable of overcoming temporal and spatial constraints that limited the interactions and thus productivity in traditional societies. The standardization of time and space and homogenization of the social world make possible a lifting out of social relations from local contexts. It does not matter where you are and when. Standardized time keeping and abilities to communicate across space allows social relations to stretch across wide spans of time-space. Time is separated from space in the sense that our paths do not have to intersect in time and space for us to interact and coordinate our activities. In Giddens' words:

"Modern social organization presumes the precise coordination of the actions of many human beings physically absent from one another; the 'when' of these actions is directly connected to the 'where,' but not, as in pre-modern epochs, via the mediation of place." (Giddens, 1991: 17)

The level of abstraction and the focus on large-scale changes in societies across centuries clearly found in this debate on place and space do not speak directly to our concern with the day-to-day care for patients in primary care clinics and hospitals. Individual actors, when discussed by these authors, serve as examples for large scale changes or deal with the time-space paths over the course of a person's life. Furthermore, it is interesting to notice that these scholars predominantly discuss the impacts of information, communication, and transportation technologies in regard to space and not how these artifacts are used as part of the daily unfolding of people's time-space paths. They do not seem to be interested in how people mix local interactions with social relations extending over time and place. Discussions of postmodernity do refer to a renewed interest in the merger of place and space. This mix of place and space, however,
does not satisfy our need for understanding the stretching of social relations in hospital work. The examples that motivate these analyses primarily refer to interactions in online environments.  

Giddens does refer to the use of writing and text in pre-modern societies, exemplified by the King’s keeping of tallies and lists to record their achievements in government and in war (Giddens, 1981). Again, these descriptions do not help us conceptualize how doctors and nurses use documents as tools to mediate their interactions within and across the day-to-day care for patients. We need a notion of document use that supplements Zerubavel’s temporal analysis of hospital work, allowing us to understand how the recording of patient histories helps doctors and nurses interact and coordinate across healthcare locales. Despite these shortcomings, the debate on place and space does hint at how people use documents to extend their social relations across time and place. In the following section, I use these as a springboard for a discussion of the use of documents in hospitals that is characterized by both face-to-face activities and relations across locales.

Documents: The Extension of Social Relations Across Locales

The literature on time-space, including Giddens’ work, does not go into much detail when addressing issues of writing and other communication and information technologies as tools for overcoming time-space constraints and issues of presence and absence. I have not found a systematic discussion of various types of writing and its use in the extension of social relations across time-space. As in Harvey’s case, communication, information, and transportation technology are referred to as the holy trinity of time-space compression (Harvey, 1989). I will not attempt to tackle this trilogy but focus solely on writing. In Giddens work, in particular, writing stands out as a principal strategy for the extension of interactions across time and place. Historically the development of writing opens up for the stretching of social relations in time-space. Giddens’ appears to elaborate

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4 Postmodernity marks the end of modernity’s fascination with space and the beginning of a renewed nostalgic interest in place and a yearning for its return. However, postmodern understanding of place does not exhibit the simple boundedness, immediacy, and intimacy associated with a pre-modern sense of place. Instead, the postmodern place is a virtual, placeless place that is shared by a dialectic interweaving of local and global, of presence and absence, and of being somewhere and being nowhere.
different aspects of documenting as a tool for social integration across time-space (Giddens, 1979, 1981, 1985b). From my readings I have extracted four perspectives on documents used to extend social relations across time-space. Documents as: communication devices, storage and encoding devices, maps, and timetables (see Figure 2.2). In the following, I briefly introduce each type and then elaborate on it by drawing on scholars outside the time-geography literature.

<table>
<thead>
<tr>
<th>Documents as:</th>
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<tbody>
<tr>
<td>Communication devices</td>
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<tr>
<td>Storage and encoding devices</td>
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<tr>
<td>Maps</td>
</tr>
<tr>
<td>Timetables</td>
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**Figure 2.2 – The Extension of Social Relations Across Time and Space**

**Documents as Communication Devices**

The practice of writing allows for the temporal or spatial absence of one or more party in an interaction. The text makes possible communication across time and space that bears certain similarities to the interaction with the physical presence of individuals. The literature on “place and space” and especially authors with a postmodern bent do not focus on everyday communication practices in time-space management. Rather the debate centers around the stretching of the person’s body in time-space. Poster, for instance, argues that a person’s body is no longer an effective limit to an individual’s position (Poster, 1990). “Informational bodies” substitute the need for physical presence and free people to pursue interactions in many times and places more or less independently of each other. The person’s body is no longer the effective limit to an individual’s position in time and space (Schultze & Boland, 2000). Scholars like Harvey, Gregory, and Giddens make claims about the function of documents and other artifacts as part of their larger argument
on the extension of social relations; but in contrast to my project, theirs does not explicate the social means of facilitating document supported cooperative work practices.

Genre analysis as formulated by Orlikowski and Yates allows me to further articulate the work practices involved in the temporal and spatial organization of document use and how those influence the ongoing communicative actions of people through their use within and across locales (Orlikowski & Yates, 1994; Yates & Orlikowski, 2002; Yates, Orlikowski, & Okamura, 1999; Yates, Orlikowski, & Rennecker, 1997). Orlikowski and Yates analyze use of communication technologies as social practice. Their work offers a framework that highlights the temporal and spatial organization of communication practices, including those that go into the use of documents.

The concept of genre originates in literary and rhetorical analysis (e.g. Bakhtin, 1996) but has recently been appropriated into a literature striving to typify social actions (Bazerman, 1995; Brown & Duguid, 1991). Orlikowski and Yates have extended this framework to organizational communication and examine these as “socially recognized types of communicative actions habitually enacted by organizational members to realize particular communicative and collaborative purposes” (Yates & Orlikowski, 2002: 1). Communicative genres, then, are not restricted to documents but include meetings, training reports, as well as reports, resumes, and announcements. Yates and Orlikowski identify genres by their socially recognized purpose and form. These are socially constructed motives and powerful sources of communicative norms for social activity linked to specific situations. Genres can be linked in various ways through improvised or habitual use. First, a community of people may routinely enact a number of genres, which reflect the common knowledge, norms, and expectations that members associate with their mutual communication. The community can be said to draw from a “genre repertoire” (Yates et al., 1999). Secondly, collaborators typically link or network together a number of genres in a way that constitutes a more coordinated communicative process. The journal submission process often serves as an example, where a peer review and editorial decision letter follow the submission of a manuscript. These sequences consist of interdependent genres that are habitually enacted. Yates and Orlikowski define these “genre systems” as:

“... composed of a coordinated, interconnected set of communicative actions that together accomplish an interaction. From an organizational standpoint, much
collaborative activity is organized and defined by such genre systems, so that by examining these genre systems in practice we can learn much about collaboration, in general, and distributed, computer-supported collaboration, in particular. (Yates & Orlikowski, 2002: 5)

Genre systems can thus be seen as organizing structures in the coordination of activity over time and space. They provide expectations about the participants, time, and place of communicative interaction, in addition to its socially recognized purpose, form and content. Yates and Orlikowski summarize these expectations as the who, when, where, why, what, and how of a genre system (Ibid.). In their writings, the authors mainly provide empirical examples of these six categories in relation to genre systems and less so in regard to individual genres. Given the importance of the temporal and spatial organization of work practices and documenting practices, in particular, I focus on the specification of participants, time, place, purpose, form, and content in an analysis of individual genres as well as genre systems.

If we step back and compare genre analysis to the general project instigated by time-geography, we find the two frameworks complement each other in compelling ways. Hägerstrand’s analysis takes its point of departure in people’s paths in time-space. By looking at the time-space paths of more than one person, Hägerstrand shows how they form activity bundles or stations for interaction in space and time as illustrated by his time-space maps. These activity bundles have remained largely unexplored up until now. Giddens’ definition of locales and regionalization supported by Zerubavel’s analysis of the cyclical temporal rhythms in hospitals extends the focus on the paths of individuals as structured in time and space. Genre analysis offers a systematic framework to analyze the practices that unfold in those activity bundles, whether they take place within the boundaries of a locale or through the use of documents stretching across time and place. By fleshing out who engages in what communication when and where, we refine out understanding of the temporal and spatial organization of interactions, whether they unfold face-to-face or across great temporal and spatial divides. We are no longer caught in the dichotomy between presence and absence but can articulate their interwoven nature.
Documents as Storage and Encoding Devices

Some modes of writing, and in particular the use of lists, break with speech and the spoken word. A list, according to Goody (1971, 1987) and Giddens (1981), is a particular type of “container” not just an aid to the memory, but a definite means of encoding information. The keeping of written accounts regularizes information about persons, objects and events. Thus, Giddens argues, it generates power that is unavailable in oral cultures. The list is the most elementary form of information coding, and therefore information storing. Foundational research in the field of Science, Technology, and Society and Sociology of Knowledge takes its point of departure from the analysis of lists. Notably, Foucault (1970) and Latour (1987) study the importance of lists as both hierarchical ordering and practical tools for organizing work and the division of labor. Classification systems are at their core lists of encoded information and knowledge. Latour argues that the primary job of bureaucrats is to compile, shuffle and compare lists. These lists form the foundation for the proliferation of science and as well as empires that control work and division of labor from a distance. Bowker & Star (Bowker, Timmermans, & Star, 1996; Bowker & Star, 1999) further elaborate the importance of lists in a book on classification systems and their social consequences. In brief, documents can be used not only as communication devices but also as classification systems.

Lists and the storing and encoding of information and knowledge provide another means for the stretching of social relations across time and space, beyond the co-presence of interacting parties. Bowker and Star argue: “List making is fundamental for coordinating activities distributed in time and space” (Bowker & Star, 1999: 138). The classification of information and knowledge functions as a means of coordinating distributed information and work. Latour’s notion of “immutable mobiles” highlights this quality of classification systems, where inscriptions may travel unchanged and be combined and compared in many different places and over time, extending social interactions beyond a locale (Latour, 1986). Mary Douglas preempts Latour when arguing that classification systems of all types legitimate social institutions by staking out parallel cognitive conventions. These conventions sustain institutions by describing the way things are in the social world (Douglas, 1986: 48). A host of different terms have been used to
describe such classification systems and how they provide a foundation for social formations beyond immediate face-to-face interaction. Giddens, for instance, introduces the concept of “expert systems” to describe the same process (Giddens, 1991). In modern societies, he argues, lists have been further developed into expert systems that encode information and store knowledge. The expert system mediates interactions across time and space through the employment of technical knowledge with presumed validity independent of the people interacting. Knowledgeable subjects can draw on these systems, which in turn disseminate the system and integrate it into local practices and knowledge. Through the integration of abstract systems into the unfolding of daily life, these conditions spread across large tracks of space. Bowker & Star use the term “boundary infrastructures” to describe a similar dynamic of stretching social relations across multiple communities of practices. Through their use of the term “boundary infrastructure” they highlight how expert systems often are composed of a heterogeneous group of classification systems used for various purposes by different constituencies. Nevertheless, the overall point remains the same: social groups use the encoding and storage of information in documents to stretch their interactions across time and space, beyond mere co-presence.5

Looking back at my original questions posed in the beginning of the chapter one may ask what the notion of documents as classification systems offers in addressing why Sophie has her history taken and recorded repeatedly. It is not difficult to appreciate the importance of globalizing classification systems and boundary environments when turning our attention to the troubled history of large-scale medical information systems, including universal patient-centered records. These information systems represent an effort to disseminate particular classification practices across a heterogeneous field of healthcare settings. A large part of the literature on classification and expert systems within science studies deal with exactly this problem; how do large scale classification systems come

5 Giddens focuses on the generative power associated with the storage capacity and encoding of information and knowledge in lists and other documents. He describes them as means to the storage of authoritative resources. Expert systems stand out as an example of the retention and control of information and knowledge, which in turn serves as an authoritative resource. Drawing on Foucault he argues that “surveillance encompasses the idea that coded information can be used as a resource in the supervision of subordinates and collectives of people, even when the superordinate authority is distant in time-space. These resources are not equally distributed in time-space either according to Giddens (1981). One of his major concerns is to understand how some places become centers for the storage for authoritative resources whereas other places take on a peripheral position.
about and get accepted into, some may say colonize, the daily work of various communities. Bowker & Star offer an intriguing analysis of the development of the International Classification of Diseases system and nurses’ development of nursing information systems (Bowker & Star, 1999). Large parts of Latour’s work describe the solidification of encoding practices into immutable mobiles. One also finds studies of how doctors and nurses pursue ad hoc attempts to tailor broad classification systems to local circumstances and how doctors and nurses work out conflicting requirements of different expert systems (Ibid.).

Important as these issues may be, understanding the development of healthcare information systems is not the problem facing us in the present analysis. My project is not to comprehend the failure or success of global information systems per se, but to understand the current use of documents in the sharing of knowing and coordination across healthcare settings. Medical classification systems do saturate the content and format of many medical documents to be discussed in the following analysis, and specialized medical language serves, without doubt, as the foundation for medical institutions as we know them today. Their use plays a central role in extending social relations across time and place. However, to narrow the scope of my analysis, I do not intend to discuss this role of document use here.

**Documents as Maps and Timetables**

Not surprisingly maps stand out as a type of document that through their use allow people to extend their social relations across time and place. Harvey goes into great detail describing the development of cartography and its role in the expansion of western power across the globe (Friedland & Boden, 1994; Harvey, 1996). Changes in communication and transportation technologies have gone hand in hand with new modes of mapping space

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6 One finds very interesting dynamics in the ways doctors and nurses mediate between the abstract and global knowledge systems provided by medical science and their daily care for patients. An important extension of the analysis in this dissertation would be to articulate how the constant history taking and documenting is part of a continuous mediation between the abstract system and the local circumstances. The history taking and documenting link the abstract categories with the situated problems facing doctors and nurses. This would partly explain why a new history is told and recorded when a patient arrives in a new setting and as a new doctor or nurse faces the patient. Each time, the doctor or nurse bridges the abstract knowledge system with the situated needs for actions through the telling of the patient’s story.
from the introduction of the Ptolemaic map into Florence in the 1400 to online accessible satellite images of the our backyards. Means of cartographic representation allowed individuals to see themselves in terms of different social relations in time and place. In other words, the map becomes an important resource in coordinating people’s time-space paths and enables them to converge and diverge in particular locales across great distances. Groups of people can use maps to depict themselves as distributed over a space but still in a relationship of coexistence. A multiplicity of mapping of the same world is possible depending on the position or the perspective of the people using and producing them. As a town can look fundamentally different depending on the side one views it from, so can maps depict starkly different extensions of social relations in the same space. This becomes important later when we turn to the analysis of doctors’ and nurses’ use of documents with the same and different locales. Turning to healthcare, I have not found scholars explicitly discussing map making. Like Bowker & Star, some discuss the spatial aspects of classification systems and other encoding schemes. These, however, do not deal with space in its geographical sense but merely as the organization of elements into their own “proper” and distinct location in relation to other elements. This aside, mapping and its role in the extension of social relations are difficult to separate from representation of time.

Certain types of writing explicitly address time keeping. Giddens, for instance, highlights how the use of timetables is a significant modern organizational device, stimulating a regulation of social life by quantifying time in a manner quite unknown to prior types of societies. Timetables do more than simply regulate the time of specific events. The use of timetables assists the choreographing of social interactions in time and space; it is a time-space ordering device at the heart of modern organizations. When social groups interact across time and space, as opposed to close face-to-face interaction, this form of orchestrated time-space paths becomes more important than ever.7

Zerubavel’s temporal analysis of hospital work is a case in point. His analysis of the various temporal cycles around which social life and work reverberate largely build on the reading and reporting of numerous timetables or time sheets, as he refers to them

7 “Time-space distanciation” (Giddens, 1991), or in Harvey’s words, “time-space compression” relies on the increasingly precise coordination of time-space sequencing in social life facilitated by the use of timetables.
(Zerubavel, 1979). Doctors and nurses, according to Zerubavel, pay close attention to these timetables, which relate to the distribution of responsibility among staff members and the hospital’s effort to support continuous coverage.

Classification systems also include explicit reference to time according to Bowker & Star’s analysis. They can be seen as quasi timetables. Narrative structures are typically formed with a moving time line, protagonists, and a dramatic structure unfolding over time. A story also needs objects in the world that can be cut up spatially (Bowker & Star, 1999: 87). Bakhtin makes the very same point (Bakhtin, 1986, 1996). To avoid confusion, we should be aware that Bowker & Star and Bakhtin by pointing to the explicit temporal and spatial references in classification systems and other texts draw attention to the times and places represented in the text itself and not to the actual lived times and places of people. They approach documents as timetables and not the enactment of timetables as in Zerubavel’s case. Bowker & Star do not explicitly make this distinction in their work, which makes some of their analysis rather difficult to dissect.

According to Bowker & Star even classification systems as abstract as the International Classification of Diseases (ICD) order entries in accordance to some temporal markers. For instance, if one reads the ICD in its entirety it contains a lot of temporal references right around the birth of a human life as many complications occur at this point and in relation to the exact time of birth. Few temporal references deal with adulthood, however timing becomes an important signpost when classifying diseases leading up to death. In other words, these temporal points of reference within the ICD provide a window into the times that concern doctors dealing with the classification of diseases. Documents and even classification system often contain temporal and spatial references in the same way as timetables and maps do.

Bowker & Star take this argument further to show how the times represented in classification systems often do not resonate with the lived biography of patients. Drawing on Roth’s classic ethnography of two tuberculosis sanatoriums, they argue that patients often struggle to define their own timetables as the medical disease classifications do not give a detailed enough timetable for the trajectory of their treatment (Roth, 1963). The patient’s personal biography and experience of the disease is significantly more detailed
than the timetables given by the treatment plan. Roth vividly describes, partly based on personal experience, how patients constantly push doctors and nurses to specify a timetable for their trajectory through the tuberculosis sanatorium. Doctors and nurses cannot and do not want to commit to such timetables and end up in constant negotiations of the timing of the next step in the treatment plan, whether that is a chest x-ray or the privilege to leave the sanatorium on weekends. What we see here is an interaction between the timetables explicated in medical documents and patients’ physical time-space trajectories through the sanatorium. The timetables do not determine patients’ and the staff’s unfolding practices but are enacted in a constant negotiation between doctors, nurses, and the evolving nature of the patients’ disease.

Roth’s and Bowker & Star’s analyses raise the question: if it is difficult for patients to relate their daily time-space paths to the abstract times and places specified by medical timetables and classification systems, then what about the doctors and nurses? Given that staff members do work with a large number of timetables and temporal rhythms, as described by Zerubavel, one could hypothesize that coordinating care across healthcare locales would involve the ad hoc negotiation of conflicting or unclear timetables. This would resonate with Nandhakumar’s analysis of information system designers and how they constantly negotiate the conflicting pressures of many time schemes (Nandhakumar, Forthcoming).

Before we move on, it is worth clarifying a couple of key terms. Let me first distinguish the notion of “trajectory” from “time-space path,” and secondly specify my approach to the concept of document. First, Bowker & Star take their notion of “trajectory” from Strauss (Strauss et al., 1985). Strauss is concerned with the degree to which patients integrate changes in their body following disease and treatment with changes in their biography. He distinguishes between the trajectory of the body and the trajectory of the biography. The trajectory of the body may change radically after an accident. Often it takes some time for the person to follow suit and integrate the changed reality of the body into their self-perception (i.e., biography). Bowker & Star further extend this idea of multiple trajectories and add the presumed trajectories of treatment plans and classification systems. Bowker & Star discuss how the patients’ identities get pushed and pulled by incomplete
treatment plans as in the case of tuberculosis treatment (Bowker & Star, 1999). Patients try to fit their experiences along both the trajectory of their body and the trajectory laid out by the treatment plan. Not surprisingly, conflicts often follow. In contrast to Hägerstrand, Strauss and Bowker & Star’s definition of trajectory remains rather abstract and vague and does not refer explicitly to the temporal and spatial organization of these trajectories. In particular, the spatial dimension is left out. We get a sense that changes occur over time but Strauss and later Bowker & Star do not help us understand how these are tied to specific everyday practices and places. Wenger introduces a comparably vague notion of trajectory when he uses the term to describe the long-term development in a person’s identity (Wenger, 1998). Giddens also uses the term trajectory when discussing people’s long-term identity formation (Giddens, 1991). In the following analysis I will draw on the notion of “time-space path,” or simply “path,” when referring to people’s temporal and spatial moves. In contrast to the balliestic connotations of “trajectory,” the term path highlights the often windy, improvised, and ad-hoc nature of unfolding practice in time and space. In brief, the notion of path resonates with my definition of knowing as “going on.”

Secondly, none of scholars referenced so far discuss whether or how professionals such as doctors and nurses use documents to navigate their unfolding practices under pressure from different temporal and spatial rhythms. They do not look at people’s use of documents as navigational tools for their unfolding time-space paths. Time-geography and Giddens’ work articulate the role of document use and other information technologies in the stretching of social relations across time and place. They largely approach documents as vehicles for the extension of social relations comparable to the Boeing 747 allowing us to visit friends and family across the globe. What has largely been left out is a concern for how people produce, read, and distribute documents. Giddens and time-geographers do not concern themselves with the practices that go into the production and use of documents and how these connect to the unfolding of people’s time-space paths. They do not look at how timetables and maps can be made on an ad-hoc basis to assist the unfolding of everyday practices. Bowker & Star address how documents can warp and distort patient careers through an institution, but neither they nor Roth give us a sense of how the very work of documenting is part of healthcare institutions. In contrast, Orlikowski and Yates’
genre analysis does address the production and use of documents by drawing attention to the time, space, participants, content, form, and purpose of documents. In the following analysis I refer to the production and use of documents as “documenting” or “documenting practices.” In this way, I hope to call attention to the role that the production, reading, and distribution of documents plays in how doctors and nurses navigate healthcare locales and extend their interactions across time and place. My concern is how people produce and use documents in order to “go on.”

We have now made a full circle and returned to the issue of doctors’ and nurses’ coordination and sharing of knowing within and across locales and what role documents play in this regard. With the pinpointing of four uses of documents in the mediation of interactions across time and place we have also returned to the issue of people’s time-space paths as formulated by time-geography.

Using Documents to ‘go on’

I am now in a position to return to the question raised by Sophie’s case and offer a framework that will guide my analysis in the subsequent chapters of how doctors and nurses use documents to share their knowing within and across healthcare locales. Drawing on Giddens’ notion of knowing, we can specify the question as: How do doctors and nurses use documents to ‘go on’ as a heterogeneous collective of caregivers within and across settings?

This “going on” I conceive of as the organization of people’s time-space paths crisscrossing within and across locales. These locales are historically constituted and associated with particularly rich bundles of intersecting paths of the different participants. The organization of people’s time-space paths further regionalizes locales. Each region is associated with specific types of practices and interactions following specific temporal and spatial rhythms.

Doctors and nurses interact with caregivers both locally and in other places and times through their coordinated time-space paths and various means of information and communication technologies. By doing so, they engage in the temporal, and to some degree spatial structure of practices in those other locales. As people coordinate their work
across multiple locales and some even move between many locales and regions they constantly have to negotiate the temporal and spatial rhythms of each of these settings. The following empirical analysis will try to discern if and how they use documents to guide those practices.

I distinguish three ways doctors and nurses use documents to ‘go on.’ These uses are not mutually exclusive. First, people use documents as communication devices that coordinate their interactions in time and space. Many of these communicative practices are habitually enacted and coordinated at certain times and place. Secondly, people use documents as repositories, for the storage and encoding of information. In order to narrow the task of the following analysis I will not emphasize this aspect of document use. Thirdly, documents can be used as timetables and maps to structure collective “going on” within and across settings. To put it differently, people use documents as navigational devices in their shaping of their personal time-space paths and in coordinating their collective practices.

The organization of doctors’ and nurses’ time-space paths, their collective ‘going on’ is brought to bear in their document use in two ways. First, people structure their use of documents in relation to habitually enacted temporal and spatial expectations. Genre analysis helps us articulate how actors structure their communicative practices in time and space. Second, the temporal and spatial organization of work can be expressed in the content of the documents themselves. As timetables and maps documents can be used to discern explicit references to places, times, and participants involved in a coordinated effort.

By merging the concerns of genre analysis with social geography’s articulation of the temporal and spatial structure of people’s collective practices, I have attempted to build a framework that will serve as a starting point for my analysis in the following chapters. My framework can be distinguished from social geography and Giddens’ work by its emphasis on how people actually use documents. That is, how do they produce them, read them, and distribute them. In other words, I bring to genre analysis, with its focus on the everyday temporal and spatial structure of communicative practices, a concern with how
people use documents to stretch social relations across time and place and how they do so by coordinating their activities into time-space bundles or locales.
Chapter 3 – Research Methodology: Studying Documenting Practices

Empirically this dissertation builds on a field study conducted in several pediatric healthcare settings. Pediatric care provides an example of knowing in practice and the sharing of knowing within and across settings through which I hope to develop an understanding of the role of document production and use in extending social relations across settings. Beyond the theoretical considerations, the use of information systems to share knowing in pediatric care is an important issue in and of itself. I start by describing recent, multi-sited ethnographic research strategy as a tool to understanding the sharing of knowing across settings. The following four sections each discuss different multi-sited strategies involved in my research design: site selection, unit of analysis, data collection, and access to field sites.

Research Strategy: Multi-Sited Ethnography

Since the goal of this research is to learn how doctors and nurses use documents to share their knowing within and across healthcare settings, it is reasonable to choose a methodology that focuses on everyday practices and their relations across multiple settings. Ethnography is predicated on attention to the everyday, an intimate knowledge of face-to-face communities and groups (Van Maanen, 1988); in this sense it serves my concern for the everyday sharing of knowing through the use of documents. The last decade and a half has seen the emergence of a multi-sited ethnographic method within social anthropology, and, in particular, science and technology studies, cultural studies, and women’s studies (e.g. Downey & Dumit, 1998; Gupta & Ferguson, 1999; Haraway, 1991; Latour, 1987, 1988; Martin, 1994; Rapp, 1998; Traweek, 1993). Marcus (1995) provides a helpful summary of this recent shift from an emphasis on single locations towards multiple sites of observation and participation. Historically, ethnographic research focused on what was conceived as an individual setting and assumed the existence of
relatively closed cultural spaces. The idea that ethnography might expand from this committed localism to represent relations across settings seems at first antithetical to its very nature and beyond its limits.

Multi-sited ethnography does not search for a holistic representation of one conceived locale or a number of locales. Rather, it is an exercise in terrain mapping. Multi-sited ethnography searches for the connections among sites or connections among local cultures. In other words, the context of the ethnographic work does not define or presuppose a cultural whole but rather a field of investigation with multiple relations and cultural formations at play (Marcus, 1995). Before beginning a more detailed discussion of my methodological choices, I will address four issues: 1) does the application of close ethnographic scrutiny to multiple sites stretch the method too thin? 2) what role do the notions of culture, 3) translation, and 4) comparison play in a single-sited versus multi-sited ethnographies?

To the first question one can easily argue that the fieldwork experience of most standard ethnographic studies inevitably crosses many sites (Marcus, 1995). Malinowski’s “Argonauts of the Western Pacific” is a case in point (Malinowski, 1922). He follows and stays with the movements of a particular group of people as they travel across settings. Likewise, Rabinow’s “Reflections on Fieldwork in Morocco” describes his study of multiple settings as a centripetal movement towards the center, a small village (Rabinow, 1977). Where his analytical aim seems to be the cultural core of the village, his method nevertheless takes him from marginal French ex-colonists to peddlers in the bazaar of a nearby town as he slowly approaches and gains the trust of the villagers while developing an understanding of village life. In this sense, the notion of multi-sited ethnography turns traditional ethnographic research into a straw man in an effort to highlight an aspect of fieldwork that was there all along. The multi-sited push is simply old wine in new bottles and the present study may as well be cast as a single-sited study of pediatric care in a US metropolitan area.

Second, what a multi-sited approach offers may be more theoretical than methodological. The ethnographic method has often conceived of the findings from several sites under the umbrella of a global or holistic frame, often conceptualized around the
notion of culture. A multi-sited approach does not presuppose such a common denominator but rather brings an openness to describing the multiplicity of contours and boundaries among a number of settings. In short, the aim of multi-sited studies is not a unifying notion of culture embracing all the people studied but rather a description of the interdependencies among multiple cultures or sub-cultures.

Third, the focus on interdependencies brings the notion of translation among settings to the forefront. The strong, ethnographic function of translation from one cultural idiom or language to another remains prominent and even gains importance in a multi-sited approach. For instance, Spradley describes at great length the ethnographer as engaging in a translation of socially situated knowledge (Spradley, 1970, 1979, 1980). The translator sets out to discover the meanings and relations among behaviors, places, artifacts, and people in one social setting in order to communicate them in a format comprehensible and useful to people with a different perspective or cultural background. The process entails a dual task; first, the translator makes sense of the activities, people, and artifacts, their interrelations and meanings. Then, the translator communicates the situated knowledge learned to her audience. Thus, a truly effective translation requires an intimate knowledge of the two social settings, the one described and the one of the audience.

In a multi-sited approach this perspective on translation is brought into the field. The researcher applies the ethnographic method to explore the translation that the Others (i.e. subjects of the research) themselves engage in as they deal with each other within and across various settings and cultural idioms. Carlile’s study of product development teams provides an example of this recent innovation in methodology (Carlile, 1997; Carlile, 2002). Carlile carefully lays out three modes of translation that take place across the boundaries between various parties involved in the product development process.8

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8 Carlile distinguishes between syntactic, semantic, and pragmatic approaches to knowledge boundaries. First, the syntactic conceptualization of knowledge boundaries was introduced by Shannon and Weaver (Shannon & Weaver, 1949) and developed out of their mathematical theory of communication. Once syntax is shared and stable across a given boundary the processing of information becomes the primary concern. Second, the semantic approach focuses on the existence of different meanings (Redding, 1972). Even when people share a common syntax or language interpretations of them often make communication and collaboration challenging. Third, the pragmatic approach, proposed by Carlile (2002), highlights the importance of understanding the consequences and interdependencies among the knowledge of different groups. The knowledge accumulated by one group is rarely unrelated to the knowledge accumulated by
Comparably, the present study and the multi-sited approach in general, follow Carlile’s concern with the unfolding translation among different constituencies or settings within the fieldwork.

Fourth, one should not confuse a multi-sited approach with controlled comparison. Anthropological studies involving controlled comparisons are undeniably multi-sited as in the case of Barley’s comparison of two radiology departments (Barley, 1986). These studies generate their comparisons from what are generally conceived of as homogeneously conceptual units: a locale, a people, a company, or a department. Comparisons are at the heart of a multi-sited ethnography, the following chapters being no exception. However, in this case the divisions and boundaries across which the comparisons take place are not predetermined. The relationships and boundaries among settings, or at least some of them, are the subject of investigation. A description of their contours is an end in and of itself.

The question remains how one designs multi-sited research; how does one construct the multi-sited space through which the ethnographer traverses? Marcus summarizes six strategies based on his literature review: Follow the people; follow the thing; follow the metaphor; follow the narrative; follow the career or biography; and follow the conflict (Marcus, 1995). To this list I will add two: follow the task and follow the researcher. I find four out of these eight relevant for my multi-sited research, highlighted in Figure 3.1. In the following, I discuss only these four strategies: follow the people, follow the task, follow the thing, and follow the researcher.

*Follow the people* is probably the most obvious and common strategy for designing a multi-sited ethnography. By staying with a particular group of people as they move across settings, the ethnographer can explore the particular extensions of their activities and explore the role the various sites play in their general cultural complex. Time-geography, as described in Chapter 2, lends itself directly to this kind of approach as it tracks people’s movements across time and place, focusing on the activity bundles that occur in particular locales and the relations among these locales. Nandhakumar’s ethnographic study of software developers illustrates the approach (Nandhakumar,

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another group. Groups often have a vested interest and stakes in their hard-won knowledge and are reluctant to re-invest their knowledge in other ways of doing things.

61
Forthcoming). He followed software developers in a multinational corporation and carefully mapped their time-space paths in regard to various spaces, projects, and forms of control.

**Figure 3.1: Multi-Sited Strategies**

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*Follow the task:* Recent organizational studies of virtual and distributed work often demarcate their multi-sited space by means of a well-defined and commonly shared task. The task is what defines the connections around which various teams come together across organizational, national, and geographical boundaries. In a study of product development teams Carlile illustrates this strategy as he maps the interrelations among salespeople, design, production, and manufacturing engineers as they come together to develop a particular auto part, an on-board vapor recovery valve (Carlile, 1997, Carlile, 2002). The task also provides the axis for a multi-sited research design in Rennecker’s study of globally distributed teamwork (Rennecker, 2001). In this case, it is the development of new standards for electric systems in cars that brings together members from various organizations and industries distributed across North America and Europe. Barrett et al. (In preparation) offer a similar mode of multi-sited design of globally distributed audit work. Here, the task that brings the different sites and subject together is a particular audit performed by a major financial company on a multinational corporation.

*Follow the thing:* Tracing the circulation of artifacts through different contexts can serve as another basis for a multi-sited research study. At times the artifact or artifacts may not be mobile in and of themselves but they bring together many different constituencies.
Science and technology studies have been a strong promoter of this approach. Some scholars, including Latour, even place humans and artifacts on the same plane of investigation. (Latour, 1996, 1999; Latour & Woolgar, 1986). Researchers drawing on the notion of “boundary object” in effect design their studies around specific artifacts (Beckky, 1999; Carlile, 1997; Levina, 2001; Star, 1989). One should notice that I have already argued that Carlile’s research is designed around a particular task. I find that multi-sited studies often draw on more than one strategy, as each mode of exploring a multi-sited space highlights different aspects of the relations across settings.

*Follow the researcher* may not qualify as a primary research strategy in and of itself. However, I find that an eye on the ethnographer’s own movements across the various settings involved in the research effort can provide valuable information about the interdependencies among various settings. For the same reason a section on access to the field has long been an expected ingredient in ethnographic method chapters. Rabinow’s “Reflections of Fieldwork in Morocco” stands out as an extended version of this genre (Rabinow, 1977). These “confessional tales” explore the researcher’s odyssey into and, at times, out of the field. They often serve as a valuable supplement to the more formalistic “realist tales” applied when translating the native point of view to an academic audience (Van Maanen, 1988). The same approach and representational techniques can be used to highlight relations among field sites, deepening the understanding of the multi-sited subject of concern. The present study draws on these four strategies in the design of a multi-sited study, where each of them relates to a core element of my research design. I draw on “follow the task” to structure my site selections. “Follow the thing” helps me define my unit of analysis. I structure my data collection around “follow the people” (i.e., doctors and nurses). Finally, “follow the research” as a multi-sited strategy helps me articulate what I learned from the process of gaining access to field sites.

**Site Selection: Follow the Task/Treating Asthmatic Patients**

Numerous site combinations could make up a multi-sited study of healthcare. In most urban areas one finds countless sub-specialty clinics, primary care facilities, and hospitals with in-patient and outpatient clinics and various wards. Given my interest in the
sharing of knowing about patients care across settings I made the task of patient care the organizing principle for site selection. It is in their care for patients that doctors and nurses deal with caregivers in other settings. I narrowed my focus further by selecting the care for a particular type of patient and general area of ailment. First, I chose to focus on pediatric care based on a pilot study, a two-month participant observational study of an adult emergency department (Osterlund, 2000). Pediatric care is preferable to adult care when studying medical histories and documenting practices. Pediatric patients are rarely left alone recounting their history. In the vast majority of cases, pediatric patients are jointed by a relative that keeps a vigilant eye on the progression of the patient’s history and are able to recount it. In contrast many adult patients arrive unaccompanied. Many patients, in particular the elderly, are not capable of recounting their own medical histories and experiences along the way.

Second, to narrow my focus further I chose to focus on doctors’ and nurses’ work around a common ailment among children. I selected asthma treatment as the organizing task around which I selected my healthcare sites. Asthma is a widespread disease, some suggest at epidemic proportions, seen often in both primary care and hospital settings. Based on my focus on the typical trajectory of an asthmatic child I arranged to spend time in five primary care clinics, a pediatric emergency room, and two inpatient medical wards routinely caring for asthmatic children. The emergency room and the inpatient wards are all part of the same teaching hospital whereas the primary care clinics are not.

Not all children suffering from asthma attacks follow the path from primary care clinic, through emergency room, to an inpatient ward. Some are seen in their primary care clinic and then sent home. Others, in particular the urban poor, use the emergency room as a substitute for a primary care setting. Life-threatening asthma attacks do not get admitted to general medical wards but are sent to the intensive care unit. I have not been able to find any statistics showing the distribution and typical path of pediatric asthma patient.

I based my choice on preliminary interviews with nurses and physicians in particular emergency rooms where there was a general consensus that asthmatic patients offered a good base for observation. Asthmatic patients are one of the most commonly treated chief complaints in pediatric hospital care. The relative high number of asthmatic
patients presenting every day allowed me to observe the same tasks repeated frequently. A focus on another severe disease but less common, say Sickle Cell disease, would have limited the number of encounters, callous as that may sound, I could have observed in each setting. By focusing on asthma patients I was able to observe doctors and nurses care for this group of patients every day I spent in the hospital and on most of the days that I observed doctors’ and nurses’ work in the primary care clinics. Often I would observe patients in the primary care clinics who were later sent to the particular hospital in my study. Likewise, many of the children whose care I observed in the hospital came from clinics involved in my study. Observational work is time-consuming and to secure depth I narrowed my focus to one hospital and two primary care clinics.

The hospital, which I will call “Kilham Hospital,” is a 400-bed university-affiliated pediatric teaching hospital located in a major US city. The institution is considered one of the top teaching hospitals in the nation. For those reasons the hospital cannot be seen as your average hospital facility but rather as an ideal example of how patient care is documented and shared within and beyond a world-class healthcare institution. As part of my selection of primary care settings I spent two days in five different clinics. These were selected to represent both urban and suburban clinics with small and high volume of patients. Based on these 10 days of observation I selected two primary care settings where I spent extended time and developed relationships with staff members. I chose these two clinics based on the high volume of patients that they send to Kilham Hospital and to have both a clinic in an urban area and one in a middle class suburban neighborhood.

**Unit of Analysis: Follow Documenting Practices**

One should not confuse the unit of analysis guiding this study with the common task (i.e., patient care) directing the site selection. My unit of analysis is the work practices of doctors and nurses, specifically the practices that go into documenting patient’s care. “Documenting practices” include the recording, distribution, sorting, and reading of documents. In terms of the artifacts themselves I do not restrict myself to one media but embrace recordings made on various note cards, preprinted forms, on-line record systems,
whiteboards, tape recordings, and the objects used to store and sort those documents such as bins, racks, folders, and computers. The vast majority of documents I studied captured some form of printed text, with the exception of tape-recorded patient histories and a number of various flagging systems, racks and binders.

Documents saturate doctors’ and nurses’ work. Few activities do not involve the recording, sorting, or reading of documents. Patients’ histories are taken with a document in hand, and the physical exam usually involves simultaneous recording of the observations. Discussions and interactions with colleagues typically take place around one or more documents. As doctors and nurses typically dedicate a significant amount of time to catching up on some paperwork, they can often be found bent over a computer terminal or sheet of paper in the corner of a bustling room. Without being able to support it with hard data my observations and field notes entries suggest that documenting practices are integrated into the vast majority of doctors’ and nurses’ workday. Among this universe of documents I narrow my focus to the ones involved in the sharing and coordination of care within and among primary care clinics, emergency room, and in-patient wards.

Consequently, I did not pay much attention to forms sent to and received from laboratories and radiology departments, social service forms, psychiatric service forms, home care request forms, referrals to sub-specialties, security officer request forms, nor letters written by the physician for a child to bring to school or for parents to bring to work justifying why they missed school or work. Nor did I include pharmacy prescriptions, reimbursement slips for cab rides home, and the vast number of documents involved in billing. Some of these forms are used in nearly all cases, such as prescriptions and laboratory related forms. Others are used more sporadically, for example, forms related to social services. The remaining documents left after this reduction still amount to a major part of nurses’ and doctors’ work. Doctors and nurses always record patients’ histories in the documents included in following analysis. Furthermore, documenting (i.e., recording, distributing, and using) patients’ histories and care takes up far more time than, for instance, filling out order slips for the laboratory and prescriptions for the pharmacy.

In short, although the documents included in the present analysis take up the majority of doctors’ and nurses’ time allocated to paperwork, these documents make up
less than half of the total number of documents found in the three settings studied. This
does not mean that all individuals allocate their time equally to the various documenting
practices. As we will see in the following Chapter Four one finds great variations in how
much time people spend recording versus using documents in the course of a workday. For
instance, senior physicians expend relatively more time reading and correcting documents
compared to the hours that junior physicians engage in recording their patients’ histories.

Studying doctors’ and nurses’ documenting practices entails following documents
but not from the perspective of the documents themselves. I have not centered my research
around the movements of one object as in the case of several science studies, for instance
Bijker (1995). One could easily envision a study that tracked particular document’s
trajectories across healthcare settings. At the outset I had envisioned that some documents
paralleled the patients’ paths across the various settings. I did not find any such documents.

Though I did not organize my research design around the trajectories of documents
I did pay attention to where the documents produced and used by doctors and nurses came
from and where they were heading. While in primary care settings I did follow what
happened to the documents received from the ER and inpatient wards, as I took account of
the documents received in the ER and inpatient wards from primary care, and so forth.
This being said, doctors and nurses remain the actors of my study. They care for patients
that move through the locales they inhabit. They document their care and share their
knowing within and across settings. This brings me to the issue of data collection.

**Data Collection: Follow Doctors and Nurses**

Following individual doctors and nurses in their daily work provides a convenient
observational focus allowing me to engage in their interactions with colleagues and
patients and most importantly their documenting practices. Using Hägerstrand’s term, it
allowed me to follow staff members’ time-space paths. By trailing people’s daily work
practices I did not restrict my observations to the care of asthmatic patients and did indeed
watch the care of many other types of patients.

Furthermore, I often moved beyond the ward or department that was my selected
site at the outset. Some staff members’ activities are restricted to a clearly defined and
limited locale. Nurses on the inpatient wards generally do not move around the hospital in the course of a work shift and many spend years working on the same ward. Doctors, in contrast, typically move across departmental and institutional boundaries as part of their daily work and interact with other caregivers in a number of other settings. In my observation I followed each staff member's moves from the start to the end of their shift. Particularly in the inpatient wards, the daily paths of physicians brought me outside the boundaries of individual wards as patients often were spread across the hospital, depending on the availability of beds. Consequently, the three types of settings selected based on the typical trajectory of an asthmatic child were only an initial guideline. Following individual doctors and nurses brought me through a number of other wards and clinics. This ultimately extended my observation and understanding of document practices and their role in the sharing of knowing within and across settings.

Data from my two-month pilot study in adult emergency medicine inspired me but has not been included in the present analysis. Data collection for the present study stretched over 15 months with an average of three days a week of observation, interviews, and participation in local research seminars and meetings. During the first three months I predominantly interviewed doctors and nurses involved in medical informatics efforts and participated in medical informatics seminars, symposiums, and meetings. I became a usual visitor at a number of medical informatics research centers. Occasionally, I followed a physician to his or her clinic or department for a few hours of the day. It was through contacts developed in this first stage that I started negotiating access to the various research sites.

After gaining access to clinics and departments my typical mode of operation was to trail an individual doctor, nurse, clinical assistant, or secretary for the course of their shift. When seeing patients I was typically introduced as a researcher and asked if I could participate. If the staff member or I perceived the case to be sensitive I did not follow the person in their interactions with the particular patient or relatives. Most of these cases involved teenagers and reproductive issues, possible sex abuse, breastfeeding mothers, and situations where parents were to be informed about a diagnosis with grave consequences.
In those situations I would simply wait for the person to reemerge from the patient room. I also joined staff members at meetings, teaching rounds and grand rounds.

Beyond following staff members in each setting, I participated in a weekly research fellow seminar and regular meetings with members of the Quality Improvement group. The former involved doctors hired in research positions in the hospital who would split their time between research and patient care. The participants studied everything from large-scale public health initiatives to small medical informatics initiatives. The Quality Improvement group facilitated my access to several of the field sites and became my sparring partner in the hospital. The group was involved in the improvement of documentation and was interested in my findings. I met with the core members of the group several times during my data gathering in the hospital to discuss my general research findings on the production and use of documents.

Figure 3.2 summarizes the number of field notes entries divided by setting and occupational group. As should be clear from this figure, I mainly followed nurses and doctors but also joined several secretaries, clinical assistants, and primary care nurses in their daily activities. Clinical assistants’ work became particularly important in the primary care settings where they took a central position in the daily running of a clinic.

**Figure 3.2: Data Collected in Each Site**

<table>
<thead>
<tr>
<th></th>
<th>Medical Informatics</th>
<th>Primary Care</th>
<th>Emergency Department</th>
<th>Inpatient wards</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctors</td>
<td>7*</td>
<td>14</td>
<td>15 (13)**</td>
<td>24</td>
<td>5</td>
</tr>
<tr>
<td>Nurses</td>
<td>3*</td>
<td>5</td>
<td>12 (10)**</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>Clinical Assistants, etc.</td>
<td>8</td>
<td>5</td>
<td>5 (3)**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Interviews, Meetings, etc</td>
<td>28</td>
<td>9</td>
<td>11 (15)**</td>
<td>12</td>
<td>21</td>
</tr>
</tbody>
</table>

* Days following medical informatics researchers.
** Days following staff during preliminary study in adult emergency room.
Others days included time spent following doctors and nurses working in other positions, such as the Coordinator of Patient Placement nurses and Hospitalists (i.e. doctors attending to patients from a provider network). Furthermore, I attended research or community-based asthma efforts. To avoid cumbersome listings of different occupations I will refer to only doctors and nurses in my general argument and only mention other groups when explicitly discussed.

I carried a notepad with me and would whenever possible take notes. From time to time I would retreat to a conference room or library to catch up on notes. After a patient exam, meeting, round, document writing, or other important activity I would ask questions to clarify what had happened and what else might have been done. When things got hectic, which was often the case in the ER and some primary care clinics, I simply held back my questions for later, often sometime after midnight. It would have been helpful to tape record all interactions but for privacy reasons this was not possible. When a lull in activity did happen or over meals I sometimes engaged my informant in semi-structured interviews. I would tape record some of these conversations. In addition to observational data, I collected examples of the documents my informants used. I would immediately strike any patient-identifying information contained in any of those documents. Apart from these work activities I was invited to a few parties and social gatherings organized by my informants. In the following analysis of this material I have changed, not only the identities of patients but all the names of places, people, and positions, and in many cases the gender of particular informants.

Limitations of the Data

Focusing on the nurses’ and doctors’ work practices leaves out the patients’ perspective. I observed conversations between patients and their relatives and staff members. From these conversations and the patients’ and parents’ recounting of their history I could often piece together a rather complete picture of their path, particularly when they came from settings that I had previously studied. However, I lacked a clear sense of the patients’ path, i.e., the decisions and changes that happened along the way in their history giving and care decisions. The original research design involved following
patients as they moved across healthcare settings. However, I never managed to gain IRB approval to either follow patients or interview them or their parents. I regret that I was not able to match the experiences of the doctors and nurses with those of the patients and relatives.

I partly compensated for my lack of patient interaction by attending a series of public workshops on asthma. The meetings brought together healthcare professionals who specialized in asthma and asthmatics of all ages and parents with asthmatic children. Furthermore, Dr. Rich, a medical researcher, gave me access to some of his research material on asthmatic children/teenagers. Drawing on visual anthropology research strategies Dr. Rich had equipped asthmatic children and teenagers with camcorders and instructed them to video tape their lives as asthmatics, their home, friends, family, visits to the physician, and asthma attacks (Rich, Lamola, Amory, & Schneider, 2000; Rich, S., Gordon, & Chalfen, 2002). These tapes were stunning, showing the lived experiences of asthmatic children. One girl, for instance, videotaped her own face continuously from the onset of an asthma attack and until she runs out of tape. Watching her struggle for air during a 15-minute car ride to the emergency room left me speechless. In another case, a 10-year-old boy brought the camcorder along to a routine visit at his primary care physician. As the doctor launched into a long monologue about how to control asthma triggers and the dangers of cuddly pets, the camcorder slowly slides from the doctor’s face to the ceiling, circling the room zooming in and out on random spots and marks on the walls.

For a personal account of asthma from an adult perspective I read Tim Brookes’ novel “Catching My Breath” (Brookes, 1994). This material served as my window to the patients’ life and thoughts beyond the clinic even though it did not track the details of their trajectories through the sites of my study. I hope that a follow-up study will add this perspective. Furthermore, two current research projects do follow pediatric patients as they move across different healthcare settings and consequently address the patients’ concerns explicitly in their research design and analysis. Yrjö Engström heads a larger research effort that focuses on the coordination of care between primary health care and specialized hospital care in Helsinki, Finland (Engström, 2002). Cheryl Mattingly, a social
anthropologist at the University of Southern California, leads another current study of African American children in Los Angeles in need of occupational therapy (Lawlor & Mattingly, 2001; Mattingly, 2002; Mattingly & Lawlor, 2000).

**Watching ER in the ER**

Studying healthcare work and, in particular, emergency room work calls for a note on the relation between popular images of my subject and what I observed. Of particular interest is how my informants draw on those popular images when facing an outsider like myself with whom they initially share little more than having watched the same hospital soaps. My attention was drawn to the issue on the first day of my pilot study in an adult emergency room. I arrived in the ER and as the night progressed I learned that the previous evening NBC had shown an older episode of “ER” in which an MIT researcher walks around the ER talking about his research in the hospital and the changing nature of work. The puzzled doctors and nurses assume that it is Dr. Kerry Weaver, the one with the crutch, who has invited him. Later in the show the ER staff learn that the MIT researcher is, in reality, a schizophrenic patient who escaped from an asylum earlier the same week. This coincidence obviously amused the staff quite a bit. Later on I was reminded of the popular representations when on Thursday nights I would walk through the ER and see patients watch Dr. Green on his way to a new trauma patient, as a nurse checks their own IV.

On the first couple of days in each ER of my study – staff members, and in particular nurses, would take me aside to say: "Tonight it was nearly like ER." Or nearly excusing themselves: "tonight was not quite like ER." They would use the pace and intensity as a measure for my assumed expectations. In both settings nurses would also make sure that I got to see a trauma patient when one arrived, “a real ER case.” In reality these trauma cases, with gurneys hurling down hallways are novel enough to attract janitor and other staff members as spectators and generate energized discussion among house-officers at the nursing station afterwards. In short, whereas you do find high paced work in the ER, the popular images of blood and gore, traumas, and sense of pending death are far from the daily reality of ER work.
Among the doctors and, in particular, residents and interns the show often emerges in conversations about their choices of careers and professional identities. One intern explains how he wants to be the kind of doctor who can help a person who falls over in the street any place at any time. He does not want to be the kind of cancer specialist who hides in his airplane seat if a flight attendant asks if there is a doctor present. He wants to be able to act. Another resident responded, when I asked why he wanted to specialize in pediatric emergency medicine:

"In the ER you get dead children, you get really sick kids, you get to see a lot of cases, and do a lot of hands-on work. You get a lot of action. I don't want to sit in a Pediatric office and look in children’s ears."

His excited statement resonates with the other ER residents I talked to as well as the popular image from the show where Dr. Ross, a pediatrician, acts as the savior of dying and abused children. What it doesn't resonate with is the reality of emergency room work where the residents may not see that many ear infections, but do see, what they consider, a multitude of tedious cases of bronchiolitis and asthma which easily could have been seen in a pediatric clinic setting.

Nurses give slightly different justifications for choosing ER medicine as their preferred work environment. As with the doctors, these justifications both draw on images from the show and contrast to it. Nurses will tell you that they choose ER medicine because it's not as sad as working on the wards. This answer puzzled me in the beginning as I saw a lot of sadness in the ER. I did not understand until a nurse told me a long tale of how she got to know a patient and his family intimately when she worked on the inpatient unit and how she got so sad when he died. In the ER you don't get time to get attached to a patient. In contrast to the show, I have never seen ER staff engage on an emotional level with their patients whereas this often take place on inpatient units. As one nurse puts it:

"Seeing patients in the ER is like watching just the first episode of a soap opera. You never get to know the characters."

References to popular images only came up in a couple of instances during my observations in primary care settings and inpatient wards. On two occasions, a staff member noted that having me follow her felt a bit like "being in one of those reality shows."
Access to Field Sites: Follow the Researcher

To conduct this research I needed access to several organization that would allow me to follow their staff members wherever they went, hang out during breaks and come and go more or less at my will. Furthermore, I initially was looking for a place where I could track the implementation of an information system that linked several settings in a hope of learning if doctors and nurses changed their sharing of knowing across settings when faced with the capabilities of new artifacts. My quest to realize these two goals lead to much frustration and ultimately taught me a great deal about the reality and fiction of medical information systems and the blurry yet firm boundaries among medical settings.

During my preliminary study I had got to know several medical informatics researchers. It was through those contacts that I started looking for a project that involved the implementation of a system linking healthcare settings across institutional boundaries. I found one initiative that was implementing webcams in neonatal units allowing parents and, potentially, primary care physicians access to images and information on the patients. As I was about begin research, the project was scaled back and became a local project narrowly focusing on the neonatal unit with little if any involvement of doctors and nurses from other departments and institutions.

I then investigated a number of other projects including a teledermatology project in dermatology that would allow primary care doctors to email digital pictures to a hospital-based specialist for consulting. Again, the project was delayed and had problems enlisting primary care physicians in the project. Repeatedly, I would hear stories about other institutions where great systems were being implemented or had been implemented but following up on those descriptions felt much like chasing a mirage. When I showed up, the system was rarely used and often contained in only one department or clinic. Finally, I conceded that the global system that the medical informatics community envisioned might not exist, and if it did I might not be able to find it. I was intrigued by the puzzle of why it might be so difficult to implement global information systems, and I started wondering how doctors and nurses in fact did share their knowing if they did not find boundary crossing information systems helpful. With this in mind, I ended up gaining access to a
pediatric emergency department through contact to physicians developing a web-based system that allowed parents to send follow up questions to physicians, check test results, and receive discharge instructions. They were interested in feedback on the use of their system in return for sponsoring my study.

Studying the emergency department went without trouble until I started following nurses and physicians to meetings outside the department. Every time I would introduce my study, emails were sent to my sponsors inquiring about my presence and who had given formal approval. About the same time, I had to inform my sponsors that despite weeks spent in the ER I had only observed their web-based system used when they were around to promote its use. The news was not welcomed. Somewhat reluctantly they helped me establish contact with the Quality Improvement group in the hospital who found that my study spoke to their effort of developing and implementing Clinical Practice Guidelines. These were paper-based systems, which involved people from across the hospital, though not outside the institution.

In an effort to make sure that I did not run into surprises when moving among departments in the hospital I spent several weeks gaining approval from each department in which I would spend any significant amount of time. I soon learned that a ward is not a ward to everybody. What nurses may consider one department under the jurisdiction of one nurse manager, doctors regarded as two departments managed by different chief physicians representing the cultures of starkly different sub-disciplines. Depending on who I talked to, different organizational maps took shape. At the same time I gained access to a number of primary care clinics. Again, their affiliation with each other and the hospital varied greatly. Based on preliminary observations I selected a clinic with a close affiliation to Kilham Hospital and one with a more peripheral relationship both organizational and geographical. These experiences made me sensitive to the variations among doctors and nurses in how they perceived and acted upon the division of locales and regions in the hospital and beyond. It is through some of these observations that I form the basis for the following analysis.
Summary

Drawing on a multi-sited ethnographic approach I engaged four out of eight different strategies to explore doctors’ and nurses’ use of documents in the sharing of their knowing across settings. I selected my research settings based on the shared task of caring for asthmatic children. Based on a typical trajectory of an asthmatic child I gained access to a number of primary care settings, an emergency room and two inpatient wards. Following the practices that go into documenting patients’ care constitutes my unit of analysis that I approached by following and observing doctors and nurses in their daily time-space paths. Each of these strategies should not be regarded as separate. In the unfolding of the actual field research they entwine and complement each other. In the chapter that follows, I provide a descriptive overview of each of the settings as a necessary foreshadowing of the more targeted analysis of documenting practices in later chapters. My description is guided by the concerns for people’s time-space paths, temporal rhythms of work, and document use outlined in the previous theory chapter.
Chapter 4 - The Healthcare Settings Sophie Travels Through: Regions, people, and rhythms of documenting practices

At this point I have introduced from a distance the organization of the primary care clinics, emergency department, and inpatient wards through which patients like Sophie travel. I shall now embark on a closer description of the documenting practices that take place in each of these healthcare settings. In order to understand the context for the activities that define the production and use of each document, I draw on the framework developed in Chapter Two.

If doctors and nurses produce and use documents as a way to extend their social relations across time and space, as my framework suggests, it is important to comprehend each locale within the subdivision of regions governed by different work practices and
temporal rhythms. Thus, the present chapter characterizes not only the larger physical and temporal structures but also describes the inhabitants and their time-space paths within and beyond these locales. In the process of laying out the working of each locale, I emphasize the places, production and use of key documents capturing patients’ histories. I intend to foster a fine-grained understanding of the physical and temporal structure within which doctors and nurses care for patients and carry out their documenting practices. The chapter should be read as descriptive background, setting the stage for the more targeted analysis of doctors and nurses’ production and use of documents in Chapters Five and Six.

Sophie had her history taken 15 times and her many histories were recorded in more than one document. As summarized in Figures 4.1 we find that Sophie’s 15 histories were recorded more than 30 times.

**Figure 4.2 – Key Characters**

<table>
<thead>
<tr>
<th>Setting</th>
<th>Position</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long</td>
<td>Attending Doctor</td>
<td>Patrick</td>
</tr>
<tr>
<td></td>
<td>Senior Resident</td>
<td>Lucy</td>
</tr>
<tr>
<td></td>
<td>Intern</td>
<td>Donna, Oliver, Jennifer, Gabriel</td>
</tr>
<tr>
<td></td>
<td>Medical Student</td>
<td>Karen</td>
</tr>
<tr>
<td></td>
<td>Nurse</td>
<td>Heidi</td>
</tr>
<tr>
<td></td>
<td>Night-Floater</td>
<td></td>
</tr>
<tr>
<td></td>
<td>COPP Nurse</td>
<td>Mary-Jo</td>
</tr>
<tr>
<td>ER</td>
<td>ER Attending Doctor</td>
<td>Paul, Brenda</td>
</tr>
<tr>
<td></td>
<td>House-Officer</td>
<td>Samer, William (Research Fellow)</td>
</tr>
<tr>
<td></td>
<td>ER Nurse</td>
<td>Ann, Sharon (Chart Nurse)</td>
</tr>
<tr>
<td></td>
<td>Triage Nurse</td>
<td></td>
</tr>
<tr>
<td>Clinic</td>
<td>Primary Care Doctor</td>
<td>Dr. Roth</td>
</tr>
<tr>
<td></td>
<td>Clinical Assistant</td>
<td>Lydia</td>
</tr>
<tr>
<td></td>
<td>Nurse</td>
<td>Magdalena</td>
</tr>
</tbody>
</table>

This adds up to a quite a number of places, people, and documents to keep in mind. Figure 4.2 and 4.3 outline the key people and important terms. My description falls into four parts – each including a map of the particular locale and documents. I attempt to go behind the scene in each the settings Sophie travels through (i.e. Cildra Health Clinic, Kiltham Hospital’s ER, and two inpatient wards within the hospital at 10 East). Between
the section on the ER and the inpatient wards, I include a brief section describing the
COPP nurses’ work (Coordinator of Patient Placement). These nurses decide where Sophie
and her fellow patients end up once admitted to the hospital.

**Figure 4.3 – Key Terms**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attending Doctor</td>
<td>Experienced physician working part time or full time in hospital or primary care doctor attending to own patients admitted to hospital</td>
</tr>
<tr>
<td>CCS</td>
<td>Coordinated Care Service</td>
</tr>
<tr>
<td>COPP</td>
<td>Coordinator of Patient Placement</td>
</tr>
<tr>
<td>ER</td>
<td>Emergency Room</td>
</tr>
<tr>
<td>Firm</td>
<td>Organizational division of medial wards. Each firm specializes in certain sub-specialties and age group and covered by several teams</td>
</tr>
<tr>
<td>Floors</td>
<td>Inpatient wards</td>
</tr>
<tr>
<td>Hammer Resident</td>
<td>Slang term for physicians in emergency medicine resident program</td>
</tr>
<tr>
<td>HOSO</td>
<td>House Officer Sign Out; Interns communal note system</td>
</tr>
<tr>
<td>Hospitalist</td>
<td>Physician representing a network of primary care physicians working full time in a hospital attending to the network’s patients.</td>
</tr>
<tr>
<td>House-Officers</td>
<td>Residents and Research Fellows</td>
</tr>
<tr>
<td>ICU</td>
<td>Intensive Care Unit</td>
</tr>
<tr>
<td>Intern</td>
<td>First year resident, just out of medical school</td>
</tr>
<tr>
<td>Senior Resident</td>
<td>Third year resident</td>
</tr>
<tr>
<td>Med. Student</td>
<td>Third or fourth year in medical school</td>
</tr>
<tr>
<td>Night-Float</td>
<td>Second year resident working at night to cover for interns and senior residents on inpatient wards</td>
</tr>
<tr>
<td>O2</td>
<td>Oxygen</td>
</tr>
<tr>
<td>Primary Care Doctor</td>
<td>Physician working out of primary care clinic</td>
</tr>
<tr>
<td>O2</td>
<td>Every two hours</td>
</tr>
<tr>
<td>Research Fellow</td>
<td>Physician who has finished residency and now work in the hospital while conducting research</td>
</tr>
<tr>
<td>Residency</td>
<td>Three year hospital based training programs for newly minted physicians fresh out of medical school</td>
</tr>
<tr>
<td>SOAP</td>
<td>Medical history format: Subjective data, Objective data, Assessment, and Plan</td>
</tr>
<tr>
<td>SSU</td>
<td>Short Stay Unit. Shares 10 East with the Long Stay Unit</td>
</tr>
<tr>
<td>Triage Nurse</td>
<td>Nurse evaluating patients as they enter the ER</td>
</tr>
<tr>
<td>10 East</td>
<td>One of many medical wards in hospital</td>
</tr>
</tbody>
</table>

Each section starts with a description of the locale and its regions, followed by a
general portrayal of the people inhabiting these places and the temporal rhythms
structuring their work. Finally, I describe doctors and nurses’ work in each locale with an
emphasis on how their documenting practices are integrated into their time-space paths. I
attempt to capture these fluid practices by ending each section with a vignette describing
the daily routines of a staff member. My description concentrates on the participants and
documents that compose the bulk of each setting’s documenting work. The following
accounts are intended to foreshadow the document analysis in the following chapters.
Primary Care Clinics

Regions

In primary care clinics the registration desk and storage for medical records and most other documents partition the clinic into two parts. On the one side, one finds the public space of the waiting room, on the other side the restricted area where doctors, nurses and clinical assistants do their work. In the Cildra Health Clinic, where Sophie receives her primary care, the registration desk has a glass window facing the waiting room. In the back of the registration room, a nurse and clinical assistant station opens up to the hallway leading to the examination rooms and offices. Medical records fill three large filing shelves in the back of the room. Notes and telephone lists hang on a large bulletin board next to the station. The clinical assistants face the far end of a long hallway forming an “L” lining two sides of the building as seen in Figure 4.4. The examination rooms line the building’s outer wall; the windowless immunization area, small laboratory, storage room all face the center of the building. The clinical assistants use one windowless exam room to ready patients before sending them to see a doctor or nurse by taking temperature, measuring weight, height, and eyesight. At the end of the hallway and around the corner one finds the doctors’ and nurses’ offices and a small staff lunchroom. Only a toddler on the run will make it to the far end of the hallway.

The physical layout does not vary greatly across the five primary care clinics in my study. All follow a general division between the public waiting room, the registration space in the middle opening up to a number of exam rooms and test/medication areas. Offices, in particular the physicians’, are partly or entirely shielded from the places frequented by patients. Few doctors and nurses ever venture out into the waiting room. Only the clinical assistants will from time to time make a quick round through the waiting room to check on a particularly sick child. Patients’ movements through the clinic takes them from the waiting room past the registration desk into an exam room, and/or immunization area. Beyond these semipublic spaces one finds the offices for doctors, nurse practitioners, and physician assistants, the clinical assistant’s desk, and the staff room.
Where the partitioning of pediatric clinics is largely identical, the number of occupational groups involved in the daily running of these five clinics differs significantly. On one end of the continuum two pediatricians and two receptionists run a small clinic facing a dreary looking strip mall on the outskirts of a middle class suburb.

Figure 4.4 – Primary Care Clinic Layout

From their registration area bridging the waiting room and the rest of the clinic, the receptionists handle phone calls, register patients, file and fetch medical records, bring patients to the exam room, take care of insurance, billing issues, and referrals. The two pediatricians do everything else as they share five basic exam rooms and a small alcove where they run simple tests (e.g., strep and urine tests), keep medication, and other medical paraphernalia.
On the other end of the continuum, a large Provider Network Clinic located in a corporate looking building on a hilltop overlooking the intersection of two major highways, employs seven pediatricians, three nurse practitioners, two physician assistants, five clinical assistants, an asthma/respiratory specialist, a full time administrator, three receptionists with two attending to registration and one specializing in referrals, scheduling follow up visits, and co-payments. Yet, waiting room, registration area, exam rooms, and offices still share the same configuration with the much smaller clinic mentioned above.

The pediatric clinics are overwhelmingly women’s work places. Ten out of the 16 pediatricians I observed are female, ranging from newly minted pediatricians to physicians with 10-20 years tenure. The male pediatricians tend to be either right out of medical training or elderly men approaching the end of their careers. With no exception, the nurse practitioners and physicians assistants are middle-aged women with long careers in primary care clinics. In the early part of their careers, nurses did what clinical assistants do today. Progressively, nurse practitioners have carved out larger areas of jurisdiction involving phone triage, seeing their own patients, and running the vaccination program. I initially found it difficult to distinguish nurse practitioners from physicians, as they would have their own offices, see their own patients, and fill out the same documents as the pediatricians. In contrast to nurses, I encountered all age groups represented among the clinical assistants from young women in their early twenties to elderly women such as Lydia described in Sophie’s case in the Cildra Health Clinic. The age profile among the receptionists matched that of the clinical assistants. Yet, among the receptionists I did not encounter any men. In the following description I will focus on the pediatricians and clinical assistants. I leave aside the nurses here as they generally engage in the same documenting practices as physicians with the exception of phone triage.

Temporal Rhythms: Quiet mornings and busy afternoons

From time to time older pediatricians reminisce about the days of home visits and 24-7 on-call duties. Today clinics typically open between seven and nine and close between five and seven, depending on the day of the week. After-hours phone calls automatically get transferred to a nursing call center. The nurses assess whether the patient
can wait until the clinic opens the next day or must go the emergency room. By the time the clinic opens the next day, a fax summarizing the past night's calls awaits the clinic staff. If an admission is deemed necessary during the night, the call center contacts the primary care doctor by phone. However, most pediatric primary care doctors are on-call only once a week. The other days a colleague covers for them. Furthermore, many physicians split their time between the clinic and other duties, such as working part-time as an attending physician in a hospital or teaching in a nearby medical school. Nurse practitioners, clinical assistants, and receptionists typically work eight-hour days.

Compared to Zerubavel's temporal analysis of hospital work, a primary care clinic's work flow is relatively simple (Zerubavel, 1979). Physicians, nurses, and clinical assistants follow a general "temporal symmetry" where they all work in the clinic during its open hours. Physicians, especially in larger clinics, do rely on some degree of "temporal complementarity," covering for each other's patients and outsourcing care to nursing call centers outside clinic hours. In contrast to hospital care one does not find "staggered coverage" in the clinic. Patients do not stay around long enough to require doctors and nurses to create continuity in their care by taking over patients from each other during overlapping segments of time. If the patient requires more attention than the schedule affords, he or she is sent off to a hospital.

Pediatricians and clinical assistants divide the day into two segments: "Before and after the school bus hits." Typically, parents only realize that their child is sick when the school bus drops off a pale-looking fellow with a fever or wheezing as in Sophie's case. Mornings in the clinic tend to start slow with scheduled "health maintenance visits" also known as health checks. Infants and toddlers come on frequent visits starting with their two-week exam, two months exam, four months exam, and so forth. As the child reaches school age these scheduled visits become less frequent. For this reason pediatricians and clinic staff know many of their youngest patients by name. The older children often blend into a more nondescript mass, with the exception of frequently or chronically ill children. Afternoons leave space for more unscheduled sick visits and between three and five the line at the registration desk lengthens and the noise level in the waiting room increases.
Clinics measure the length of a patient visit in physician time. With some variations among the clinics, a health check is scheduled for 15-20 minutes and a sick call for 10 minutes, sometimes as little as five minutes. The large number of sick visits puts strain on, not only the pediatrician, but also the receptionist and clinical assistants. All patients go through the same registration process at the front desk and have their history taken and vital signs measured by the clinical assistant.

One clinic squeezed between a large housing project and a cemetery stands out as an exception to this general daily rhythm. Nurses and pediatricians start each day with a list specifying all the scheduled visits. However, those patients rarely show up or arrive very late. Instead, the nurses and pediatricians attend to non-scheduled visits. From the patient perspective it makes little difference whether they show up for a scheduled or non-scheduled appointment. Either way they are likely to wait for at least an hour. On my first visit to the clinic I lingered for an hour and a half in the waiting room for the pediatrician to show up in the clinic. Meanwhile, the receptionist worked frantically to keep up with two phones ringing off the hook. Every time a new patient registers she kicks the wall behind her. At one point she literally screams down the hallway to a doctor: “Dr. X if you don’t do something soon all your patients gonna leave!” A Haitian man seated next to me explains in his soft heavy accent that he finally understands the root to the double meaning of the word “patient.”

Clinical Assistants, Pediatricians, and Their Documents

As the number of occupational groups employed in a clinic varies greatly so does the number of documents used to record patients’ care. Figure 4.5 summarizes the three important document types. The Encounter Sheet is a cover term which includes a number of possible sick/follow-up visit or health check forms. All clinics use physical growth charts to track the child’s development and one or more forms to document clinic visits. In one clinic the two pediatricians depend on one form to document all patient encounters. For each visit the receptionist draws a line under the previous entry and initiates the new section with the day’s date. In the examination room the pediatrician enters longhand any pertinent observation, such as: “ear infection,” “UTI” (urinal tract infection), or “looks
good” and “++ development.” The pediatrician makes a note after administrating vaccinations. After filling out the last line on a sheet the pediatrician grabs a new form from a bin in the examination room. Another form in the bin is used for referrals to specialty clinics. All the other clinics I studied have developed preprinted forms for the most typical encounters, including, phone triage forms, sick/follow-up visits, and health check visit forms. Typically, one finds 14 versions of the health check form, one for each routine visit: newborn visit, two week visit, two months visit, four months visit, and so forth. Depending on the age, each form prompts the user to record patient name, age, medicine, allergies, parental concerns, interim history, development social/family history and a number of other age dependent categories. A form leaves space for the clinical assistant to document the height, weight, and vital signs, and for the pediatrician to record the physical exam. The receptionist or clinical assistant places the appropriate form on the left side of the medical record folder so that the most recent encounter form faces the reader when flipping open the record. On the right hand side of the folder, the clinical assistant attaches all forms pertaining to test results, growth charts, notes from specialists, discharge summaries from hospitals, and any summary list the clinic may use. Often documents from outside caregivers take a long time to make it into the record. When asked if discharge summaries and summaries from after-hours nursing services go into the records the administrator in Sophie’s clinic provided a typical answer:

“It’s supposed to go into the charts but it will probably not go into the chart. We have two-year-old filing that has not been done. We are trying to get it organized. We need a system. That is partly why Chuck (a clerk) works weekends — to get us up to date. So, we are kind of behind.”

The medical record starts and ends its paths through the clinic at the registration desk where the secretary places the appropriate encounter form on the left hand side. In Sophie’s case it is a Sick/Follow-up form. The clinical assistant collects the records of newly arrived patients. When a room opens up the clinical assistant selects a record and brings the patient to an examination room where she will take vital signs and make the first entries in the encounter sheet. If it is a health check visit, the clinical assistant makes sure to ask if the parents have any particular concerns they want to talk to the pediatrician about.
In Sophie’s clinic, Lydia, an elderly clinical assistant with 20 years tenure takes care of this process. Constantly on her feet she circulates between the waiting room, examination room, registration desk, procedure room, and all the hallways. At first her moves seem idiosyncratic and impossible to discern. Lydia decides what patient is “next in line,” brings the family to the clinical assistant room to record the patient’s vital signs and put together a chart. When needed, Lydia fills out the social evaluation part of the Health Check-up Sheets including family situation, how well the child is doing in school, eye sight, etc. She places the chart in the door-mounted folder used by the doctor or nurse she deems most fit for that patient. In addition she serves as the clinic’s Spanish translator whenever needed, which is often. She explains in her heavy Latin accent:

“I know if this doctor is good at something and weak in other areas. Some are quick if you need a quick check and get things moving. If an asthmatic is in a bad stage I will place them in R2 (Asthma room) and give a neb. [With a smile] I’m not supposed to give medicine but if it’s busy the doctor will just sign-off on it afterwards. Also if I think it looks like strep [strep throat] I’ll take the strep test and if it’s positive then the doctor will just have to sign and write a prescription.”

<table>
<thead>
<tr>
<th>Staff Member</th>
<th>Document Types</th>
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<tbody>
<tr>
<td>Primary Care Doctor</td>
<td>Encounter Sheet</td>
</tr>
<tr>
<td>Clinical Assistant</td>
<td>Encounter Sheet</td>
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<tr>
<td>Nurse</td>
<td>Phone Triage Form</td>
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<td></td>
<td>Expect Sheet</td>
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In comparison to Lydia, the doctors and nurses are nearly immobile. They spend most of their time in their offices and otherwise circle among a few examination rooms, determined by Lydia. As one of the doctors put it: “Lydia – she runs this place. She will normally tell me what is wrong with the patients before I see them. She is amazing.”

**Pediatrician’s Time-Space Path**

The pediatricians oscillate between their offices and the examination room. Each patient visit typically starts in the physician’s office. The physician then sees the patient in the examination room, only to return to his or her office after the patient leaves. The
following vignette captures one such typical patient visit, which primary care doctors repeat again and again on a typical workday in their clinics.

Dr. Roth, Sophie’s pediatrician picks up the encounter form from the bin outside his office door and heads to the examination room specified by Lydia on the top part of the encounter form. Soon after entering the room he flips back in the record a few pages to the last health check to see if any notable concerns had been documented since then. He also looks at the problem list. One morning the patient, a 16-year-old male is coming in for a health check visit. This problem list seems old. It mentions asthma but Dr. Roth cannot find any recent asthma visits or hospitalizations in the forms. Lydia has noted that he complains about acne. Dr. Roth: “I need to clean out this problem list and acne is not severe enough to go in there.” From the last encounter form, he notices that he prescribed an antibiotic to treat the boy’s acne. In the room he greets the boy and the mother. After a few polite exchanges Dr. Roth asks if they have any questions or problems they want to discuss. The boy shows off his pimply chin. Dr. Roth takes a closer look, and then proceeds with the physical exam. As he checks the boy’s ears, heart, and eyes he asks a series of general questions about how he is doing in school, friends, nutrition. Dr. Roth gives him a little lecture on how acne can be related to nutrition. The boy looks like he has heard this before, as the mother nods vigorously in the background. Smoking can also affect acne. The boy assures Dr. Roth that he does not smoke. As he finishes the exam, Dr. Roth returns to the encounter sheet and makes a few notes on the acne and nutrition. Meanwhile the mother and boy keep talking about his cousin who pulled his back in the gym. Dr. Roth barely listens as he fills out a billing sheet and then the growth chart, which he shows to the boy and mother. “Your height is at the 95 percentile. You should join the basketball team.” He already has. Dr. Roth writes a prescription for a different antibiotic to help clear up the acne and tells them to schedule a visit in a month from now to check if the antibiotic is helping. Finally, he hands the mother the billing sheet and asks her to give it to the receptionist. Back in his office Dr. Roth adds a few more notes to the encounter sheet and places a fresh problem list in the folder to be filled out later, then places it in a stack of charts to be finished. He then goes off to see the next patient.

For many pediatricians their day in the clinic rarely ends when the last patient leaves. Depending on the writing style and document system used, the pediatricians compile records during the day and sometimes spend hours writing up patient histories. One
physician in a large Provider Network clinic with a relatively new computer system complained one day that she had seen more than 20 patients a day for the last three days, and that she had had time to finish documenting only a fraction. Now she has to spend her evenings at home accessing the system on-line to document the cases based on memory and the fragments she had managed to enter during the exam. She types fast but does not like to use the prompts that the computer system offers as a base for the history writing. She prefers a narrative system and dislikes the textbook histories the system generates as she clicks through a set of predefined categories.

The Emergency Room

Regions

The spatial layout of the emergency department follows the same broad outline of the primary care clinics as illustrated in Figure 4.6. A registration desk buffers the waiting room from the semi-public spaces partitioned out for specific activities such as exam, medication, charting, isolation, trauma, library, and dental. Behind a set of double doors, out of the patients’ reach, one finds a small number of administrative offices and messy cubicles belonging to the attending doctors and research fellows. Apart from this rough demarcation of space, the partitioning or regionalization of the locale changes by the time of day and the types of patients arriving at the triage desk. One finds five main areas of the ER largely defined by where people do their documenting work: Triage/Waiting, Registration, Ambulatory Emergencies (know as Non-urgent), and Major Emergency area. A family’s typical path through the ER proceeds as in Sophie’s case from the triage desk to registration and back to triage for a physical evaluation followed by a long wait in the waiting area. Immediately after the family is called into the main department they are placed in a patient room, where they stay until discharged or admitted, unless they are sent to Radiology or need special or painful procedures done. Doctors and nurses prefer to perform lumbar punctures, draw blood, bladder taps, and pelvic exams in designated

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9 The ER contains a number of rooms that I will not discuss, including the isolation room, social work/psych area, dental room, nursing break room, library, procedure rooms, medication room, registration clerk manager’s office.
rooms. From time to time a family may be placed in a small waiting room within the main ER if long waits are expected before test results or a consult becomes available. This way the nurses can give the room to another patient in the meantime. The patient’s path through the ER ends at either the front or back door of the ER. When discharged, the patients check out at the registration desk and leave through the waiting room. House-officers often refer to children in the process of being admitted to the hospital as “back-door” patients. Admitted patients are like Sophie – rolled through the back door of the ER to an elevator leading to the hospital’s main tower.

Trauma patients arriving by ambulance or the hospital’s own transportation represent an exception to this patient path. The patient will enter through the ambulance dock and is wheeled straight into the adjacent trauma/critical care rooms. Nearly all those patients will get admitted. In Kilmham Hospital relatively few patients arrive straight from an accident scene. Due to the hospital’s location in relation to other hospitals, most trauma cases have been through another hospital before they get transferred to Kilmham Hospital.

The Triage desk controls access to the waiting room and registration desk. One cannot avoid passing the triage desk on the way into the emergency room. Without a visible hospital badge one inevitable draws attention from one of the nurses. The triage area is a world unto itself. Behind the desk facing the patients one finds a long counter with fax machines, computer terminals and phones. There are three exam rooms crammed behind the triage nurses and a nook with a chair and a nebulizer pump used for asthmatic patients who need treatment while waiting for rooms to open up in the main department. Apart from the nurses, a couple of clinical assistants work in the triage area measuring patients’ vital signs and their weight and height in the examination rooms.

The Registration desk defines another major center of activity in the ER. The front faces the waiting room with two cubicles where predominantly younger men and women interview and enter patients’ demographic and insurance information into the hospital-wide computer system and the emergency room on-line system. The back of the cubicles leads to a large circular counter containing all the forms used in the department. Doctors and nurses come to the counter when calling new patients from the waiting room, picking up forms, or printing patient names and record numbers on sheets from the hospital ID cards.
placed at the back of the registration desk. Patients check out at the same desk when they leave. Most documents pertaining to specific patients end up in the registration desk after the patient has left, where one of the clerks will sort and send the relevant parts to the central record department located two floors below ground. A tubing system used for sending tests to the laboratory is found opposite the registration desk. Nurses and doctors use the registration desk to ready the tests and fill out test request forms.

"The Non-Urgent area takes care of the children that should not be in the ER," one fellow explains when describing the ambulatory side of the department. The chart nurse sorting the children sent from triage decides who are expected to be the least sick children and assigns them to the Non-Urgent side of the ER. Here a nurse and one or two fellows (physicians that have finished their residency but split their time between doing research and working in emergency medicine) call in their own patients and pace their work independently of the rest of the department. They have a small alcove opposite a handful of exam rooms where they write up their notes, look up test results, and socialize. The Non-Urgent area does not have a clearly demarcated space though they generally operate in 4-5 rooms closest to the waiting room and near their charting area. Depending on the number of ambulatory children and the need for exam rooms in the rest of the department, the ambulatory side shrinks or swells in size.

The Major Emergencies area encompasses the work of four teams taking up the rest of the emergency department: Blue, Green, Red, and Black. The Blue team specializes in surgical, orthopedic cases and trauma/critical care and operates out of the Trauma/Critical Care rooms 28-30 and the Lacerations room 26 and 27. The Green team focuses on sicker urgent patients, whereas the Red and Black teams care for less acute medical patients. The Red team leans towards respiratory patients, the Black team gets most of the psychiatric patients. The latter team places their patients in rooms 8, 9, 12, and 13 located at the periphery of the Charting area where most of the activity takes place. One can easily tell when a psychiatric patient occupies a room as a security guard will be seated outside the door. Each team is staffed with one or two house-officers or fellows, a nurse, and a clinical assistant. The number of doctors and nurses and allocation of rooms fluctuates by the time of day and year. For instance, broken bones, lacerations and other surgical injuries increase
dramatically over the weekend and holidays when children play outside. Respiratory and viral illnesses peak during the winter months, as do the total number of patients in the ER.

Doctors and nurses from the four teams all congregate in and around the Charting Room. A glass wall reveals a long narrow room where doctors sit or stand along two desks equipped with computer monitors. The room bustles with activity from mid afternoon till the early morning hours. House-officers bend over terminals working on their emergency room discharge notes. Others check lab results. At the back wall two fellows go over a handful of chest x-rays. At one end a secretary manages the phones, and constantly glances at a large whiteboard located across the hallway in full view from behind the glass wall framing the Charting area. In the hallway separating the whiteboard from the glass wall, nurses gather, taking a break or using trash bins as desktops when filling out their Flowsheets.

People: Registered Nurses, House-Officers, and Attending Doctors

Numerous people work in the ER on any given day to provide care and services for the approximately 50,000 yearly patient visits. One meets a steady stream of consultants from most of the hospital’s sub-specialties, policemen, detectives, childcare specialists, social workers, administrators, hospitalists, coordinators of patient placement (COPP), orderlies, clinical assistants, janitors, and security people, just to mention a few. In the following description I will focus on the nurses’ and physicians’ work. Within these two groups the nurses are predominantly female but one finds more male nurses in the ER than in primary care clinics. One finds approximately equal numbers of men and women among the physicians.

The ER nurses constitute one group but at the beginning of each 12-hour shift they divide themselves between Triage, Non-Urgent, and the Green, Blue, Red, and Black teams. One of the most senior nurses will also take on the role of Chart Nurse, which involves coordinating the entire flow of patients with the number of beds and staff available. Nurses assign themselves to a team on a first come, first serve basis. Often nurses will show up 10-15 minutes early to land a favored assignment. Most nurses prefer to work in Triage or on the Blue team. Triage is perceived to provide the most freedom,
with no dependency on house-officers. Nurses favor the Blue team for the fact that only the more experienced doctors get that assignment. One Blue nurse explains: “The Blue team docs are more experienced and they only work on this team. That means we can really get things moving. If they work on other teams as well they tend to get bogged down in non-blue kids and that slows things down.”

All nurses join the ER with several years experience from in-patient services and require additional accreditation to work in the ER allowing them to do more procedures and participate in trauma care. One third of the nurses have worked for more than eight years in emergency medicine and many of them participate in various national and regional disaster teams occasionally whisked off to trouble spots with a few days notice. One old-timer explains: “We have very few nurses that stay only four years and then leave. Either they love it or they hate it and clear within the first year. It’s a hard place to get used to, especially during the winter.” The nurses that stay on celebrate the high pace of ER work and generally talk despairingly about the in-patients wards as being too boring and too doctor dependent. The ER nurse Ann explains:

“We have a lot of autonomy here that the nurses don’t have on the floors. A nurse at the floor could not put in an IV and draw blood and get fluids started. They have to have a doctor see the kid and make an order. We can do that if we see a dry kid who needs fluid and has a fever. We know what they [doctors] need and what blood to draw. So what we can do is to put in the IV, draw the blood, send them to the lab, start the bolus; and the doctor has not even seen the kid yet. When the doctor comes to see the kid he can look in the computer and he has already got the lab results. We try to do as much as we can to expedite the patient care. You want to make the patient comfortable, of course - but also to get them through here as soon as possible.”

As the nurses, so do the full time ER physicians value the fast pace of the setting. One emergency medicine resident puts it this way when asked why he liked ER work:

“Problem solving. All you do here is problem solving. You get a patient coming in with a problem. I don't care about long-term care for the patient. A plan is set in motion and your goal is to follow that plan and see if it works, and watch the patient heal. I'm not a fan of that. I'm very goal and result oriented. I want quick results, quick verification. Emergency medicine gives you that. You get patients in with certain problems. You do things very quickly. You get answers really quickly. You can make a real difference in a very short amount of time. Plus it gives you the chance to know a little bit about everything. I could not do primary
care. You see a lot of *not* sick kids. There are a lot more social psych issues. I don't want to deal with that. I want to deal with patients with medical problems.”

A slightly older emergency medicine research fellow, who worked in primary care for a few years before joining the hospital, provides an answer that seems less infused with popular culture imagery:

“*I choose emergency medicine because I don't really care how they [patients] pay. That is not really my responsibility. My responsibility is solely to provide the best care to the patient. I don't have to worry about billing; I don't have to worry about any of that. I think the way HMO's have ruined medical care -- internal medicine is not what it used to be. Pediatrics is not what it used to be. They are seeing 50-60 kids in their office every day; that is 6 patients an hour. That is crazy! I spend more time talking with my families in the ER than they do with their own patients in their own office.”*

The physicians working in the ER are a heterogeneous group. Several residency programs circulate through the ER, some belonging to the Kilham’s pediatric program others enrolled in two different multi-hospital emergency medicine programs that include both adult and pediatric emergency care. The ER also houses a research fellow program in emergency medicine where the physicians both work and conduct research in the department. In addition, there is a group of approximately 26 attending physicians all board-certified in pediatrics and emergency medicine. The various residency programs promote starkly different professional identities. The emergency medicine residents will often cringe when pediatric residents spend a quick meal break talking about Harry Potter or compare notes on where to purchase their favorite Winnie the Poch tie. The pediatric residents refer to their counterparts as “Hammer residents.” The following quote from a “Hammer resident” should explain how they earned their name:

Q: “What is the difference between pediatrics and emergency medicine?”
A: “Focus! Pediatrics is much more touchy feely. I'm going to get a little cynical. In pediatrics it's much more family oriented. You take care of the family, take care of the patient, make sure that everybody’s feeling good, that everybody’s looking happy. In ER medicine there is a lot more pace and psychiatric component to it. So sometimes you have to say that it doesn't matter whether they look happy or not. They don't need to be here, whether the kid is happy or not. [in a mocking voice] "oh they are not happy, let’s..." That is not good enough. [Pause] It's just a different perspective. The pediatricians are more humanistic. Not the word humanist but just more humanistic. For us [in emergency medicine] it’s a lot about
moving meat – in and out, in and out. I have got to see X amount of patients in Y amount of time. I have to get these patients in and out. You have to move fast.”

**Temporal Rhythms: Rotations and daily schedules**

House-officers rotate through the ER on four to five week cycles. While on the ER rotation, they work from 8:00 am to approximately 7:00 pm. Every fourth night they have a 2:00 pm to midnight shift. On weekends they work from noon to midnight. The late shift house-officers tend not to leave before 1:00 or 2:00 am, struggling to finish their paperwork. The research fellows, junior residents, and attending doctors cover from midnight to the morning shift. Two or more attending doctors work in the ER at any given time and take on one of two roles: supervisor and what is called the “drone” position. As supervisor, the attending doctor will see all house-officers’ patients prior to any major intervention, specifically discharges and admissions. This arrangement creates some “temporal symmetry” among attending doctors and house-officers, which allows the former to monitor and supervise the latter group. The drones, also sometimes referred to as worker bees, see their own patients and will typically work closely with the chart nurse to focus on resolving cases that would help open up beds or speed up the flow of patients in the ER.

Nurses work on two 12 hour shifts from 7:00-7:00. This staffing scheme supports the typical daily patient-load fluctuations, which starts low in the morning and begins increasing after lunch to peak between 5:00 pm and 8:00 pm. The five to eight rush matches most primary care clinics’ closing time. The evenings remain busy and quiets down only past midnight. The major activity spikes, in terms of documenting, take place between 6:00 and 7:30 pm and just around midnight. Importantly, this is the time where the “staggered coverage” among both doctors and nurses schedules comes into play. As we will see in Chapters Five and Six, the staggered coverage marks important times and places for documenting work.

In the early evening, house-officers struggle to finish their day shift by discharging or admitting as many of their patients as possible before they sign-out to the house-officers staying until midnight. Furthermore, day nurses sign-out to the arriving night nurses.
around this time. At midnight the next set of house-officers scramble to get out the door by making decisions about their patients.

Midnight is also the time when the Coordinator of Patient Placement, known as the COPP, goes home. The COPP is a nurse who takes care of all admissions to the hospital. He or she decides where a given patient should be admitted given their diagnosis, age, special needs, available beds, and nursing staff. After the COPP nurse leaves, the ER chart nurse takes over the job; at 2:00am triage closes, which means that the registration desk clerks are the first people to see the patient. These changes alter the document flow in the department. Rounds in the ER can and will take place whenever an attending, chart or COPP nurse find it necessary; but rounds always take place around the major changes of shift, 7:00pm and before the COPP nurse goes home at midnight. These rounds involve the attending doctors, ingoing and outgoing chart nurses, the COPP nurse and anybody else who wants to participate, which usually means no one else.

Seasonal changes work their way into the work pace in the ER as well. The average patient load of 160-170 visits a day jumps to as high as 250 daily visits on some January and February days where scores of infants present with bronchiolitis, influenza and many asthmatics experience flare-ups. A first warm spring weekend means a lot of lacerations and orthopedic work in the ER as does an inviting weekend snowfall. The ER staff happily shares their elaborate theories explaining various spikes and valleys in patient load. For instance, both doctors and nurses will regularly refer to "the super bowl syndrome," meaning that popular cultural events influence their work load. No children show up in the triage for hours only to swarm the ER when daddy finally turns off the TV or the turkey has been devoured.

Doctors’ and nurses’ documenting practices tie closely with the daily temporal work cycles. I will focus primarily on the triage nurses, the nurses on the green and red team, the chart nurse, and house-officers in the Major Emergencies area. I leave aside the registration and non-urgent side of care as these fall outside the main focus of my study. Furthermore, I specifically target documents used to record patient histories and not documents and forms designated for medication, procedures, tests, and orders of tests. Figure 4.7 summarizes the documents of particular importance for the upcoming analysis.
### Triage Nurses and Their Documents

The triage nurses perform a first assessment of all patients as they show up on the doorstep of the ER. Based on their first question, “why have you come?” the nurse will select one of four emergency department Flowsheets: a General Medical Flowsheet, an Asthma Flowsheet (used for most respiratory issues), a Surgical/Trauma Flowsheet and a Mental Health Flowsheet. In the majority of cases the triage nurse selects a Medical or Asthma Flowsheet. From time to time the nurse fills out the wrong Flowsheet. This typically happens when the parents do not state the pertinent complaint up front but wind their way through a longer history. In those cases the triage nurse starts over on a fresh Flowsheet and the parent is labeled a “bad historian.” The first third of the page is designated to the triage nurse and prompts the nurse to document the patient’s name, date of birth, time of arrival, chief complaint, past medical history, medication, allergies, and triage status. Triage nurses typically record the chief complaint, past medical history and medication with one or two words (e.g., asthma, hospitalized 2y ago). Medication may not be filled out. The triage status section allows the nurse to code the patient as “non-urgent, urgent, move-ahead, and emergent.” By checking off “non-urgent” the triage nurse deems the patient capable of waiting more than an hour, “urgent” patients wait less than an hour, “move-ahead” 15 minutes, and “emergent” patients should be seen immediately.

“Emergent you don’t see too often,” one triage nurse explains. The nurse will also record if they measure the oxygen level in the patient’s blood. The triage section on the Asthma Flowsheet takes up an entire page where the nurse, among other things, calculates a “triage respiratory severity score” based on age, oxygen level in blood, dyspnea, auscultation,
retractions, mental status, past hospitalizations, and most recent primary care or emergency room visit. The score places the patient in the non-urgent, urgent, or emergent category.

When completed, the Flowsheet is placed according to its triage level in a gray rack on the wall next to the doors leading into the triage examination rooms. The clinical assistants and triage nurses call up patients in accordance with the way the Flowsheets have been sorted. If bones are broken, triage nurses send the patient to radiology for x-ray or they administer nebulizer treatment to asthmatics, as in Sophie’s case. The triage nurses do whatever they can to comfort the child, for instance, by giving medication that reduces fever or placing a sling on a broken arm. Placing IV and giving boles is considered too time consuming for the triage nurses to handle.

Triage nurses engage in a number of other activities, facing “daggers” being one of them. A “dagger” is a complaining parent on a busy day. “Parents come up complaining and want to have their children seen, now! They cannot understand that we have a system. They see people go in who arrived after they did.” Apart from waiting room management, the triage nurses work the phones. In particular, the receptionist will transfer calls from primary care physicians referring one of their patients to the ER to the charting room or directly to an attending doctor’s mobile phone. The ER staff uses a preprinted form named the “Expect” sheet to fill in the information. The form contains a number of pre-specified categories, including space to record vital signs, laboratory results, blood tests, radiology, treatment given, treatment plan, call back requested and some information on ambulance service. In reality, the nurses record the patient’s name, the primary care giver’s name, the chief complaint, and whether the doctor wants to be called back. The primary care doctors often request specific procedures or tests. These do not always make it onto the form. Likewise, many primary care doctors insist on talking to the attending doctor, in the hope of gaining more influence over their patient’s emergency room care. Attending doctors will actively avoid these calls. Some patients arrive in the ER knowing that their primary care doctor called the ER. Often the parents assume that the triage nurse will know about their case when they present at the triage desk or expect that the call will help them circumvent the waiting room. They are often disappointed to learn that neither is the case.
The triage nurses place their Expect Sheets in an in-box next to the phones and fax machines. Similar boxes can be found in registration and the charting room; all places where staff members receive expect calls. Little organized effort is put into transferring them to the patient’s chart with the Flowsheet. When it happens, the nurse and physicians are typically well along in their care. Most staff members in the ER do take “expect” calls and one night a triage nurse offered to have me spend the evening taking “expect calls.” The chart nurse, attending doctors, COPP nurses (coordinator of patient placement), and triage nurses regularly frequent these three in-boxes to gain a sense of what to expect in the next few hours. Typically, staff members simply assess the size of the pile. Returning from a round of the in-boxes one triage nurse is asked by his colleague: How does it look?” As an answer he holds up his hand making a five-inch space between his thumb and index finger. The other nurse shakes her head in resignation.

In the triage examination rooms one also finds computer terminals. The system has been sitting dormant for over six months. The system is intended to allow nurses to document nursing patient history, vital signs, lab check list, etc, by going through a large number of prescribed screens. The physician’s emergency medicine [EM] system was meant to import those notes avoiding multiple recordings of vital signs and other information. However, the new system can communicate with neither the hospital-wide registration system nor the EM system. It proved difficult to start a record on a patient that had not first been entered into the hospital’s old legacy registration system. Furthermore, the department faces problems integrating the nursing information into the ER physicians’ homegrown EM system. So far ten nurses have been trained in the use of the system and the terminals remain in the examination rooms. I observed similar scenarios of technology non-use in several other healthcare settings in the course of my study.

**Chart Nurses and Attending Doctors and Their Documents**

The Flowsheets follow patients to the registration desk where the patient gets entered into two on-line systems, the hospital-wide registration system and the EM station, the ER’s homegrown record system. From here, a registration clerk brings the Flowsheets to a larger version of the gray rack, one mounted on a wall within direct view of the central
whiteboard and charting room. This gray rack serves as a window to the waiting room. When talking about how busy it is or was, ER staff members signal this by the distance between the palms of their hands. Hands held two feet apart amounts to a full rack and a hectic evening.

Patient rooms are a scarce resource in the ER and as soon as one opens up the Chart nurse will select a Flowsheet based on the triage status and in which team the room opens up. The Chart nurse brings the Flowsheet to the backside of the registration desk and calls the family over the intercom. After bringing the family to the room and leaving the Flowsheet in a bin next to the door, the chart nurse adds the patient’s name to a the large whiteboard. Most interactions in the main part of the ER start in front of the whiteboard or in the charting room. Rounding serves as an important example. Historically a round involved the walking from bedside to bedside in a given department. Rounds were lead by the attending physician and included nurses, house-officers and medical students. In this ER, rounds entail attending doctors, chart nurse, and the COPP nurse. They do not walk from patient to patient but from document to document starting at the whiteboard. The following vignette illustrates a round and the multiple documents that are part of the staff members’ unfolding work practices.

The Time-Space Path of ER Rounds

At 9:30 pm two attending doctors and the chart nurse, Sharon, gather for a round in front of the whiteboard. One attending, Paul, is signing-out to the incoming attending, Brenda, but they want Sharon to join in case they need to take “nursing issues” into consideration. The Charting Room bustles with activity. House-officers bend over terminals working on their emergency room discharge notes. Others check lab results. At the back wall two fellows go over a handful of chest x-rays.

A secretary at the one end of the narrow room hangs up the phone and sticks her head out from behind the glass wall, addressing Sharon, Paul, Brenda: “The COPP just called. Room 17 can go to the Short Stay Unit. Sharon nods and writes SSU under room 17. “We better get this one up as soon as possible,” she says to the attending physicians and points to a gray rack at the end of the hallway. It is nearly full. Sharon continues: “Just an hour ago it was like this. . .” She holds out her hands with a foot or so between them to demonstrate how much the number
of Flowsheets and thus waiting patients have increased. “Yeah, let’s get going,” Paul responds. Starting at one end of the ER they stroll from patient door to patient door where each patient’s Flowsheets can be found in a rack next to the door. Paul picks up each chart and briefly summarizes each patient and what needs to be done. Outside room 18 he explains: “Well, this is a 3-year-old with some wheezing and shortness of breath. No history of asthma. Possible Bronchiolitis, but we are also checking for pneumonia. Do we have a chest XR yet?” He pops his head into the patient’s room and asks the mother. They returned from Radiology 45 minutes ago. To the group Paul continues: “We better get on top of this one. They have been here for quite some time.” Sharon asks: “Who is the intern on this one? Is it Starr? He seems to be dragging his feet or something.” Paul agrees. Starr is a new emergency room intern. Brenda promises to keep an eye on him.

The team continues their tour from flow sheet to flow sheet only to end back at the whiteboard. Standing in front of the whiteboard the team turns their discussion to the blue, green, red, and black teams respectively. On this Friday evening, the black team is fully booked with four psychiatric patients, three of which need a “sitter” (security guard). Sharon explains that they are teenagers from a residential home. They have sniffed something but will not tell what. “They are just draining our resources, with a room each and sitters [security guards].” “On top of that,” Sharon continues, “we have a rape coming. The cops called. They should be here in 50 minutes.”

On a Friday evening, they know from experience that they can expect more psychiatric cases in the form of teenagers on drugs. The group works out a joint effort to find places for the current patients in order to allow space for the expected children. They add a room to the blue team and Brenda, the attending, promises to make sure that the responsible interns put in extra effort into finding places for these children outside the hospital. Sharon assigns a nurse from the red team to help the blue team with their extra room. In this way the team assesses possible bottlenecks, discusses what patients are likely admissions, and which teams and doctors need help in order to facilitate the flow of patients through the unit. In front of the board they summarize their plan. Paul turns to the ethnographer to explain:

“Number one, you should pay attention to flow – who are the sick kids and whether the interns, residents, and fellows have their patients seen or need various levels of help and instruction.”

Addressing Sharon, Paul asks: “Did room 15 go home? Sharon responds with a yes. He wipes clean the cell for room 15. Paul continues: “By the way, there is something funky about the
family in room 8. It’s the kid that choked on a grape and turned blue. The mother was too cool about it. She wouldn’t tell what happened in detail.” Sharon: “I saw them in Triage. There the mother seemed pretty concerned.” Brenda glances at the whiteboard and then turns to Sharon: “Ok – let’s move some patients.” As the little group breaks up Brenda says to the ethnographer: “The whiteboard is our world.”

Sharon goes directly to the gray rack. Sharon flips through the Flowsheets placed in the rack, mumbling: “Vomiting and fever, vomiting and fever, vomiting and fever. They all seem to be vomiting with fever.” “I just look at the chief complaint,” she explains to the ethnographer. “Only if the kid seems really sick do I look over vital signs.” Sharon picks out a couple of Flowsheets from the left hand row of the rack and places them in the row on the right side. The patient is now in line for a room in the ambulatory side and no longer in line for a room in the main ER. Depending on workload and how swiftly each team works Sharon moves patients between the urgent and non-urgent side. This time around she places two vomiting and fever on the non-urgent side. The ambulatory team has two good fellows and a very experienced nurse, Sharon explains, so they should be able to handle it. Room 15 just opened up. Sharon picks the Flowsheet she has placed on the top of the left side: A 3-year-old asthmatic girl. Sharon goes to the communication desk where the secretaries reside and reading from the Flowsheets she calls the patient’s name over the intercom. A couple of minutes later the family enters the ER, clearly relieved to leave the waiting room behind them. A cacophony of crying and playing children slips out through the closing door. Sharon greets the family and leads them to room 15 where she leaves them behind promising that a nurse will see them shortly. She passes the whiteboard; places the patient’s name in the cell for room 15. Turning to a nurse leaning up against a trash bin filling out a Flowsheet Sharon asks: “Ann there’s a new one in room 15; a three-year-old asthmatic.” Ann nods, continues writing. Sharon clears cell 14 on the board and checks the room. Swiftly, she straightens up the room before calling in a new patient from the communication desk. “I don’t have time to wait for the janitors. When I need a room I need a room,” she explains.

After placing the new child on the whiteboard she takes a round to look at the Expect Sheets. Sharon walks from pile to pile, judging the size of each pile and flipping restlessly through them. In Triage she chats a little with the nurses there. They ask her to move ahead a 4-year-old boy with asthma and chicken pox. “Oh, lord! Now he will tie up our isolation room and we probably have to find a private room for him on the floor.” Sharon sighs and turning to the ethnographer she continues: “Because of the chicken pox we have to keep him from the
others. Those mixed bags always tie me up. I can do ten easy ones in the time I’m going to spend on a complicated case like him.” Returning to the whiteboard from her small round to the three Expect piles Sharon summarizes: “Well the expects don’t look too bad. Mainly wheezing, vomiting and fever, the usual February stuff. But you never know. We could suddenly get slammed. The night is still young.” Sharon glances at the Gray Rack and then through the glass window to the charting room. On the wall she can see a rack with x-rays sent up from radiology. “It looks like the docs need to get on top of their x-rays.” Sharon stops the attending and asks her to push her house-officer to get through the new x-rays. “We need to get them moving on their admissions.” Addressing the ethnographer she continues as she points to the circled patients’ on the whiteboard:

“As far as admissions I am looking at the whiteboard to see how many kids are admitted that either haven’t got beds or are admitted but aren’t ready to go to the floor. After midnight we cannot send them up to the floor with holding orders. We have to wait for the admitting doctor to come down which throws a wrench into it. So if I can get them [doctors] moving now to get the kids upstairs before midnight then it saves me the grief of dealing with it after midnight.”

“Last night there was seven circled but nobody booked a bed. No red dots. I’m looking for the red dots. That means that they are ready to go upstairs: the Doc has called the doc on the floor, they have made their holding orders, everything is ready. That is what I’m looking for. If they have a red dot then I’m all right. That is the key to try to get them to do that. A lot of times things tend to back up, then everybody [house-officers] start going home, when all of a sudden everybody gets circles because they finally made a decision. ‘I have to go home let’s admit the kid.’”

A nurse greets Sharon with the question: “How does it look?” Sharon responds: “Staffing looks good and no bad expects.” She turns to the whiteboard. “Room 26 has been waiting for an hour and a half.”

**Team Nurses and Their Documents**

Emergency nurses care for three to six patients at a time. Some of these patients are assigned by the Chart nurse to their team, others they select themselves among the Flowsheets in the Gray Rack. As soon as the nurse has placed the patient in the room she will sign the patient’s name on the whiteboard including room number, her own name, and the time patient was placed in the room. The latter allows ER staff to determine how long
the patient has been waiting in the room or how long it took for a house-officer to sign up for the patient. The nurses keep an eye on the whiteboard to see if a patient has been circled (i.e., pending admission) or a red dot placed by the patient’s name (ready to go to the ward). The whiteboard helps them detect if a colleague is particularly busy and needs a helping hand.

Just before seeing a new patient, the nurse goes to the registration desk and collects a note card, order sheet, and forms needed for tests. Using the patient’s credit card sized hospital ID, found in the registration desk, the nurse copies the patient name and record number onto each of the forms including a blank Note Card. The latter she places in her breast pocket together with Note Cards on her other current patients. On these cards she maintains short lists of things to do or keep in mind pertaining to individual patients, for instance, chief complaint, when to give nebulizer treatments, medication administration, whether they are sent to x-ray, blood tests pending, or possible admissions. The nurses flip through these Note Cards just before seeing a patient or when deciding what to do next. As a pile, the cards serve as a list of all the pending activities a nurse faces at any given time. When a patient leaves the ER, the nurse discards the note card.

The nurse will glance over the entries made by the triage nurse on the front page of Flowsheet. In the patient room the nurse dresses the patient in a hospital gown, takes a history, and does a physical exam. For the latter the nurse turns to page 4 in the Flowsheet containing a checklist organized by organ system with space to record any exceptions to a normal assessment. The nurse signs and dates the assessment. The structure of page 2 and 3 varies among the four types of Flowsheets. These pages are used to structure and document the nurses’ care for the duration of the patient’s ER path. In the Asthma Flowsheet the nurses will measure vital signs, level of respiratory distress, medication, and the ongoing patient assessment every half hour. The other Flowsheets specify a different combination of nursing activities. The nurse fills out the sheet in the patient room while performing the tasks or on a trash bin in front to the large whiteboard. The nurse makes an entry after an activity has been performed. In the medical Flowsheet nurses habitually leave blank the large section on ‘conscious sedation discharge score.” This section is considered outdated by the nurses. On the last page the nurses sign their name and if
another nurse takes over both nurses will sign and date at the same line. When not in use
the nurse leaves the Flowsheet in the bin outside the patient room together with other
forms pertaining to that case.

Apart from their care for patients, and use of Flowsheets, Note Cards, and
Whiteboard, the nurses continuously coordinate with the attending doctors and house-
officers on their team. From time to time house-officers see patients on more than one team
in which case the nurses collaborate with three or four house-officers at a time. The doctors
write their orders in the order sheet that the nurse checks before executing. Most often, the
nurse and the doctor talk about the order either before the doctor writes it or before the
nurse follows through with it. The order sheet can be found in the bin outside the patient
room together with the Flowsheet. In this way, the nurses and physicians structure their
work practices around these documents. When admitting a patient the nurse fills out a one
page preprinted admission form that they tube up to the receiving ward. The sheet contains
the same categories as Flowsheets or the doctors’ admission notes. In addition the form
includes questions about the patient’s “special needs.” These include the need for
interpreter, exposure to TB, varicella, measles, and whether the child needs a crib, or a
monitor. The nurse follows up with a call to the chart nurse on the receiving ward to give
the history verbally and answer any questions.

**House-Officers, Attending Physicians, and Their Documents**

House-officers document their care in two types of documents: the Temporary
Notes and the EM chart (also known as the emergency medicine online discharge and
admission notes). The Temporary Note resembles the nurses’ Note Cards. For every new
patient a house-officer will get a preprinted form headed: “Temporary Notes: Discard After
Use; Not Part of the Medical Record.”

Like the nurses, ER doctors copy the patient’s credit card sized registration card
onto the form. The ER doctors carry around a pile of those notes, summarizing all the
patients they care for at any given time. The Temporary Note form contains many of the
same categories as found on the nurses’ Flowsheet. The doctors can check off the patient’s
condition on arrival as good, fair or critical. They can record the primary physician’s name,
vital signs, and time arrived. The form is divided into five major parts. One leaves space for recording of the patient’s history. The second outlines organ groups to include in the physical exam. The third contains a checklist for procedures and x-rays, the fourth laboratory tests. The fifth allows the house-officer to keep track of what consultants they involved and record additional notes. Much of the information the doctors copy from the Flowsheet or the on-line laboratory result system.

To ER doctors, their Temporary Notes collection signifies the patient group they are currently working on, what rooms they need to go to, what other staff members they collaborate with, what tests they must order, and what results are still pending. By flipping through their pile they are likely to know if they have time to take another patient or if they need to speed up in order to be able to go home before 2 am. One resident explains, referring to the batch of notes protruding from his lab coat pockets: “I feel naked without my paperwork.”

If a new resident cannot “read” their piles, the attending helps them, as in the case of Samer Beuf, a new emergency medicine intern. One morning around 11:30am the ethnographer finds Samer sitting in the charting room with eight Temporary Notes spread out in front of him. His eyelids are noticeably heavy and he does not get much done apart from vividly describing to a fellow intern how earlier the same night he administered a complex and painful series of rabies vaccines to a 15-year-old teenager who had been bitten by a dog. As Samer reaches the point in his story where he specifies the number of milliliters of serum he injected, an attending walks by gently patting Samer on the shoulder: “You are not seeing any new patients before you finish up your notes.” Samer nods. Like most of his fellow residents, Samer would rather spend time learning to do procedures than write records. Consequently, his collection of Temporary Notes piles up, as a grave reminder of the hours ahead of him before he can go home. For every ER discharge or admission note Samer finishes on the EM on-line charting system he slips a Temporary Note into the trash bin underneath his table, with a playful triumphant smile to the ethnographer, leaving the desk in front of him a little less cluttered.

The emergency department uses an electronic charting system (EM station) developed by a couple of the attending doctors. All ER doctors’ discharge and admission
notes are logged into the system and become part of the patients’ medical record, which makes it a legal document. The system provides a structure for the house-officer entries by allowing them to choose from preset categories. It is possible to complete major parts of the note by simply clicking one’s way through several screens with the mouse. This is particularly so for the physical exam, which is expected to include a description of general appearance and exam of heart, lungs, and abdomen; other parts of the physical exam are individualized to each patient with pertinent positive and negative findings documented. Furthermore, house-officers are expected to document all procedures, medication, and lab results. All these the house-officer typically copy from the Temporary Notes. Emergency medicine attending doctors strongly promote short and concise ER charts. Attendings sign off on all charts and will scold a wordy house-officer. Charts should be concise and the history includes the chief complaint and a brief history of present illness. In the case of discharges the EM station allows house-officers to print discharge instructions to give the parents. The system covers the majority of chief complaints seen in the ER.

Apart from the Temporary Notes and EM Charts, house-officers and attending doctors use many of the same documents as the nurses and secretaries. They look over the Flowsheets before seeing a patient to get a little background on the patient. From time to time a quick glance at the vital signs and ongoing nurse assessment helps them determine if an asthmatic patient’s oxygen level in the blood is improving after nebulizer treatments. When not with patients, the house-officers spend significant time in the charting room documenting their care, looking up tests results on a couple of old dummy terminals emitting a florescent green light, looking over radiology films, discussing their cases with colleagues or simply joking around. One house-officer says: “I have a really interesting case right now.” To which a fellow promptly responds: “Yeah, it’s called influenza.” House-officers spend a significant amount of time hanging around the supervising attending waiting for their turn to present one of their patients.

The glass walls framing the charting room offer a free view of the whiteboard and the Gray Rack. Few house-officers know how to read the Gray Rack but they all use the whiteboard. A resident keeps an eye on the whiteboard in order to know when a new patient has arrived in their team or another team if they want to try another type of case.
When choosing or getting assigned a patient, the house-officer signs his or her name and time by the patient’s name. House-officers alert others, such as the COPP nurse, chart nurse, and chart secretary that the patient is a possible admission by drawing a punctuated circle around the patient’s name. A solid circle signals the start of the admission process. As with most other documenting practices the house-officer follows up the recording by verbally communicating the same message. In the case of an admission, the house-officer notifies the charting area secretary, who keeps track of admissions on several forms and contacts the COPP nurse. The latter books an available bed on a suitable ward. The majority of admissions go to the medical wards.

Before admitting a patient, the responsible ER house-officer calls and presents the patient’s case to the senior resident or fellow on the receiving ward. These conversations often grow tense as the in-patient senior resident typically probes for information the ER house-officer cannot provide. ER doctors perceive their role as stabilizing the patient long enough to allow them to make a decision to either admit or discharge. Furthermore, the in-patient residents often request additional tests and procedures performed before they will accept the patient. From the in-patient resident’s perspective, it is easier and less time consuming to perform most tests and procedures in the ER compared to the wards, where the laboratory, radiology, medication, and other medical amenities are not all close by and readily accessible.

The house-officer writes brief holding orders that accompany the patient to the in-patient ward. These orders expire two hours after arrival to the floor and must be approved by the supervising attending. A phone call notifying the primary care physician that the patient is being admitted to the hospital is considered a part of the admission process and must be documented in the admission logbook. House-officers often regard this as a time consuming and unnecessary activity. A typical complaint from an intern is: “This asthmatic does not deserve a call.” In most cases the house-officers consider it a courtesy call. From the house-officers’ point of view a decision is made and set in motion. The patient is in good hands. As most admissions take place outside primary care clinic working hours, the house-officer typically reaches a voice mail, phone service, or covering doctor. On the receiving end, the primary physicians appreciate being called but often
complain that they get little helpful information. One primary physician offered the following typical comment:

"In reality most of the calls you do get from the ER, if at all, are not in the category: 'Hi here, we have one of your kids. We are thinking about admitting him, what do you know about his asthma? Mums seem a little nervous, what do you think?' The most typical call is three in the morning: 'We saw this kid last night. He got sent up to the floor. He is on the floor for his asthma. Thank you.' And you ask: 'What floor are they at?' 'Oh well I don't know where they are.' Thank you for waking me. It's pointless. I need to be able to speak to the family, be able to have input to the decision-making.'

Calling the primary care physicians supposedly takes place before admitting the patient but in reality the calls are postponed together with other documenting tasks. Once the inpatient ward has been called, the standing order filled, and a bed found, the house-officer place a magnetic red dot by the patient’s name on the whiteboard, notifying the nurses and secretaries that the patient is ready to leave the ER.

**COPP Nurses: Moving all over the hospital**

The Coordinator of Patient Placement (COPP) program, run by five nurses, manages the flow of patients in the entire hospital. These nurses coordinate all admissions into the hospital though the ER, directly from primary care clinics, transfers from other hospitals, or the Hospital’s own transport team that fetches patients from around the country and abroad. In effect, the COPP nurses manage the available beds in the entire hospital. Beds are the limiting factor in much hospital work and carry great monetary value as a bed comes with a specified number of nursing hours depending on the ward. COPP nurses make sure that beds do not stand empty while patients, for instance, are waiting to get admitted in the ER. So, if a patient getting admitted for Cystic Fibrosis cell disease is waiting in the ER because there are no beds open in the unit specialized in Cystic Fibrosis care, the COPP nurse places the patient in a department where the staff nurses will still be able to care for the particular patient without being specialized in Cystic Fibrosis. The work involves not only keeping track of the open beds and the number of patients potentially getting admitted but also making sure that each unit has the nursing staff required to cover the needed number of beds. In the words of one COPP nurse:
“It is a complicated job. We are the only ones who move all over the hospital. We are talking about 800 beds. You have demands from the ICU who wants to transfer a patient to a bed. We have demands from the ER wanting kids to go out. The recovery room has patients to move into beds. So everybody is after the same beds. The COPP is able to look at everybody’s situation and really prioritize. I compare it to an air traffic controller with the planes coming in. This one is clear. That is really the essence of what we are doing.”

The COPP nurses, all with many years of experience in several departments, work out of a small cramped office in the back of the central registration office. The phones are ringing off the hook all day long. If not the phones, it is the COPP nurses’ pagers that go off. The ER calls with a new admission, the Transportation Team is bringing in a patient from Colombia, one inpatient ward asks to have a deteriorating patient transferred to the ICU, another inpatient ward wants to know how many patients they can expect before they make decisions about calling in one more nurse for the night shift. This small office far from demarcates the COPP nurses’ territory of operation, the entire hospital does. Throughout the day the COPP nurses do rounds in the ER and the inpatient wards. In the ER they try to get a sense of how many admissions to expect and how busy they are at the moment. On the inpatient wards, they learn from nurses and physicians who is getting discharged when, whether a unit needs more nursing staff, or if they can help with discharges or transfers to the ICU. In the words of one COPP nurse:

“We are really out and about.”

The two COPP nurses working the day shift mainly deal with patients admitted directly from outpatient specialty clinics and primary care clinics with privileges in the hospital. The evening COPP nurse working from 3:00-11:00pm mostly handles ER admissions.

As summarized in Figure 4.8, the COPP nurses maintain three documents: the Admission Sheet, Ongoing Log, and Staffing Log. All three look much like the ER Whiteboard boiled down to an 8.5” by 11” sheet. Instead of representing the patients in the ER, the COPP nurses’ sheets cover the entire hospital in terms of scheduled admissions, available beds, needed beds, and available nurse staffing. Apart from these three documents, the COPP nurses use a host of other documents found across the hospital, each focusing on the temporal and spatial organization of work in the specific locale. The
following case illustrates how one evening COPP nurse manages patient admissions to the entire hospital and still takes each unit’s local concerns and rhythms into account.

**Figure 4.8 – COPP: Frequently Used Documents**

<table>
<thead>
<tr>
<th>Staff Member</th>
<th>Document Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>COPP Nurse</td>
<td>Whiteboard</td>
</tr>
<tr>
<td>ER Attending Doctor</td>
<td>Whiteboard</td>
</tr>
<tr>
<td>ER House-Officer</td>
<td>Whiteboard</td>
</tr>
<tr>
<td>ER Nurse</td>
<td>Flowsheet</td>
</tr>
<tr>
<td>Triage Nurse</td>
<td>Flowsheet</td>
</tr>
<tr>
<td>Primary Care Doctor</td>
<td>Encounter Sheet</td>
</tr>
<tr>
<td>Clinical Assistant</td>
<td>Encounter Sheet</td>
</tr>
<tr>
<td>Nurse</td>
<td>Phone Triage Form</td>
</tr>
</tbody>
</table>

**COPP Nurse’s Time-Space Path**

The time is 5:45pm and Mary-Jo, a COPP nurse in her early 50s walks briskly into the Operating Room (OR) recovery unit heading for the Operating Schedule. Mary-Jo makes a couple of notes in her admission sheet and exchanges a few words with the chart nurse for the unit. Does he know when Sullivan, a 5 year old, currently in the OR for a cardiac operation, is likely to need the ICU bed? He does not know. On the way to the elevator Mary-Jo’s pager goes off. This time it is the transportation team calling with a new child, Brooks, also with cardiac problems, coming in from a suburban hospital.

They would like Brooks to go to P6, the ICU cardiac unit. Turning to the ethnographer she sighs: “It happened! We are going to have an unexpected ICU [patient].” She continues: “Is it going to be one of these nights? I hate ICU crunches.” Mary-Jo notes Brooks’ name, diagnosis, record number, and primary care doctor in her admission sheet. “Well, we better get up to P6 to see how they are doing.” In the ICU, Mary-Jo, heads straight for the nursing station, passing beds where children lie still, tubes protruding from all extremities, machines quietly pumping, batteries of drops overhead. There is a hushed atmosphere underlined by the humming of equipment at each bed. Mary-Jo looks through the large nursing sheet summarizing the unit’s patients and nursing staff. As Mary-Jo flips between the transport team list and the ICU page in her Admission sheet and a log of available beds, the Chart nurse, Emily comes over. Looking up at Emily, Mary-Jo says: “Take a deep breath. You have a cardiac Transport coming in from Suburbia. Maybe we could send Sacks down to P5 and Good to the Neonatal ICU. Surgery [pointing to her Admission Sheet], we may be able to persuade them to send Sullivan directly
to the medical floor if he is stable. What do you think?” Mary-Jo places her sheet on top of the large ICU nursing schedule. Pointing to their various documents Mary-Jo and Emily engage in a longer conversation trying to find the best way to facilitate all the new ICU patients. Mary-Jo calls a couple of other units and at one point two ICU attending doctors join them in the discussion. They decide to hold onto Sacks for another two hours and if he remains stable transfer him directly to 10E a medical floor and not P5 the other ICU. Leaving, Mary-Jo takes the staircase to P5. Again, she heads for the large scheduling sheet at the nursing station with her own sheets in hand. Her next stop is 10E. At 8:30 pm, Mary-Jo stands on a purple rhinoceros, carved into the linoleum floor, waiting for the elevator down to the ER. A clown, in full costume, hurries by, glancing at his wristwatch.

**Short Stay Unit & Long Stay Unit**

**Flexible Locales: 10 East**

Sophie was admitted to the Long Stay Unit or what is known as 10 East. Doctors and nurses refer to 10 East as one among several medical wards as opposed to non-medical wards such as the Intensive Care Units, Surgery, Transplant, Orthopedic, Neurology, Oncology, and Cardiology.
As illustrated in Figure 4.9, 10 East is shaped like a “U” taking up one end of a hospital tower floor. Patients and staff all enter the ward at the upper left side of the “U” through a set of double doors from the elevator lobby. Patient rooms line the outer wall from the entrance to the lower right of the “U.” Each patient room has windows facing the exterior and interior of the building allowing direct sunlight to fall into the hallway when curtains are not drawn to create privacy for the patients. Patient rooms do not extend up the right side of the “U” where a small kitchen, playroom, a conference room and the nurse manager’s office can be found. The ward ends in another set of double doors leading into the transplant unit. Double rooms make up the majority of the ward’s patient rooms with a total of 26 beds.

The hospital staff and supplies occupy the inside of the “U” including the linen room, supply room, procedure room, rest rooms, and clinical assistants’ conference room. A large nursing station features prominently at the belly of the “U” facing two of the three
hallways and the patient rooms. The doctors' conference room and the nursing room flank the backside of the nursing station. The nursing room leads into a second smaller nursing station. From the hallway glass walls on two sides permit an unobstructed view of the doctors' conference room. Despite the transparent architecture of the staff areas these are off limits to patients and their families and even rounding primary care physicians rarely venture behind the nursing station desk and into the conference rooms.

To patients and other outsiders it is not apparent that 10 East hosts not one but two medical units, known as the Long Stay Unit and the Short Stay Unit. The Long Stay Unit bears the official name General Medical Team A, but in their daily work doctors and nurses refer to it as the Long Stay Unit. Organizationally, both units are part of one of two general medical firms. Firm one under which the Long and Short Stay Unit operate encompasses general pediatrics, tilts toward infants and toddlers, and specializes in patients related to Gastroenterology, Hematology, Allergy, Immunology, Rheumatology, Dermatology, Metabolism, Genetics, and a Coordinated Care Service. The other General Medical Team B, which I did not study, leans toward older children and is supported by specialists from Pulmonary, Renal, Endocrine, Infectious Disease, and Adolescent Services.

Few elements of the ward's physical layout hint at its division into a Long Stay and Short Stay Unit (SSU). The smaller nursing station adjacent to the nursing room houses the SSU house-officer team and the nurses caring for the SSU patients. SSU rounds take place here and both SSU nurses and house-officers tend to spend significant time socializing or documenting in the narrow station. When they get full, the SSU nurses move into the adjacent nursing room. The Long Stay physician team occupies the house-officer conference room adjacent to the large nursing station. The nurses working on the Long Stay Team share the nursing room with their SSU colleagues. Both teams use the large nursing station and the ward secretaries working from 7am to 11pm serve both teams. Individual beds or patient rooms are not earmarked for either of the two units but change with the flow of admissions coming from the ER.

Where the ward's architecture offers few clues, visible indications of the division can be derived from documents. For instance, opposite the main nursing station a large
whiteboard summarizes the patients currently admitted to 10 East, their room number, the nurse, intern, and attending doctor in charge of their care. A colored dot specifies whether the patient is on Long Stay, blue and Short Stay, black. Furthermore, the Short Stay Unit keeps some documents pertaining to a patient at the bedside whereas the Long Stay Unit staff store parts of the patient record in a bin next to the patient room. Glancing down the hallway one can get a rough sense of the current Short Stay and Long Stay division of the department depending on where charts hangs in the bins. This is not an infallible method, however, as a doctor or nurse may have temporarily removed a Long Stay patient’s chart from the bin.

Of the physicians, one senior resident and four interns staff the Long Stay Unit in addition to two attending physicians; one attends to patients where the primary care doctor does not have rounding privileges in the hospital, the other performs a teaching role in relation to the interns and medical students. The team cares for 15-25 patients, with four to eight patients admitted every 24 hours. A general focus on predominantly infants and toddlers with unknown, complex and chronic problems, including birth defects and sickle cell disease, earned it the name, Long Stay.

The Short Stay Unit cares for children expected to stay in the hospital 72 hours or less. They generally present with what physicians consider “straight-forward medical diagnosis” and common, easily managed symptoms. This comprises patients suffering from predominantly respiratory illnesses with asthma and bronchiolitis being the top candidates. The remaining half suffers from diarrhea, dehydration, and soft tissue infections including rule-out sepsis, cellulitis, urinary tract infection, and pneumonia. The Short Stay Unit physician team consists of one senior resident, two interns and one attending doctor. With half the number of interns compared to Long Stay, the team admits four to eight patients every 24 hours and cares for up to 16 patients at a time.

Given that 10 East operates with a maximum of 26 beds (and often less depending on the nurse staffing), the two physician teams also care for what are known as “outlying patients” or “spill over.” These are patients distributed to other wards in the hospital when sufficient beds are not available on 10 East. The Long Stay team typically cares for 2-15 outliers compared to a maximum of 6 on the Short Stay team. The number of beds on 10
East “belonging” to each team also fluctuates depending on need and allocated nursing staff. Consequently, nurses and doctors cannot predict what beds and thus patient rooms belong to Long Stay versus Short Stay on a given day.

In the day-to-day work, long-staying patients end up in Short Stay and routine short-staying patients get admitted to Long Stay. The division serves as a guideline for admissions but when one unit fills up new admissions spill into other units. The Long Stay team, for instance, routinely cares for asthmatic patients staying less than 72 hours or children with rule out sepsis. In the Short Stay Unit some patients, whom ER doctors initially deemed straightforward, routinely, and to the house-officers’ delight, reveal more complicated pathologies. At other times, social issues lengthen a stay. One asthmatic teenager spent three weeks in the Short Stay Unit after the staff deemed that she was neglected but not abused at home. According to the nurses, the young teenager savored the attention given to her from child support specialists, nurses, doctors, social workers, and free access to the play room. She would keep telling the doctors and nurses that she was tight every other hour in order to get nebulizer treatment, thus prolonging her hospitalization. The staff cannot discharge asthmatic children if they require nebulizer treatments more than every four hours.

The division between two broad General Medical Teams is not as clear-cut in practice. The division intends to allow children with the same diagnosis to cluster in the same wards, as opposed to dividing them by age which had been the guiding principle in children hospitals for decades. Ideally, children repeatedly admitted with the same problem should end up in the same unit and thus relate to the same nursing staff. However, when one unit fills up, new admissions spill into other wards with a nursing staff specialized in other pathologies.

**People: Interns, senior residents, attending doctors and registered nurses**

Nurses, in contrast to the physicians, work permanently on 10 East and operate under one nursing manager and one clinical coordinator. They do not move around the hospital in order to care for Outliers. Depending on the number of beds/patients allocated
to each team on 10 East, the nurses will divide themselves into two groups. Typically two nurses work Short Stay and two to four nurses cover Long Stay. The junior nurses tend to end up working at the Long Stay Unit and more experienced nurses cover the Short Stay Unit. The general sentiment among the nurses is to avoid working in the Short Stay Unit (SSU), which is considered task oriented. “Short Stay work is busy work,” Karen, a nurse with seven years experience states and continues: “You go from bed to bed to keep things up and attend to them.” The patients are not supposed to stay more than 24, max 78 hours. Long Stay cases tend to require more interaction with parents and teaching. I like that part of the work better.” Nurses with less than one-year tenure are generally not perceived as fit to work the higher paced SSU.

The 10 East nurses are predominantly female and the majority have worked on this one ward since they obtained their Registered Nursing degree. For a handful of nurses like Karen, 5-20 years have passed since then. A larger number of nurses have been in the department 2-5 years, and almost half have less than two years tenure. Often, one or two traveling nurses work on the ward. Hired through an agency, they travel across the 50 states holding 3-6 months appointments. In the wee hours of the morning one can often find the younger nurses reading up for their GRE test or discussing career options – should they strive for a masters degree in nursing and earn the nurse practitioner title or try out other departments in the hospital. One nurse, three years out of nursing school dreams: “I want to work in the ICU. It’s exiting. You’ve got really sick kids, one nurse on one kid, cardiac, transplants, you name it.”

The interns and senior residents in both the Long Stay and Short Stay Unit belong to the hospital’s house-officer staff. Interns are in their first year of residency and the senior residents in their third year. Given the prestige of the hospital, entrance to its residency program is highly competitive and the doctors come from across the country and include a handful with medical training from abroad, mainly Europe. Approximately a third are male. Apart from the house staff every patient on the medical wards has a designated attending physician. The attending may be either the patient’s own primary care pediatrician, a rounding physician who represents the primary care pediatrician, a subspecialty (e.g., Gastroenterology, Allergy, or the Coordinated Care Service), or the
ward attending for the month. I will focus here on the latter group. The Long Stay Unit has two ward attending doctors and the Short Stay Unit one. They spend the mornings with the team participating in rounds and teaching sessions during or after rounds. The ward attendings on Long Stay tend to be younger physicians who went through research fellowships in the hospital after their residency and now hope for a career within the institution. Others are pediatricians affiliated with the hospital and the medical school who want to keep contact with the wards. They will typically return to their own outpatient clinics or other duties after lunch. The Short Stay attendings are all board certified in pediatrics and have subspecialty training in pediatric emergency medicine. When on service, the SSU attending physician is on call for 7 consecutive days and is available for consultation 24 hours a day. Most work full time in the ER. Their close affiliation with the ER shapes the work mode in the Short Say Unit.

Many other groups frequent 10 East daily. Among them are: the clinical assistants, unit secretaries, medical students, childcare specialists, full time clowns, janitors, patient care coordinators, nutritionists, social workers, pharmacists, and a number of medical consultant teams. I will leave the work of these groups untouched in the following analysis and only refer briefly to the clinical assistants, unit secretaries and medical students.

**Larger Rhythmic Structures of Long Stay and Short Stay**

Interns and senior residents rotate through the Short Stay Unit and Long Stay Unit on four and five week cycles. Like military personnel, house-officers are not assigned to any service on a permanent basis, but rotate every four to five weeks among the various services, including ER. The period of time during which they stay on the same service is called the "rotation." House-officers talk about their rotations as finite entities and they generally do not socialize with interns on other rotations during the day, even though they most likely have been on the same team on a previous rotation. Despite their proximity the Short Stay and Long Stay intern teams rarely interact apart from passing greetings in the hallway. They are part of two different temporal rhythms leaving few opportunities to be in the same place at the same time for long. A favorite mealtime subject among both interns
and senior residents involves ranking rotations on a sliding scale from much-loved to most hated.

Interns and senior residents’ respective rotation cycles are temporally organized to overlap with one another, so that a group of interns and a senior resident will not start their rotation at the same time (i.e., staggered coverage). For instance, a senior resident in the Short Stay Unit takes over a group of interns midway through their Short Stay rotation and introduces a new intern group to the unit before moving on to another service. The Long Stay Unit replicates the same general pattern. Attending doctors in the Long Stay unit follow the same monthly rhythm as the interns (i.e., temporal symmetry). In the Short Stay Unit the Attending doctors rotate on a weekly basis.

Embedded in each rotation, house-officers follow a four-day cycle. Every fourth day they are “on-call” which means that their day starts at 7:00am as usual, but runs until the afternoon on the following day. This creates three types of days known among the house staff as on-call, post-call, and swing days. Consequently, house-officers go through one on-call, one post-call, and two swing days every four days. Weekends are lighter staffed which means that interns get a weekend off at least once during each rotation. The system builds around a temporal complementarity among the interns’ schedules, which facilitates a continuous coverage for a body of patients. One of the interns in the group will always be in the hospital at any time of the day and week.

The distinction between on-call, post-call and swing days bears great significance to the interns as a group and their daily work. The on-call intern admits all patients assigned to the unit from 7:00am to 12:00 midnight. Those specific patients remain that intern’s responsibility for the reminder of their hospital stay, unless the intern ends his or her rotation. If few patients get admitted during, for instance, Donna’s on-call day she will be responsible for fewer patients compared to an intern who happens to be on-call during a busy night where many patients are admitted. Not surprisingly interns pay considerable attention to the number of patients admitted during their own and fellow interns’ on-call night. Superstition permeates this issue. Both nurses and house-officers react promptly and half jokingly to anybody who states that it is a quiet evening: “Shh! Don’t say that. The patients can still come and hurt me.” The reactions are equally strong when a night does
turn out quiet. On more than one occasion the on-call intern performed a victory dance down the hallway for me if he or she was able to go to bed before midnight. When meeting in the morning swing day interns on the Long Stay team first check on a whiteboard in the doctors’ conference room to determine how many admissions the on-call intern received the previous night. On the whiteboard under the name and pager number of each intern they list the names of their patients. The general sentiment among interns is that swing day interns help out the post-call intern with as many tasks as possible. A particularly hard hit intern receives more help from team members in the days that follow.

The Short Stay team includes two interns, which means that the interns cannot cover all nights on a four-day cycle. In order to make up for the lack of people, two interns on the Allergy/immunology rotation cover for the two nights every fourth day that the two Short Stay interns are not on-call. In a similar manner the Short Stay senior resident and Long Stay senior resident cover for each other together with two seniors on the Ambulatory Surgery rotation. Consequently, the senior resident on-call is responsible for both the Short Stay Unit and the Long Stay Unit and thus collaborates with the on-call intern in both Short Stay and Long Stay. Thus, interns on-call will always have a senior resident as a direct supervisor and that senior resident will be supervising two interns on any given on-call night.

Sunday through Friday from midnight until 7:00am admissions on the medical teams are done by a junior resident know as the “night float.” On Saturday nights the supervising senior acts as a night float for his or her team. For instance, the Saturday nights that the Long Stay senior resident is on-call he will have to stay awake for 32 hours. This allows interns not to have any admissions to take care off after midnight, except on rare occasions. Not having admissions after midnight, however, does not necessarily mean that an intern gets to sleep. Admitted patients up until midnight still need to be cared for, interviewed, examined and documented, a task that can keep an intern up until the wee hours depending on the number and complexity of patients admitted.

Even though nurses work in both the Short Stay and Long Stay units, they do not rotate through these in any organized manner equivalent to the highly structured house-officers rotation cycles. The assignment to either unit is done by the chart nurse during the
night and negotiated in the morning. The chart nurse is typically an experienced nurse that takes over the clinical coordinator’s middle manager role for the night while still caring for patients. As in the ER, nurses work 12 hour shifts, which requires a full time nurse to work in three or four day blocks followed by three or four days off. Most nurses rotate between day and night shifts. The clinical coordinator manages the nursing schedule inscribed on a 3’ by 2’ sheet of paper found on a separate table in the nursing station. Shift trading is a common activity in the nursing room allowing one nurse to go to his cousin’s wedding in Florida and another to join her kids at a soccer tournament out of town. As the interns check out their whiteboard upon arrival, so do nurses pour over the schedule sheet when they arrive for a new shift. “Staffing looks good?” is a typical question asked by a fresh nurse approaching the nursing station where four or five colleagues huddle around the schedule sheet.

In order to understand the staff members’ documenting practices I turn to the daily work among nurses and house-officers in the Short and Long Stay units. I illustrate this in the following two vignettes. The first describe the daily work of a Long Stay nurse, Karen. The second follows the Donna, a Long Stay intern who cares for Sophie. Figure 4.10

![Inpatient: Frequently Used Documents by Setting and Producer](image-url)
summarizes the most important documents involved in Karen and Donna’s work. The section concludes with a brief description of how their work diverges from that of nurses and house-officers in the Short Stay unit. I will start out with a vignette describing Karen’s daily time-space paths, an experienced nurse in the Long Stay Unit.

**Nurses’ Daily Documenting Work: Karen’s time-space path**

At 6:50am, amid a steady current of people Karen enters Kilmington Hospital through a large rotating door. People disperse in all directions from the main lobby after picking up coffee at a Starbucks located in the back of the hall behind several large aquariums where tropical fish float still waiting for their florescent lights to turn on at 7:00am. Karen is a 29-year-old nurse with seven years tenure on 10 East. She landed her job at Kilmington Hospital right out of nursing school.

Arriving at 10 East, Karen passes the nursing station to check the large nursing-scheduling sheet to see who her colleagues will be today and what patients she has been assigned. Today as yesterday she is on Long Stay. The Chart nurse fills out the large sheet in pencil over night and makes sure that extra nurses are called in if needed. Karen collects “her” patients’ Management Plan binders at the nursing station using the Nursing-scheculing sheet as her guide. The Management Plans are used by the nurses on 10 East only, and consist of four preprinted forms where nurses document various demographic, family related and medical information. A Management Plan is initiated upon the patient’s admission to the ward and updated throughout the stay. The nurses update the Management Plan for each patient before they end their shift whether that is late afternoon or early morning.

The ward is still dark and quiet. A tired looking night nurse greets her in the nursing room. A couple of magazines, some chocolate wrappers and an empty box of candy litter the table. Notes from nursing staff meetings, hospital wide announcements, pictures of nurses’ children compete for attention with brightly colored Halloween characters taped to the wall. A few small open lockers, with clothes and bags spilling out of them stand in a corner. On the opposite wall, another night nurse is checking her email on an old and lonely computer terminal. Reference books and binders with teaching material, nursing evaluation sheets, other nursing materials are crammed onto a couple of book shelves above her head. Karen asks how busy the night has been. Jennie, an older nurse replies: “I just want my bed.”

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At 7:00am, the Long Stay nurses for the day assemble in the small conference room at the very end of the 10 East ward together with two clinical assistants and the clinical coordinator. The nurse and clinical assistant are paired and care for the same group of patients. The night nurses stay behind in the nursing room longing for their beds. A large bulletin board contains two homemade posters summarizing the use of nursing Flowsheets in the department. It is put together with the same colorful paper that decorates the nursing room, cut out not as evil pumpkins but arrows, text boxes, and mock up documents.

Each of the nurses brings a pile of pink and light blue note cards and the Management Plans binders on each of their patients. The Clinical Coordinator (local nurse manager) turns on an old beat-up tape recorder. The voice of one of the night nurses, currently sitting at the other end of the ward, blares out from the rickety machine: “Noah Downey, four year old male with developmental delay. He was admitted two days ago with diarrhea and vomiting. He’s on regular diet, feeding orally. Last night he only peed 50 cc. You may want to increase his input. The mother wants a letter to bring back to her employer. Noah is old to the unit and he has been admitted for excessive vomiting several times before. The mother may be partly homeless. You may want to discuss it with the CCS (Coordinated Care Service) team. They are rounding on him today.”

Karen has opened Noah’s Management Plan and found a baby blue note card. “I know him,” she tells the other nurses. The Clinical Coordinator agrees: “He’s becoming a frequent flyer up here.” In her neat handwriting Karen scribbles on a blue note card the boy’s name, record number, room number, times when medication need to be administered, “excessive vomiting” (chief complaint), “feed orally Q4, CCS, eye mother.” The young Clinical Assistant, Ester, working with Karen today also fills out a note card on Noah.

Meanwhile on the tape the night nurse has moved on to the next patient: “. . . six year old meningitis from Bermuda. In Bermuda he got antibiotics and will go home Monday. They (the intern) asked for a dipstick at 10:45 am today. We had a perky one last night – several others needed tests.” The nurses smile and one of Karen’s colleagues fills out a note card with name, age, room number, medication, “meningitis, Dipstick 10:45, discharge . . .”

Karen sets up a new next card as another night nurse’s voice gives the history on a 3-month-old girl with bronchiolitis. “She sounds like a washing machine and gets obstructed all the time. Keep her on O2 (oxygen). Surgery (surgery consulting team to check if she needs to have corrected her airways) canceled today. She stays on nebs Q2. You can turn her off (the
oxygen machine) and walk around with her. The Mother should be in sometime today.” Karen writes the name, age, room number, “Bronch, obstructs, O2, nebs Q2. Social: Mother today.”

As the tape continues the nurses keep filling out their note cards and scan the Management Plans for their patients. Now and then they comment: “OK – Jennie that’s enough detail for today. Control yourself,” the clinical coordinator says to the last night nurse on the tape going on and on about the intricacies of a divorce case among the parents of a 3-year-old girl with fever and coughing. She was transferred from another hospital. The mother does not want the father to bring his new girlfriend on visits to the hospital. She got very upset the day before when she met the girlfriend in the ward and refused to allow her into her daughter’s room. The next evening the mother brought her boyfriend. The nurses laugh as they listen to the details of the unfolding drama. The Clinical Coordinator sums it up: “If you have a social issue send it to 10 East. We take care of them all.” The last patient on the tape is Martha, an 18-month-old girl with multiple birth defects and brain damage.

They collect the Management Plans now spread over the table and stuff their small note card piles in their nurse uniform breast pockets. Karen sports an outfit with small grinning pumpkins in tribute to Halloween. Another nurse bears deer angels, a leftover from Christmas. They bring the Management Plans to the nursing station and on their way pass through the nursing room chatting a little with the night nurses, asking a few questions related to the report. It is 7:25am and the night nurses can now go home. They stay the extra half hour – allowing the day nurses to ask them any questions that may have emerged while listening to their taped nursing report. The Clinical Coordinator explains: “We have tried every possible format [of the nursing report].” The oral presentations tend to take too long when people are co-present. It develops into a conversation that goes into a lot of detail. Then they tried to write the report but that was also too time consuming as they first would have to write it up in the Flowsheets, then the patient Management Plans, and finally a report form. They settled on the taping of the report.

Fetching her small stack of note cards from her breast pocket Karen turns to her clinical assistant, Ester and says while flipping through the cards: “Maybe we should do Martha together. She is going to take some time.” Ester goes to Martha’s room to start cleaning her while Karen heads for the Med Room [medication room]. Martha has a full drawer of various medications. Karen organizes a tray with her morning doses. She uses the medication list found in the room as her guide and double checks any new orders by recalculating the doses based on
Martha’s weight. Meticulously she measures every medication and signs her name by each medication given, both on the Order Sheet and Medication Administration Record.

With the tray we enter Martha’s room that she shares with another child. The room is hushed and the rising sun casts a golden glow on the two beds and monitors lining them. Martha’s small body is lying in the middle of a cradle with tubes and wires protruding from every body part. She has oxygen tubes out her nose and wires attached to her toes measuring the oxygen level in her blood. A drip in one hand regulates her fluid level; a drip in the other hand allows the nurses to administer medication. Several patches attached to her chest monitor her heart rhythm. One tube drains her lungs and another serves as a feeding tube in her belly. Martha’s eyes are circling the room and her legs and arms move slowly with no apparent intentionality. While cleaning her, Ester keeps saying: “What a pretty girl, what a pretty girl.” When they get to Martha’s abdominal area, Karen realizes that stomach acid is oozing from the feeding tube incision corroding Martha’s skin.

As Ester continues caring for Martha, Karen attends to the Patient Care Flowsheet found in the chart outside each Long Stay patient’s room. Nurses and Clinical Assistants fill out the Patient Care Flowsheet but in contrast to the Management Plan, the note cards and the Nursing Report, the Flowsheet is used by all the different parties involved in the care for Martha. Here you find the most up to date vital signs, assessment, test results, observations, interventions, and patient responses. It also tells everybody else what nurse currently cares for Martha. Karen writes her name, initials and time she takes over Martha, records her vital signs, fluid intake and output, medication administered and the time she checks the IV sites, solutions and pumps, and fills out a few lines summarizing her observations and assessment. Ester will check Martha’s vital signs every hour and enter them into the Flowsheet with the time and her initials. Both Karen’s and Ester’s days are punctuated by the times and places where they must measure vital signs, or administer medications, check IV, etc.

Karen leaves Martha to Ester’s care and walks down the hallway to check on Noah. He is sleeping tightly and Karen does not want to disturb him. She flips through his Flowsheet and order form before leaving the room. “We’ll check on him later,” she tells me. Instead we go to check on the 3-month-old girl with bronchiolitis. The girl lies in an oxygen tent. She just woke up smiling to Karen and I as we peek down at her. The mother sleeps on a small sofa bed under the window. She snores lightly. Karen signs her name in the Patient Care Flowsheet and enters the vital signs as she goes along. “Sure, she still sounds like a washing machine,” Karen whispers as she listens to the girl’s chest. Karen administers the nebulizer treatment holding a
mask in front of the girl’s little face. She waves energetically with her arms smiling behind the transparent plastic mask. “Cute, no?” Karen returns the smile. After finishing up the paperwork Karen goes back to Noah’s room. He is still sleeping but Karen checks his IV anyway. Noah lies still. He was born blind, deaf, and retarded due to a virus his mother contracted during pregnancy. “It’s fine,” Karen concludes and fills in the Patient Care Flowsheet – signing two places, once to specify that she has taken over from another nurse and secondly to show that she checked his IV. “I get so sad; he just lies in bed all day. When you take him up – all he does is cling to you. He just wants body contact.”

The Clinical Coordinator pokes her head into Noah’s room: “It’s time for the Docs’ round,” she says. The join each other in the doctors conference room where the round has been going on since 7:30 am. They have now reached the point where they are going to discuss some of Karen’s patients. The five interns, the senior resident, and a couple of medical students are seated around the conference table. A long narrow desk wraps the walls. In a corner the Attending doctor, Patrick, sits on the desk partly facing the group, partly a computer terminal he has turned towards himself. While listening to the teams discussion he checks the interns’ discharge summaries before signing or returning them for correction. When signing he releases the Discharge Summary for the hospital’s internal record system.

Karen and the Clinical coordinator stand close to door allowing them to sneak out when the team moves on to other patients. Oliver, an intern embarks on a long description of Noah’s past medical history and the differential (i.e., a list of possible diagnoses) they worked out. Karen’s and the Clinical Coordinator’s eyes glaze over as do the eyes of several other team members. The Senior Resident, Lucy listens intently and provides comments and elaborates on several issues. The mother reported that Noah, after vomiting violently, briefly stopped breathing and turned blue in the face and extremities. He has not vomited while in the department. None of the diagnoses proposed has been supported so far by tests. Oliver suggests that they test Noah’s mucus for bacteria, which in rare cases can cause the described symptoms. The Senior Lucy agrees and Patrick, the Attending, endorses the plan with a wave of his arm from the behind the computer terminal. Karen and the Clinical Coordinator leave the room. I ask Karen what she got out of the history. “Well basically it repeated most of what I heard this morning during report, but I did get the plan. That’s the important part,” she says as she pulls out her note cards and adds the test to Noah’s card, which she performs and sends to the lab in the late afternoon. Karen flips through the note cards and decides that it is time to check on Beatrice, a 14 month old girl with vomiting and diarrhea.

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An hour and a half later the Coordinated Care Service (CCS) team shows up in the Long Say unit. Karen meets them in the nursing station. The team includes a witch, Winnie the Pooh, a cabaret dancer, an M&M, and a research fellow. The CCS team consults on children with multiple and complicated long-term ailments that require extensive coordination across services, inpatient and outpatient care. Today the team consists of a fellow (doctors who finished residency), an attending doctor (the witch), a registered nurse (full body Winnie the Pooh outfit), a social worker (cabaret dancer), and a nurse specialized in discharge issues (large M&M sticker on her shirt). They are rounding on their two patients on the ward, Martha and Noah, and want to include Karen in their meeting.

Seated in the nursing room Karen tells the others about the oozing from Martha’s belly tube. They all look concerned and embark on a longer discussion of how it was surgically implanted and that they had her X-rayed last week to see if it was leaking into the abdominal space. At that time it was not. After some debating they decide to take her off the food, increase fluids and send her down to have it checked. The cabaret dancer describes how the mother, who is single, had a son a few months ago. He is also brain damaged. Karen pulls out her note cards and adds to her card on Martha: “feed, check tube.”

They move onto Noah and Karen tells them that he has been sleeping all morning and looks good. Pooh suspects the mother is partly homeless. They live with the grandmother only periodically. According to the grandmother, Noah’s mother leaves him unattended during the day. The grandmother knows because her neighbors call her at work when the mother leaves the house and then the grandmother will have to come home early to take care of him. The Witch adds that they have been questioning the validity of the mother’s descriptions of Noah’s symptoms. “He always gets admitted with the chief complaint, excessive vomiting. Every time! Here – he never vomits. We always thought that he had vomited it all up but it may also just be that the mother wants to get rid of him for a few days.” Karen notes “mother” on her Noah card. The teams discuss whether the social worker should look into housing for the mother or maybe a nursing home for Noah, now that they suspect that the mother neglects him.

Children’ voices ring loud from the hallway. “The Halloween parade is here,” Pooh says. The meeting breaks up and they all go to the nursing station. They each grab a trick or treat basket lined up by the Child Life Specialist, who is also handing out large M&M stickers to costumeless staff. The head of the parade is already passing the nursing station. In wheelchairs, beds, and slippers a dozen children slowly file by dressed up in every thing from a small cowboy with a pistol in one hand and an IV in the other to an old fashioned pilot teenage girl –
pale skinned and dark rings under her eyes. Karen plops a couple of candy bars in each child’s pumpkin basket. The Witch and Pooh wholeheartedly cheer the caravan along.

Karen pulls up her note cards and flips through the pile. “Beatrice, she should get discharged today. I better get going.” Half an hour later Karen is back in the nursing room. “I’m ready for lunch,” she declares – glancing at the empty bagel box on the table. Ester and another nurse pull out their note cards and flip through them. The other nurse replays: “Let me just finish checking my email and I’ll join you.” She is seated at a lone terminal in the corner. She has been going through a handful of hospital-wide announcements and a few emails from the 10 East Nurse Manager. “Oh – here’s the email about you,” she tells me. “This must be old news. I check my email so rarely.” Karen joins in: “I always mix up my passwords for the different systems.”

After lunch the nurses return to their patients, administer medication, talk to parents, and interview new patients. After 4:00pm the nursing room starts filling up again. Karen finds the Management Plans for her patients and clears a corner of the table. “What’s up with that redhead mother stalking you all day,” one nurse asks Karen. “Oh, that’s Beatrice’s mother. The Docs told her that they were going to discharge Beatrice today. She hasn’t stopped nagging me ever since. I nearly lost this one,” Karen explains dangling a pink note card with Beatrice’s name on it over a trash bin next to the table. “What can I do?” To me she explains:

“I cannot write her discharge papers before that Intern with the funny accent [Gabriel] finishes his Discharge Summary. It doesn’t help to tell them that you are waiting for the doctors’ discharge notes. Some parents are a real pain. They start at 8am and continue bugging you all day. Frankly we have no reason to discharge them before midnight. That is when the new billing cycle kicks in. You know the patient pays for 24 hours at a time starting at midnight. There is no reason to rush the discharge. All you get is an open bed that the COPP is going to fill with a new patient.”

Looking through her note cards Karen selects Noah’s card and finds his Management Plan. The top half of the sheet is written in pen, the other half in pencil allowing the nurses to make changes. She adds a line explaining that they (nurses) should monitor the mother’s behavior. “How often does mother come to see Noah? How often does she call?” “These observations could influence the decision whether to have him placed at a nursing home,” she explains to me.

Karen gets up and pokes her head out of the nursing room in order to peek through the glass wall into the doctors’ conference room. “Ah the pacman, finally!” The interns will draw a pacman on their whiteboard under the patient name when a decision is being made to discharge the patient. When the pacman is filled out solid, the intern has finished the discharge order.
this case the intern has written the discharge order to Beatrice. Karen finds the intern and gets the discharge order. Then she finds the nursing discharge form and returns to her seat in the nursing room. Over the next 15 minutes she translates the intern’s order into simple non-medical language for the parents to take home, including the medication list, instructions how to keep Beatrice well hydrated and signs of dehydration, and a request to follow up with her primary care doctor. “I have to translate from the doctors’ medical language to normal language.” Karen also includes a brief note asking the parent to bring Beatrice back to the ER in case the diarrhea and vomiting return. “Let’s get them out of here.” We go to Beatrice’s room where the mother is pacing up and down the floor — all their bags neatly packed and piled on a chair. Beatrice sits in her bed smiling to the Teletubbies wobbling across the TV screen above her head. Karen chats with Beatrice as she takes out the IV in her hand and goes over the discharge instructions that she typed out for the mother. It all takes a few minutes. The mother has no questions. She is out the door, Beatrice under her arm. “Well, they were ready to go,” Karen shrugs her shoulders — gathers the chart and takes it out to the secretary who will sort it and send the relevant parts to the central records department.

The clock in the nursing station approaches 5:30pm and Karen heads for the small conference room. It is time to record the Nurse Report for the night shift. Another nurse crouches over the old tape recorder nailed to a piece of wood muttering into its small microphone. Karen and I wait outside as she finishes reporting on her last patient. Karen organizes herself with her Note Cards spread out in front of her and a couple of Management Plans. Then she starts the recording where the previous nurse left off. “Hi there — it’s Karen. Noah Downey, four-year-old male with a developmental delay. He was admitted two days ago ...

The Chart Nurse meets Karen back at the nursing station. Apparently from the fax sheet in her hand and wrinkled forehead she is the carrier of bad news: “We have a new patient coming up at 6:30pm from the ER. I need to you take it. I know it is bad timing but the ER insisted that they have to send him up now.” Karen produces another shrug and sends a glance to the other nurses following the conversation from the nursing room. Turning to me:

“Patients always come up before change of shift. We have told the nurses down in the ER many times but it doesn’t help. They come up as the day nurses try to wrap things up and clear the table for the next shift. [Referring to the new patient] I have to go in and introduce myself and start the interview — just to see if he is OK. That is a face he does not need to see. It would be much better if he just saw the night nurse.”
The other nurses join in: “We really need to study this. I don’t know how often this happens. Maybe we just notice it because it bothers us so much. We really need to look into this.” An animated discussion continues as Karen glances over the fax from the ER with information about the new patient and when he will come up. “Another asthma. At least it’s not something complicated.” As Karen gets ready to go and see the patient and the other nurses shove me along: “Carsten, you have to go and see this one.”

The boy is a 12-year-old asthmatic. His father holds his hands. Karen checks the boy’s vital signs and takes a brief history. “So he got his last neb treatment just before they sent you up here?” The father and son confirm. Karen explains that a nurse should be with them within the hour. The father: “We know the ropes. Have a good night.”

Karen rushes to make a final check and administer medicine before 7:00pm. “I want to give the new nurses a chance to settle in before they have to give meds.” As the new nurses start arriving in the nursing room she rushes down to the conference room to add a couple of taped sentences on the new boy. The day nurses munch on a box of chocolates left behind by a parent as they wait for the night nurses to finish listening to the taped nursing report. Karen plunks her note cards in the trash bin as she turns to fetch her purse and jacket from the locker. Jacket on, purse on shoulder, ready to go she answers a couple of questions posed by the night nurses as they return from the conference room. The one taking over the new asthma boy wants to know what the father is like. “He shouldn’t give you any trouble,” she responds. “See you tomorrow,” and off she goes heading for the giraffe’s neck.

**House-officers’ Daily Documenting Work: Donna’s time-space path**

At 7:10am, Donna arrives in the doctors’ conference room on 10 East. She is into the third week of the General Pediatric Team A rotation, known as the Long Stay team. Coffee in hand, Donna settles at the first terminal and clicks her way into the HOSO, which stands for House Officer Sign-Out. Donna shares this online note system with the three other interns on this Long Stay rotation.

She holds her coffee cup between her teeth while typing in her password. Without looking at the notes she generates a document compiling only her patients. She prints out a similar document summarizing all her patients’ test results since admission. This pile of documents she will carry with her for the rest of her shift, and house-officers refers to these as “Brain Notes.”

Oliver, a fellow intern on the Long Stay team, enters the room and flops down by the next terminal. “Morning,” he mumbles. While printing out what is to serve as her Brain Notes
Donna fetches her white coat from her locker and gets rid of her backpack and jacket. She still has 15 minutes before rounds at 7:30 am and hurries out the door to pre-round on her sickest patients. On the way out of the conference room she asks Oliver if he wants to join her to 7West, which is at the other end of the hospital. “I’m going up to see my Sickler [patient with Sickle Cell disease].” He glances at the document he compiled on the screen and responds: “I don’t have anybody up there worth the trip.”

Armed with her clean set of Brain Notes, Donna checks on a 10 year old boy with sickle cell disease who came in with severe pain in the right leg two days ago. Arriving at 7 West she scans the doctors’ Progress Note found in his chart. From this she can tell that the Pain Team came by last night and want to involve him in a study. Donna makes an entry under the Sickler in her Brain Note: “Call Pain.” Then she looks for a nurse at the nursing station. Donna finds the nurse who can tell her that the boy did reasonably well over night. The night nurse woke him up every fourth hour as she had ordered, to check his breathing and administer morphine. “He’s hanging in there. He knows the routine,” the night nurse concludes. On her way back to 10East Donna stops by 9East to check on Leo, a 7 year old with severe asthma. Again she looks for his chart and the nurse. “He’s up to nebs Q2, [nebulizer every two hours]” the night nurse explains. “Not bad considering that he came down from the ICU only 4 days ago.” Donna agrees: “I better start thinking about his discharge summary.” She scribbles Q3, Discharge in the space left for Leo on her Brain Note.

At 7:30 am, back in the conference room, Donna greets the senior resident, Lucy and her fellow intern Paul. Through the glass wall she can see Oliver talking to one of the nurses. Taking a sip from her now lukewarm coffee, Donna skims over the test results in her Brain Notes pile to see if there are any remarkable test results since yesterday afternoon. The Attending, Patrick, and the two other interns on the team, Jennifer and Gabriel have already arrived. Lucy waves to Oliver pointing to her wristwatch. A fresh group of medical students have just arrived. They will follow the team for two weeks and each student has been assigned to one of the interns. Seated at the end of the large conference room table Lucy looks through her own Brain Notes, a print out of the Long Stay patients from the senior resident note system. This is a separate on-line note system that only senior residents use and can access. Like the HOSO, these notes do not become part of the patients’ medical record.

During the round Donna presents her patients. These presentations are 5-7 minutes long. The next two weeks she is supposed to help one of the medical students get his presentations down to the same length. As the entries in the HOSO, her presentation includes each patients’
name, sex, and age, their chief complain, a succinct history of present illness with pertinent
review of systems, then a brief summary of the patient’s medical history including allergies
and medication, a brief “social history” (i.e. whether asthmatics have pets, carpets or family
members smoking at home), physical exam with general assessment, all vital signs, then labs
results and the overall impression with possible diagnosis. The history is wrapped up with a
plan by organ system. Needless to say these histories often take longer than the expected seven
minutes. Donna glances at her Brain Notes if she needs to give test results or other facts. Any
decisions made concerning her patients’ care she will fill in as small bullet points on her Brain
Notes.

Leaving for walking round Donna stuffs her Brain Notes in her bulging coat pockets next
to her reference book and shuffles with the rest of the group to look at the one patient
considered most “interesting.” Today they stop by a teenage boy with a rash on his upper torso.
He suffered from fever and feels weak. The senior resident thinks it may be Kawasaki’s
disease, a rare viral disorder associated with high mortality and morbidity if not treated early.
After the Attending has given a little introduction to Kawasaki’s disease and all the interns and
medical students have filed by the boy examining his torso the team walks down for Radiology
round.

The group returns after 10:00am to the house-officers’ conference room at 10 East. Donna
has accepted to take on a patient admitted during the night by the night float. It is an asthmatic
girl, Sophie. Together with Lucy, the senior and the medical student newly assigned to Donna,
they go to interview and examine the girl. Normally, a patient like Sophie should have been
admitted to the Short Stay Unit but they were full last night and she was floated to the Long
Stay Unit.

After they have examined Sophie and interviewed her mother, Lucy, Donna, and the
medical student all go to the doctors’ conference room in this medical unit. The medical
student grabs a clean Progress Note sheet at the nursing station. Behind two glass walls, known
as the aquarium, the intern and the senior each find a computer terminal. The intern logs onto
the HOSO, an on-line system. The senior resident logs into the senior resident note system.
They each start documenting Sophie’s case. The intern will never read the senior resident’s
notes and vice-versa. Normally, Donna will also have to write a Progress Note on Sophie to
place in her chart outside her room. Today however, the medical student will take care of this
note. Donna is expected to write Progress Notes on each patient four times a week and one
time over the weekend. Donna records Sophie’s vital signs, the oxygen level in her blood, and
makes a list of tests and other procedures needed. These include calling the Allergy consult, calling her primary care doctor, and ordering chest x-rays. Tomorrow they need to re-evaluate her case to see if she should change the steroid doze they currently give her. Donna goes to find the order and medication sheet folders in the Nursing Station. She enters her orders for the nurses to read.

Donna calls the Pain Team and talks to a fellow about getting her Sickler on the study. She checks off the task in her Brain Note. The rest of the day she constantly consults her Brain Notes, crosses out a point after completing a task on one patient only to add a new important test result to keep in mind on another patient.

Grand Round is at noon and Donna rushes to finish calling the consultants who will be involved in Sophie and her other patients’ care. Interns prefer to call the consultants before noon. They have busy days with multiple consults and clinic responsibilities. The earlier you get them the more likely they are to cooperate with your plan. They appreciate an early call and will be able to discuss the case and arrange studies in a timely manner. There is the same time pressure when ordering radiology, sweat tests and other procedures. The earlier the order, the earlier they will be done. At the same time Donna and the other interns are under pressure to discharge patients early in the day to open up beds for new admissions.

Today is a “swing day” for Donna, meaning that it is a normal day from 7:00am to sometime between 5:00-7:00pm, unless she has to go to clinic, in which case it could be longer. After Grand Round she looks at her HOSO to see what patients need Progress Notes today. She walks up to the wards where each patient is found and enters the Progress Note. On some wards this is by the bedside, other wards have it outside the door or at the nursing station. Some parts she copies verbatim from her Brain Notes. Back in the conference room on 10 East she finds a computer terminal and updates the HOSO. She does not summarize all the activities or test results she has compiled on her Brain Notes, just the most important ones to understand each of her patients’ condition, medication, planned tests or involved sub-specialty services.

Meanwhile Paul is sitting with Veronica, another intern, bent over her Brain Notes. Paul is the “On-call” tonight. Apart from taking admissions to the department he will cover for Donna and the other two interns. Just before Donna takes off, she prints out the most recent version of the HOSO and gives it to Paul. She has included a short note about each patient and a “to do” list. She also clarifies whether a patient needs a new IV should it fall out before the morning. Paul takes a quick glance, then waves it vigorously over the conference table. “Look at this,” he declares, “Short and sweet! That woman knows how to do her HOSO.” They spend half an
hour going over it. Donna explains what Paul could expect to happen over night with her patients:

“So, the ICU transfer, Leo, the one with asthma is doing fine. I don’t expect anything to happen over night. Actually, the only one to pay attention to is Downey, the 3 month old who turned blue. I have ordered a monitor for him. The nurses didn’t like it. They always hate when I order a monitor. Anyway, the night nurse may give you grief but just stick to it. Say that the parents are pretty scared by the whole thing. It will make me sleep better.”

Paul takes notes on the printout Donna just gave him, asks a couple of questions and sticks the sheets in his pocket with the rest of his Brain Notes for the night.

The next morning Donna makes her way to the unit around 7:15 am. She meets Paul in the hallway. “Your Blue Baby did fine. No problems. I got slammed though.” [A lot of patients was admitted to the service during the night.] Donna prints out her test results and a new HOSO. During rounds it is decided that Leo can be discharged. He only requires nebulizer every four hour, which often serves the discharge criterion for asthmatic children. Mid-afternoon Donna finds time to sit and work on Leo’s discharge summary. Ideally she should have done this before noon but she had so many tests to order and a hard time getting hold of the Allergy consult. She pulls up her HOSO and opens a discharge summary template that she uses. The HOSO forms the foundation for her discharge note so that she pastes large parts of the general description of his case into the discharge summary. In this case, where Leo was transferred from the ICU to the General Pediatric unit she integrates parts of the ICU note into her discharge summary. She explains to me: “They (ICU) write in great detail everything they do, like: ventilation XYZ and air pressure XXZ. I take out all the detail. We are not supposed to do that but it just makes life so much easier.”

**Differences in Short Stay versus Long Stay document practices**

Nurses and doctors work on the Short Stay Unit differs from Long Stay work in several ways. Each unit follows its own rhythm with its own timing and structure of documenting practices and key meeting points such as morning rounds, sign-out, and Nurse Report.

Notably, nurses and doctors hold joint morning rounds which means that the nursing report is integrated into a short version of the doctors’ talking round. The interns do not pre-round on their patients but start rounds at 7am. The participants consist of the post-call intern, who has been on duty for the past 24 hours, the night nurse, the senior
resident, the attending doctors, the swing or on-call intern, and the day nurse. The senior resident leads morning rounds with the SSU attending physician as an active participant. The rounds follow a rigid format. First, the post-call intern gives a one-minute presentation on new patients or a half-minute reminder on the old patients. Secondly, the night nurse reports on patients’ interim status, discharge planning status and any other nursing issues. Third, the on-call or swing intern states the plan for interventions and discharge criteria. Fourth, the senior resident, day nurse, and attending ask any questions they may have and the attending approves the plan. Fifth, the swing intern puts up a “pacman” on the SSU whiteboard under each patient to be discharged. This whiteboard plays a central role in the daily work of both house-officers and nurses in SSU comparable to the ER whiteboard. On Long Stay the house-officers have their own whiteboard containing each team members name, pager number and which intern is in charge of what patients.

These talking rounds should be over by 7:30am as the night nurse is off at 7am and is staying over just for rounds. Then, the senior resident leads the doctors on a walking round. In contrast to Long Stay, they actually walk into every room. Most often the children and their parents are fast asleep and the team will glance at the child and look through the nursing Flowsheet, Medication List and Progress Note. The swing day intern is expected to write orders in the patient’s order sheet, which is placed at the bedside. Meanwhile, the nurses are getting ready to give the patients their first round of medication for the day.

The Short Stay unit integrates the nurses Flowsheet, the doctors Progress Notes, the Order Sheets, Medication List into one large four-sided preprinted form. The house-officers on Short Stay still use the HOSO, senior notes and Discharge Summaries, which they access on a computer terminal in the Short Stay nursing station. In contrast, the Long Stay nurses’ Flowsheets and doctors’ Progress Notes hang outside the patients’ rooms together with a printout of the ER admission note, and possible paperwork from previous admissions. In addition, the nurses keep their patient Management Plans compiled in the nursing station together with binders containing Order Sheets, Medication Lists, and admissions papers for all the Long Stay patients. The physicians document the patients’ care in three on-line systems accessed from computer terminals in the Long Stay

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conference room. These are the House-officer sign-out notes, senior residents notes, and Discharge Summaries.

The Short Stay team hits Radiology more than an hour before the Long Stay team and by 9am they eat breakfast in the cafeteria. With egg sandwiches in hand the attending or senior resident teaches on a topic relevant for the pathologies most common on the unit. The team splits up, but the attending physician returns at 3pm for afternoon rounds with the senior, on-call intern, and daytime nurse to organize any possible evening discharges. In the interim the house-officers work on 10 East, and on 9 East if there are any outlying patients. The team follows the mantra preached by the ER attendings: “Empty (i.e. discharge) in the AM and fill (i.e. admit) in the PM. The team examines all patients and they are expected to write Progress Notes and HOSO on all patients every day. In addition the house-officers maintain Brain Notes as the Long Stay interns. From time to time the senior resident will help with the Progress Notes. In contrast to the Long Stay unit with its complicated patients, primary care doctors often round in the hospital on the SSU patients. They typically show up before noon and look through the nurses’ Flowsheets and interns’ Progress Notes. Often the primary care doctors succeed in finding the Short Stay intern and discuss the plan with them. This is often not possible on the other teams as the interns move a lot more among different wards.

In the evening the on-call intern continues discharging and admitting patients. Their Long Stay colleagues rarely discharge at night. The intern is expected to tell the night nurses which patients are possible morning discharges so that the parents will be available. In an attempt to get a little extra sleep the on-call intern will often walk down to the ER around 11pm to see if there are any possible SSU admissions. For instance, a 14-day-old baby boy with fever who comes to the ER at 11pm will be immediately booked to the SSU although his work-up may not be complete, and he may not come to the floor until 2am. If the intern finds such admissions she completes her history taking, exam, and writes orders. Experienced interns make a detour by the outlying wards before going to bed in order to talk with the nurses there and answer any questions they may have about orders or patient care. That can save them from being awakened at 3am.
Working on the SSU involves contact with more patients for both nurses and doctors. Interns and in particular the senior residents often complain that their Short Stay rotations involve more “scut work.” Scut work is “repetitive work that is perceived to provide no educational value and no value to patients’ care.” Such work includes drawing blood specimens, filling out discharge form, and making telephone calls. Long Stay interns, however, regularly complain about scut work as well. They spend long hours trying to organize multi-team meetings involving several consulting services or trying to get in touch with primary care doctors, book complicated procedures, or request past medical documents from other hospitals, and last but not least document patients care in their note cards, HOSO, Progress Notes, and discharge summaries.

**Summary: Time spent documenting**

The preceding descriptions of each setting and how nurses, doctors, and clinical assistants use documents, necessarily, oversimplifies the daily work of these people. Nevertheless, the portrayals set an adequate stage for the question: why do doctors and nurses find it necessary to document patient histories repeatedly? In Sophie’s case, as illustrated in Figure 4.1 we saw that her history was taken 15 times and documented more than 30 times. These thirty documents include not only Dr. Roth’s writing in his Sick/Follow-up encounter form but also his documenting of her case on the Expect Sheet faxed to the ER, in addition to various nurses and doctors’ use of whiteboards, note cards, admission sheets and a host of other documents in the hospital.

Documenting all these histories takes up a significant amount of time. Yet one finds notable variations in the time allocated to documenting both within and across occupational groups in the three types of settings. I did not measure the time spent documenting while observing doctors and nurses work. At best I can offer a sketchy approximation. As a baseline for my estimates I draw from a 2002 survey study of primary care physicians work and career (Briscoe, 2002). The 155 physicians included in this study are part of a large provider network and the general profile of this group and their survey responses resonate with my qualitative observations of other primary care physicians.
Pediatric primary care physicians included in the study reported that they spend 22% of their time on “paperwork,” compared to 62% “doing patient care in office,” 7.5% on “administrative duties,” 7.3% “doing patient care in hospital,” and 3.7% “on research and teaching.” In this survey, “paperwork” includes email and phone calls with patients. Based on my observations I estimate that the majority of this time is spent recording patients’ histories after-hours, over lunch breaks, and between seeing patients in clinic. I guess that about a third of the time described as paperwork involves talking on the phone or writing emails. In general, it is difficult to estimate time allocated to paperwork as doctors and nurses often integrate their documenting into other activities. For instance, nurses on the inpatient wards routinely fill out their Flowsheets while in the patient’s room. Likewise, many primary care physicians take notes while examining the patient.

The most common negative comment in the physician survey relates to paperwork. The respondents repeatedly complained about paperwork, computer documentation, and the time and headaches of similar non-clinical issues (Briscoe, 2002: 27). This resonates with my qualitative findings; most physicians routinely vent their frustration about how much time they spend on paperwork. The following quote entered by a female physician into the comment section of the survey study might as well have been uttered by one of my informants:

“I wish we were compensated for some of the administrative work, telephone work etc. I donate at least 2 hours/day (50 minutes of lunch, 1 hour and 15 minutes post clinic). This seems unfair, and quite frankly when patients see that I am expected to take care of them in 10 minutes, they are often horrified and appreciate my work ethic.” (Briscoe, 2002: 31)

In my study, primary care physicians are one of the groups spending the least time on paperwork. Medical students and interns on the inpatient wards allocated the most time to paperwork; I would estimate that only clinical assistants in primary care clinics spend the same or slightly less time documenting than primary care physicians do. Figure 4.11 summarizes my approximation using the primary care doctors survey results as a baseline. One should pay attention to the variations among the different groups and not the actual numbers. I must stress that I generated my estimates by comparing my observational data from each group, not by measuring and then counting hours spend. Given that the survey includes phone and email under the category “paperwork,” I have also included these work
activities in my figures; however, I have not included rounds. One could argue that rounds should be included as doctors and nurses re-tell patients' histories and read their charts on these occasions. If included, one should add 10% to all the inpatient ward physicians' paperwork.

In reading Figure 4.11, one should notice that the paperwork burden becomes progressively higher as one move from primary care to inpatient care. This may be explained by the increasing complexity of the cases in the patient population and the number of people involved in each case. Furthermore, junior physicians spend more time on paperwork than senior physicians. In the case of the medical students this can probably be explained by expected didactic benefits from documenting patients care. Medical students write Progress Notes on the patients they see with the interns and their entries are often many times longer than what the intern would have recorded had the intern done it him/her self. Interns spend more time on paperwork because they are responsible for the patients' care and thus coordinate with everybody else involved in a case. I estimate that physicians on the Short Stay Unit spend a bit more time on paperwork compared to their

| Figure 4.11— Estimates of Time Spend on Paperwork as Percentage of Total Work Hours |
|-------------------------------|----------------|---------|---------|---------|
| Staff Members                | 25%            | 50%      | 75%      | 100%     |
| Attending Doctor             |                |          |          |          |
| Senior Resident              |                |          |          |          |
| Intern                       |                |          |          |          |
| Medical Student              |                |          |          |          |
| Nurse                        |                |          |          |          |
| Night-Float                  |                |          |          |          |
| COPP Nurse                   |                |          |          |          |
| ER Attending Doctor          |                |          |          |          |
| Resident                     |                |          |          |          |
| ER Nurse                     |                |          |          |          |
| Triage Nurse                 |                |          |          |          |
| Primary Care Doctor          |                |          |          |          |
| Clinical Assistant          |                |          |          |          |
| Nurse                        |                |          |          |          |
Long Stay counterparts. On Short Stay, two interns discharge between four to eight patients a day compared to four to eight discharges a day shared among four interns on Long Stay. This being said, the Long Stay Discharge Summaries tend to be longer and Long Stay interns spend more time on rounds than Short Stay interns.

In the next chapter, I analyze each documenting practice in greater detail, first to develop a taxonomy of documents associated with types of users and the temporal and spatial organization of their production and use. Second, I discuss how doctors and nurses use their documents as maps and itineraries for their unfolding work across time and place. In the process, I shall refine the basic description of work in each setting and in particular that of nurses’ and doctors’ documenting practices.
Chapter 5 – Types of Documents, Their Production and Use: Navigating healthcare

In this chapter, I examine the commonalities and differences among the many documents used by doctors and nurses across the healthcare settings described in Chapter Four. Of interest is the following question: How do doctors and nurses use the various documents to coordinate and share their knowing within and across locales? Or to put it differently, why do doctors and nurses find it necessary to document the same histories again and again?

My analysis falls in three parts. In section one I address this question by systematically comparing document use along a number of dimensions partly derived from genre analysis (Orlikowski & Yates, 1994; Yates & Orlikowski, 2002; Yates, Orlikowski, & Okamura, 1999; Yates, Orlikowski, & Rennecker, 1997). Drawing on Orlikowski & Yates I define a genre as a socially recognized type of communicative action. More specifically, a genre builds around a set of expectations among the actors about the purpose, form, content, participants, time, and space of the communicative interaction. That is, the why, how, what, who, when and where of the interactions. Of these six elements, I start out by analyzing the expectations associated with the communicative participants (who), space (where), and time (when). I do so in an effort to further my understanding of the roles that documents play in the temporal and spatial organization of work within and across healthcare locales. In other words, if people do use documents to structure their time-space paths and share knowing, it becomes important to analyze who produces and uses what documents when and where. Based on these three elements, I build a taxonomy distinguishing types of documents from across primary care, emergency department and inpatient wards. Figure 5.1 shows the four types of document genres I have identified: Private, Communal, Local, and Trans-local. In short, in attempting to build a document genre taxonomy implicated in the recording of patient histories I find that the expectations associated with who produces and uses documents and where and when they work with them allows me to distinguish four types of document genres. I illustrate each of these
starting with who uses and produces documents followed by where and when. The structure of this first section can be read from Figure 5.1 starting in the upper left hand corner, where each cell summarizes a subsection.

**Table 5.1 Four types of document genres distinguished by participants**

<table>
<thead>
<tr>
<th></th>
<th>Private</th>
<th>Communal</th>
<th>Local</th>
<th>Trans-local</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Who</strong></td>
<td>Individual producer/user</td>
<td>Community of producers/users</td>
<td>Producers and users from multiple communities and occupations</td>
<td>For example: All staff members in the ER use the Whiteboard or Expect Sheets are used by both by primary care doctors and the ER staff</td>
</tr>
<tr>
<td></td>
<td>For example: Donna’s Brain Note or Karen’s Note Cards</td>
<td>For example: Interns’ HOSO or Nurses’ Management Plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Where</strong></td>
<td>Produced &amp; used wherever</td>
<td>Produced &amp; used within one locale</td>
<td>Produced &amp; used in different locales</td>
<td>For example: Discharge Summaries are written on the Ward and read in primary care clinics</td>
</tr>
<tr>
<td></td>
<td>producer(s)/user(s) go</td>
<td>For example: The ER Whiteboard is used only in ER</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>For example: Donna stores her Brain Notes in her coat pocket and brings them wherever she does</td>
<td>For example: The ER Whiteboard is used only in ER</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>When</strong></td>
<td>Cyclic: Rhythms follow circular workflow of the producer(s)/user(s)</td>
<td>Continuous: Rhythms of many communities and occupations converge</td>
<td>For example: The ER staff use the ER Whiteboard continuously. Progress Notes in the Long Stay Unit are used continuously by all nurses and physicians seeing patients in the unit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For example: Donna initiates her Brain Notes every morning and discards them when she goes home. Nurse Report takes place every 12 hour at 7am and 7pm</td>
<td>For example: The ER staff use the ER Whiteboard continuously. Progress Notes in the Long Stay Unit are used continuously by all nurses and physicians seeing patients in the unit</td>
<td>For example: The ER staff use the ER Whiteboard continuously. Progress Notes in the Long Stay Unit are used continuously by all nurses and physicians seeing patients in the unit</td>
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</table>

The taxonomy is not exhaustive as I restrict my focus to documents used to record patients’ histories and coordinate activities among staff members within and across my three types of settings: primary care clinics, ER and inpatient wards. As discussed in the method chapter, this excludes approximately 40% of the documents involved in the care of a patient like Sophie. Most of these would fall under the trans-local document genre as the producers and users work in different locales and represent several different communities and occupational groups. Examples include: test order forms, radiology order forms, prescriptions, referral sheets, social service request forms, and billing documents, to mention a few. I did not collect and analyze these documents systematically as they fell outside my research design focusing on three types of settings. Nevertheless, the remaining
documents included in the taxonomy still amount to a significant portion of doctors’ and nurses’ daily work as described in Chapter Four.

In section two I argue that the taxonomy does not, in and of itself, explain why individual doctors and nurses often record a patient’s history in more than one document. To understand the purpose behind these many document genres I analyze the content (what) and format (how) associated with each document genre. However, I find few variations in content and format across the many document genres. A closer look at their content suggests that doctors and nurses use their documents, not only as communicative devices but also as “to-do” lists structuring their general work practices in time and space. Analysis of the format suggests that documents serve as maps and itineraries for doctors and nurses’ unfolding activities.

Section three explores the use of documents as maps and itineraries in regard to each of the four document genre types. I argue that each document type serves as a map and itinerary for a particular constituency. Nurses and doctors use those documents not only to communicate with each other within a certain territory and timeframe, they also use it as a “to-do” list guiding their unfolding practices.

1. Types of Document Genres

In the following three sections I build a document genre taxonomy based on the expectations associated with who writes and reads a documents and where and when people work with them. I start out with a discussion of the participants.

1. A. Who: Distinguishing Documents by their Producers/Users

Doctors and nurses do not engage in the production and use of all documents. Each document genre is associated with a particular set of producers and users. I identify three constituencies: individuals, well-defined work communities, and multiple occupational groups. Let me discuss each of these types.
Documents Produced and Used by Individuals

Some documents are used only by individuals. Typical examples include the Temporary Notes of the ER house-officers, Brain Notes of the inpatient ward house-officers, Note Cards employed by all the ER and ward nurses, and the Admission Sheets used by COPP nurses. In these documents, doctors and nurses use index cards or preprinted forms to jot down lists of pertinent information for their own use. In one case, a resident used his palm pilot for these notes. The content of such lists typically includes the name and record number of all patients for whom a caregiver is responsible. Depending on the staff member, lists can involve pending tests that a resident needs to keep in mind, or the times a nurse must give a patient medication, or an issue that he or she must talk over with the parents of a child. For example, Karen, the nurse on 10 East, keeps a set of Note Cards in her breast pocket and does not share them with the other nurses or clinical assistants (see Figure 5.2 for example of nursing Note Card). The cards do not become part of the patient's record and Karen discards them all at the end of her shift. Individual cards she disposes of during the day if she discharges a patient. The author and audience of these notes is the same person. Throughout a shift, nurses repeatedly pull out these index cards from their breast pockets. When asked if she (or he) wants to go for lunch, a nurse will draw her (or his) cards, skim through them, and maybe say: “OK - but give me 15 minutes. I just have to give Sophie her nebs.” The ER nurses carry a similar set of pink and blue index cards for their patients. These are also discarded when the patient leaves the ER or at the end of shift.

Figure 5.2 – Illustration of a Nurse Note Card

On the inpatient wards, interns like Donna print out a version of the House Officer Sign-Out (HOSO) compiling all their patients’ information. They update the sheet and
refer to it until the end of their shift. House-officers call these "Brain Notes." In the ER, the interns and residents use a preprinted form named "Temporary Note." They carry around a stack of sheets, one for each of their current patients. Such private notes equate the "to-do" lists most of us commonly maintain to keep track of important activities before a trip, when renovating our home, or simply to organize our busy lives. One ER resident explains after he just finished calling a primary doctor about the admission of a diabetic girl: "Done! You always have to have a list. Now this one is out." With a smile he scratches out the telephone number of the primary care doctor on one of his Temporary Note sheets. A little later, in front of the Whiteboard he elaborates: "A lot of this work is about keeping things straight. Now and then you forget something and then somebody has to wait for a loooong time."10

**Documents Produced and Used by Communities**

A well-defined group of collaborators characterizes a second type of document and their use. All group members typically share the same occupational background, follow the same overall temporal rhythms of work, and care for the same patient group.

The primary care nurses typically maintain one or more document genres developed and used by the nurses working in one clinic only. In Sophie’s clinic the nurses use two such document genres. First, at the nurses' desk one finds a plain notebook that the nurses use to write messages to each other. For instance, a nurse, Magdalene gets a call from a concerned parent with a six month-old child. The baby has been cranky, slept little the previous night, and has a low-grade fever of 100.9 F. Magdalene judges that it is not necessary for the child to be seen in the clinic. Yet, she wants to make sure that the child is getting better. She orders the child's medical record from the record department and writes a note in the nurses' notebook. The next morning one of the nurses on duty checks the book. She will look through the record Magdalene requested and call the parents to see

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10 I did not find private notes used among primary care physicians. Many do get a list of scheduled visits at the beginning of the day but these typically are outdated before they land on the physician’s desk. Unscheduled sick-visits continuously arrive. Other groups in the clinics also use those schedules, and as a document it functions more as a communal document than a private “to-do” list. However, historical analysis suggests that when single physician clinics were common and referrals to sub-specialties rare physicians kept records as simple and private notes that helped them manage their clinic and keep track of their patient population (Armstrong, 1985; Prior, 1988).
how the child is doing. If the nurse cannot find the record she knows that she has to call the record department to make sure that they bring it down. Second, one finds a red binder at the nurses’ desk. Here, Magdalene and the other nurses record every time they order a test and the results that they receive from the laboratory. If a test comes back positive the nurse will call the parents. In this particular clinic the medical director has allowed the nurses to write prescriptions on common ailments such as Strep. The nurse who receives a positive test records it in the binder, calls in a prescription to the pharmacy, and notifies the parents.

Like the primary care nurses, Long Stay nurses maintain two documents tailored for their own use: the Management Plans and Nurse Report. First, Karen and the other nurses working in the Long Stay Unit use the Management Plans to keep each other updated on nursing issues pertaining to all their patients as well as more general demographic and diagnostic information. I never observed anybody but the nurses on 10 East use the Management Plans even though the documents compile detailed information about patient’s family situation, pathology, treatment course, and training. Long Stay nurses alone initiate a new Management Plan when admitting a new patient or make changes to an existing plan. As noted, Karen revises Noah’s management plan during the day and if she had time she would have started a new plan for the asthmatic boy admitted half an hour before she was to go home.

In addition, the taped Nurse Report, given twice daily at change of shift, is a communal document genre. The nurses ending a shift record short narratives on each of their patients, comparable to the interns’ notes in the HOSO. In no specific order the nurses record these on the same tape. When the new team arrives the departing nurses wait in the nursing room while the fresh group listens through the tape. All incoming nurses listen to the entire tape, not only the parts pertaining to the patients they are going to care for that day. In this way, the team gets a sense of the entire patient group in the unit, allowing them to easily help each other if needed or take over a patient if one nurse's work load changes significantly. This being said, one could argue that the clinical assistants’ participation in the Nurse Report makes it an exception to a purely communal document genre. However, the clinical assistants’ participation is restricted. They rarely engage as more than spectators to the Nurse Report. At the beginning of a shift they join the nurses in listening
through the nurses' recordings from the previous shift but they do not record their observations at the end of their shift. Like the nurses, the clinical assistants initiate a set of Note Cards on their patients for the day while listening to the Nurse Report. Apart from taking notes the clinical assistants remain quiet during the report and play only a minor part in the discussion and joking going on during the report.

Interns and senior residents on both the Long Stay and Short Stay units sustain separate documents. The five Long Stay interns share notes in a subset of the House-Officer Sign-Out system (HOSO), the two interns on Short Stay maintain another subset of the HOSO for their notes. Likewise, the senior residents share an on-line document, the Senior Notes, among themselves. This is despite the fact that the senior residents work with interns during the day and share their work practices to the degree that they listen to the same kids' chests at the same time. Nevertheless, the interns and senior residents do not move in the same places nor follow the same rhythm. In the evenings, senior residents will cover for other senior residents across the hospital. The group of patients they care for does not completely overlap with that of the interns, nor do the temporal rhythms of their daily and monthly rotations coincide.

Among the primary care doctors I found one clinic with a document genre restricted to the pediatricians. In the clinic, run by two physicians and two secretaries, only the doctors use the patient records. The secretaries schedule appointments, register patients, find their records, walk the patients to an examination room and file the records after they leave. Each pediatrician mainly sees his and her own patients but when covering for each other they will skim through the patient's chart maintained by their colleagues. This is also the clinic with the simplest patient records. The two pediatricians use one encounter form, in contrast to other clinics that maintain encounter forms specialized for each regular health check and for sick and follow up visits. Other pediatricians regarded this set-up as old-fashioned, resembling the way clinics were run 20 years ago. In larger clinics, the chart is no longer a communal document genre as nurses and clinical assistants also documented their care in the encounter forms and other documents. Only when attending to patients admitted to a hospital did the pediatricians use a document shared only among the doctors in the clinic. The pediatricians in those clinics take turns rounding
on hospitalized patients. For a week at a time one pediatrician attends to the clinic's hospitalized patients. One large provider network organization has two full time pediatricians doing nothing but attending to patients in Kilham Hospital. Each day they summarize the progress on all the network’s patients in an on-line system accessible to the pediatricians in the network’s local clinics.

Documents Produced and Used by Multiple Occupational Groups
A large number of document genres pertain to more than one team or occupational group. As just mentioned, the patient record in primary care clinics often involves nurses, pediatricians, clinical assistants, and registration clerks. In the emergency room and inpatient wards the Whiteboards, Flowsheets, Discharge Summaries, Medication Lists, Order Sheets, Door Flags, Expect Sheets, and Rounds are all enacted by nurses, physicians, and secretaries. For instance, most ER staff members use the large Whiteboard during any shift. The triage nurse regularly takes a walk through the ER glancing at the Whiteboard to check "how the others are doing." The registration clerks take turns working as the charting secretary – a position generally disliked as the charting secretary works among the doctors and nurses making them vulnerable to all kinds of requests. Sub-specialties (e.g., cardiac or orthopedic) consulting on specific patients in the ER make use of the Whiteboard to find patients and the physicians and nurses caring for them. Likewise, more than one occupational group uses the Discharge Summaries. In the hospital they become part of the patient’s record, which both nurses and physicians can access if the patient should get readmitted. In the Long and Short Stay units, the nurses base their patient discharge instructions on the doctors’ Discharge Summaries. In brief, documents used by more than one group constitute a diverse collection of genres some of which are developed and used in one locale, others of which are sent across healthcare settings.

1. B. Where: Distinguishing Documents by Place of Production and Use
An analytical emphasis on the spatial expectations associated with each document genre helps us further distinguish the different types of document genres in this large heterogeneous setting. I start out by first discussing documents utilized within one locale,
for instance the ER or a primary care clinic, followed by examples of documents produced and used in different locales. Then I turn to examples of documents where doctors’ and nurses’ moves determine the place of document production and use. Finally, I address the important issue of where documents cannot be found.

**Documents Produced and Used within one Locale**

Each healthcare setting maintains a number of documents pertaining to the people working in that specific locale. All the occupational groups working in that setting typically use these local document genres. The Whiteboards found in the ER, Short Stay and Long Stay units stand out as an example. In the ER, the Whiteboard hangs opposite the charting room where most doctors and nurses spend considerable time documenting, rounding, and socializing. In the Short Stay Unit, the Whiteboard holds a comparably central position in the nursing station where nurses and doctors meet for rounds, hang out, answer phone calls, and document their work. Consultants, primary care doctors, specialty nurses and others who frequently see patients in the unit glance at the Whiteboard before seeing a patient or talking to one of the Short Stay nurses and house-officers. Similarly, the larger nursing station serving both the Long Stay and Short Stay Unit contains a Whiteboard accessible to everybody coming to the ward. The board is helpful if consultants or relatives of children wish to locate a child or determine who serves as the main caregiver. Several primary care clinics use Flags mounted on the examination room doors to signal where patients can be found, who is next in line, and what pediatricians should take care of the patient. In the ER, flags mounted on the patient room doors are used to signal when a physician has written an order for the nurse.

Likewise, the Flowsheets and encounter sheets pertain to several occupational groups within one locale. Flowsheets are used in the ER and all the inpatient wards. As mentioned earlier, a Flowsheet is begun when a patient arrives in, for instance, the ER or Short Stay unit and nurses and clinical assistants maintain these documents until the patient leaves the unit. Physicians and other caregivers often read through the Flowsheet to determine a patient's current status, his/her vital signs, and whether the child's general health is improving or deteriorating. The Flowsheet follows the patient's time-space path through a locale. In the ER the triage nurse initiates the Flowsheets and when the patient
moves to a room the Flowsheet is placed in a bin outside the door. In the Short Stay unit and Long Stay Units, the Flowsheets can be found at the patient's bedside or in a bin outside the room. In all but one primary care setting I studied, the Encounter Sheets serve as a Flowsheet following the patient's path through the clinic. Registration clerks, clinical assistants, and pediatricians write and read the encounter sheet. Staff in the ER and primary care clinics used the physical location of the Flowsheets to signal and facilitate the general flow of patients through the unit. In the ER for instance, a gray rack opposite the Whiteboard contains the Flowsheets of all the patients currently in the waiting room. An experienced nurse or ER doctor can tell from a glance at the rack how busy they are.

On the inpatient wards (i.e., Short Stay and Long Stay), physicians store their Progress Notes in the same folder as the Flowsheets. In the Progress Notes, any physician caring for a child summarizes his or her ongoing observations, interventions or plans. Interns are expected to summarize a patient's continuous care five times a week in the Progress Notes. Consultants, primary care physicians, and attending doctors make entries every time they have seen the child. Doctors, nurses, and clinical assistants read the Progress Notes daily to keep up on tests results, observations, or decisions made by other collaborators. When Donna pre-rounds in the morning she reads though each of the patient's Flowsheets and Progress Notes to determine what happened since she was last in the hospital.

Documents Produced and Used in Different Locales

Another group of documents used by doctors, nurses, clinical assistants and secretaries are not restricted to one locale. These documents typically mark the hand-off or closing of a patient's care in one locale, for instance, Discharge Summaries, Admission Sheets, EM Charts, and Expect Sheets. Where Flowsheets and Progress Notes and other local document genres serve as communication devices for people coming through one locale, doctors and nurses write Discharge Summaries, Admission Sheets, and Expect Sheets with the expectation of sending these documents to another healthcare locale.

Primary care physicians write Expect Sheets on their patients with the explicit purpose of faxing or emailing them to the ER. In the ER, nurses fill out an Admission Sheet and tube it to the inpatient ward before sending up the patient. Similarly, the ER
house-officers write the Discharge/Admission Notes on the EM Stations (i.e., EM Charts) with the expectation that the summaries of their patients' ER care are faxed to the patient's primary care doctor after one of the ER attending doctors has approved and signed off the summary. When admitting patients to the hospital, the ER house-officers know that the house-officers on the receiving ward read their notes. Finally, when interns discharge a patient from an inpatient ward they write a Discharge Summary to be shared with the primary care doctor and future healthcare providers should the patient ever be admitted again. In fact, the interns produce two versions of their Discharge Summary. First they write one on the hospital’s on-line system. This summary becomes part of the patient’s medical record and physicians with privileges in the hospital can access this summary. Second, the interns dictate the same summary over the phone to an off-site transcription service. The primary care doctor and insurer receive this latter note. Many interns complain about the seemingly needless repetition of these two Discharge Summaries and some avoid the dictation altogether.

In summary, the use of document genres involving more than one user group are associated with one of two types of spatial expectations for their use. The first document type is produced and used by people within the boundaries of one unit, department, or clinic. I label these "local documents." The second type of document genre I label "trans-local documents" as they involve users in more than one unit, department, clinic, or institution.

**Where People's Moves Determine the Place of Production and Use**

Returning to the private and communal document genres one does not find similar straightforward distinctions between local- and trans-local document production and use. Rather the location expectations associated with the Brain Notes, Temporary Notes, HOSO, Senior Notes, Management Plans, or Nurse Reports depend on the users’ or user group’s time-space paths.

The private documents follow their users. In the nurses' case, whether they work in the ER, the Short, or Long Stay unit, the Note Cards are used within one locale only. The same can be said about the ER house-officers. They only see patients within the ER and thus only use their Temporary Notes within this one department. In contrast, the interns
and senior residents use their Brain Notes wherever they have patients. On most days interns care for patients in several department across the hospital. Primary care doctors attending to hospitalized patients often travel to several hospitals in the course of one morning using their notes in each locale.

Similarly, the place expectations associated with communal document genres depend on the group's spatial practices. The location of the Nurse Report is set. I only observed nurses give the report in one conference room tucked away in the far corner of the ward. The tape recorder could have been moved to the nursing room at the heart of the ward but the nurses appeared to guard the privacy of the conference room far from doctors' and patients' ears. This was a back-stage area for the nurses to vent their frustration with specific doctors, patients, or family members.

The spatial use of the Management Plan is less restricted than the Nurse Report. Still it remains within the Long Stay unit. An open cabinet in the nursing station right outside the nursing room houses the Management Plans. Nurses primarily employ them in the nursing room but also bring them to the conference room when taping and listening to the report. In contrast, I have never seen the Management Plans used in the patient rooms or the doctors' conference room. The spatial expectations associated with the Management Plan genre are tied closely to the nurses' regions of the ward.

Senior residents and interns can access their Senior Notes and HOSO from computer terminals across the hospital. However, I rarely observed them access these documents away from the Long Stay doctor's conference room or the Short Stay nursing station. People generally go back to their home department when writing up their HOSO or Senior Notes.

**Where Documents are Not Found**

It is also important to determine where private and communal documents cannot be found. As mentioned, none of the individual notes, the HOSO or Senior Notes ever make it into the medical record, meaning that private, and communal documents do not serve as legal documents. Likewise, the private Note Cards never change hands. Only in the emergency room, did I observe house-officers hand their Temporary Notes to another doctor. When house-officers head for lunch or dinner they sometimes give their pile of
Temporary Notes to a colleague covering for them during their break. The receiving doctor sticks these in his or her coat pocket and pulls them out only if something drastic happens to a patient. I never saw such handoff take place among the interns or senior residents in the Short Stay and Long Stay units. One should note that the ER house-officers do not employ a communal document genre, such as the HOSO or Senior Notes, allowing them to share information on all their patients. In short, the distinction between private and communal documents is not precise in the case of the ER Temporary Notes. Nevertheless, I will continue to refer to the Temporary Notes as a private document genre in the following analysis as house-officers rarely make use of the Temporary Notes they baby-sit for colleagues. When asked, several ER interns noted that they could often not read or comprehend the short hand notes scribbled by their colleagues. The interns did not expect their colleagues to care for their patients, but to keep an eye on them and make sure to page them if something significant takes place that needs their attention.

Where the private and communal documents do not make it to the medical record, the trans-local and local documents do with a few exceptions. In the case of the Discharge Summaries and EM Charts these documents are stored in at least three places: in the hospital's on-line clinical document viewer system, in a paper record stored in the hospital's basement, and at the primary care clinic. In some cases the Discharge Summary is sent to outpatient asthma clinics or other sub-specialty facilities. In addition, the ER Charts remain in the ER on-line system. Flowsheets, Progress Notes, Encounter sheets, and other paper-based local document genres become part of the patient's record in the hospital. Other non-paper-based documents, such as the Whiteboard and flags are not saved. One could argue that the storing of Flowsheets and Progress Notes in the patient's medical record disqualifies them as a local document genre. Doctors or lawyers could request the record at a later date and use its contents in a locale different from where it was originally produced. Despite this possibility I never observed physicians or nurses using Progress Notes or Flowsheets from previous admissions. On one occasion, an inexperienced intern ordered parts of a patients' record from another hospital from where the patient had been transferred. The other hospital did not send Flowsheets or Progress Notes but only test results and consult reports. With the help of a medical student, the
Intern spent three hours sifting through the material, growing more and more frustrated. In the end, she redid all the work performed at the other hospital. To order the work redone ended up taking significantly less time than getting hold of parts of the patient’s record from another institution, reading through and understanding them. In another instance, an intern requested the full record on a patient with a complicated chromosome defect. Again the intern quickly got overwhelmed and ended up reading through selected Discharge Summaries and consult reports. I never observed senior residents and attending doctors go through a patient’s old record.

In developing a taxonomy of document genres, I do not attempt to build an Aristotelian classification system that works according to a set of binary characteristics that the document genres either present or do not present. Rather, I am attempting to build a prototype classification which represents a broad picture of the different categories, and then to extend this picture by metaphor and analogy when trying to decide if any given document belongs to one category or the other (Bowker & Star, 1999). For instance, doctors and nurses are clearly aware of the legal status of their Flowsheets and Progress Notes. In that sense, they do not write their Progress Notes and Flowsheets purely with local users in mind. However, the present analysis emphasizes the daily sharing of medical knowing and coordination among doctors, nurses, clinical assistants and other caregivers. With those everyday care practices in mind, I maintain that these two genres serve as local documents. If I were to focus my analysis on the legal implications of medical documents I would most likely have to merge the trans-local and local document genres into one category. Let me now turn to the temporal expectations associated with the different documenting practices.

1.C. When: Distinguishing Documents by Timing of Production and Use

I start out addressing the private and communal document genres followed by a discussion of the trans-local and local document genres. As we will see the former document types tend to revolve around set times of the day whereas the latter types
involving a heterogeneous group of users entail a less predictable and more contested
temporal structure.

**Cyclical Rhythm of Work: Change of Shifts and Rounds**

Doctors and nurses often align their use of private and communal documents with
other routine activities that recur every twenty-four hours. These fixed times of the day
anchor the use of many documents into the general temporal rhythms of clinic and hospital
work. In the hospital, the cyclical and staggered structure of coverage among the nurses
and doctors provides the basic structure for these temporal rhythms and points to the
change of shifts and rounds as particularly important times of the day.

The house-officers’ use of their Brain and Temporary Notes, and nurses’ use of
Note Cards mirror their users’ daily work shifts, whether it is a nurse's 12-hour shift or an
intern’s 36-hour on-call or post-call shift. On the in-patient wards, nurses and house-
officers generate their private notes at the beginning of a shift and discard them at the end
of a shift. More cards may be added and old ones discarded during the day when patients
get admitted and discharged.

Recurring daily events associated with change of shift, including rounds, sign-out,
and report, structure the use of private notes. Here patient histories are given verbally,
based on the doctors’ and nurses' Brain Notes and Note Cards. Doctor and nurses add any
decisions reached during these face-to-face meetings to their notes. On the inpatient wards,
rounds take place at set times in the morning, 7:00-7:30am for the SSU and 7:30-9:30am in
the Long Stay unit and sign-out occurs sometime in the late afternoon. As we saw, the
Nurse Report in the Long Stay Unit, is scheduled at shift change, 7am and 7pm. In
contrast, the ER house-officers do not have a set time for their reporting to attending
doctors. These encounters take place whenever needed or more likely when a house-officer
manages to corner an attending doctor in the charting room. For the rest of a shift, the
nurses and house-officers continuously exploit their notes whenever they see a patient or
make decisions of what to do next.

Likewise, nurses and doctors largely structure their documenting in Nurse Reports,
Management Plans, the HOSO, and Senior Notes around the temporal structure given by
change of shift and rounds. The Nurse Report takes place at the beginning and end of the
nurses' shift only. Nurses record their report within the last two hours of their shift and the
new team listens to the tape within the first 15-20 minutes of the new shift. The new team is under pressure to wind up the report as soon as possible. The outgoing team has been on for 12 hours already, from seven to seven, and they are not compensated for the time spent waiting in the nursing room to answer any possible questions. The night team, in particular, will be literally hanging over the table in the nursing room chatting about their pillows and strategies for avoiding falling asleep at the wheel on their way home. Karen recalls three occasions when she fell asleep while waiting at a red light. In the winter, she drives home with all the windows wide open. The rest of the year, the A/C is on full blast.

A slightly less rigid temporal structure relates to the use of the Management Plan. As in Karen's case, nurses bring the Management Plans to Nurse Report and flip through them as they listen to the taped report and write on their Note Cards. The last few hours before the end of a shift mark the time where nurses can be found working on the Management Plans. On Karen's day shift she and her fellow nurses fill the nursing room between four and six. Interactions with patients, parents, and other more task-oriented activities dominate the first half of a shift. At night the division is not quite as clear. The unit is quiet leaving more flexibility to the timing of paperwork and other activities. Still nurses generally allocate time for paperwork during the second half of the night. Apart from this general temporal structure associated with the Management Plan genre, nurses are left free to improvise when they use the plan. Karen may pull out Beatrice's Management Plan if she wants to remind herself who her primary care doctor is or learn the name of Noah's social worker.

Like the nurses' communal document genres, interns and senior residents structure their HOSO and Senior Notes use around change of shift, rounds, and sign-out. The first thing an intern or senior resident does when arriving at work is to log-on to the HOSO or Senior Notes respectively. In doing so they determine if their on-call colleagues added any significant information over night and to generate their Brain Notes. During the day, and in particular in the afternoon and late evenings, interns and senior residents update their communal note systems. In the afternoon there is a flurry of activity in the Long Stay conference room and the SSU nursing station when interns get ready to sign-out their patients to the on-call person. When two interns were asked what time of day they
considered the most important, they answered in unison: "Sign-out." Interns update the HOSO, and during sign-out use it to structure their report to the on-call colleagues. As mentioned earlier, they focus on the patients that may need attention during the night, difficult orders and other tasks.

In brief, the communal document genres become an integrated part of the hospital's staggered structure of coverage. The notes help smooth transitions by providing incoming nurses or doctors with immediate sources of information and reference from the moment the outgoing staff members leave the hospital. This explains why house-officers make an extra effort to write particularly detailed notes in the HOSO and Senior Notes on the last day of their rotation. Interns strive to discharge all their patients but if that is not possible they write to capture as much detail as possible to make it easier for the next intern to take over their patients.

**Continuous Rhythm of Work: Convergence of Multiple Rhythms**

The use of Whiteboards, Flowsheets, Discharge Summaries and other local and trans-local document genres do not seem to follow a discernable temporal structure. More precisely, many groups use these documents and each group tends to adhere to their own temporal rhythms. Given this multiplicity of uses it becomes difficult to discern a few temporal markers as in the case of the private and communal document genres.

The hospital staff uses the Whiteboards in the ER, SSU and Long Stay units continuously. Whiteboards serve as an integrated part of rounds in the ER and SSU. Yet, staff do not organize their documenting on the board around the timing of rounds, as is the case with Brain Notes, Temporary Notes, and the HOSO. Rather use of the Whiteboard follows the general flow of work variations that daily, weekly, and annual changes in patient load bring about. In the ER and SSU, staff add new patients to the boards as they get admitted. House-officers sign up to see patients when convenient or as encouraged by an attending doctor or nurse to do so.

The temporal rhythm attached to the use of Flowsheets and primary care's Encounter sheets follows the pace of patient care rather than shifts or clinic hours. For example: the triage nurse initiates a new Flowsheet upon a patient's arrival in the ER. The registration clerk initiates an Encounter Sheet when a patient presents in the clinic. Nurses
add to the Flowsheet whenever they have seen the patient. Physicians often skim though a Flowsheet before seeing a patient. Chart nurses and physicians also scan through the Flowsheets as they round the ER. A Flowsheet is concluded when the patient leaves the ER, or the primary care clinics, and inpatient wards. The physicians' use of Progress Notes mirrors that of the Flowsheets in the sense that a physician makes an entry to the Progress Note the first time he or she sees a patient. Consultants and attending doctors summarize their observations on the days they see a patient. Interns are expected to summarize the patient's care four times during the week and once time over the weekend. These rules are not always followed and while nurses note their activities and observations after each encounter, interns often avoid writing their Progress Notes until late at night or days after they are due. Primary care doctors rounding on their patients in the hospital often complain that they rarely find the interns' Progress Notes updated.

The same general criteria apply to the timing of Discharge Summaries and other local documents. As more than one group uses them it can be difficult to predict when a Discharge Summary is written and when it will be used. These uncertainties often lead to conflicts among the groups depending on the production and use of these documents.

In the ER, conflicts erupt on a regular basis over when to release the EM Charts. One evening an eight year-old girl arrives by ambulance from another hospital. She is in seizure and has been so on and off for several hours. At this point, she is in a critical situation where her blood pressure is dropping and the oxygen level in her blood is getting critically low. From the ambulance the ER staff roll her directly into the trauma room where a small army of nurses and doctors awaits her – one doctor for her head, a fellow for each arm, and nurses on either side. A third nurse stands in a corner ready to document any medication administrated to the patient. One attending doctor conducts the care. With a cell phone in hand he gives instructions to the team while calling radiology and the ICU to make sure that they are ready to receive the girl as soon as the ER team has stabilized her. As soon as the girl rolls off to Radiology, a house-officer starts to type up the EM Charts summarizing the case. Not long after the ICU doctor in charge calls the ER attending. She wants to read the EM Charts but cannot access it until the ER attending signs-off on the
note. The attending refuses to do so until he has finished seeing a glut of other urgent patients who have had to wait as the team attended to the girl in seizure.

Interns often refer to the writing of Discharge Summaries and Progress Notes as "scut work." In comparison, house-officers do not classify the time spent on documenting in the HOSO or Senior Notes as undesirable work. Doctors regard their private and communal documents as immediately more important than the documents serving several user groups. This sentiment translates into how rigorously they adhere to the temporal expectations attached to each document genre.

In summary, when comparing the temporal expectations associated with the many document genres involved in patient care across settings, doctors and nurses associate specific times of the day with their private and communal document genres. Each group carefully maintains the coordination among its members in regard to these times and the documenting practices involved. In other words, the private and communal document types tie closely to two of Zerubavel's three patterns of temporal coordination, that is, temporal complementarity and staggered coverage (Zerubavel, 1979). The communal document genres allow a group of doctors or nurses to maintain temporal complementarity, allowing, for instance, Gabriel to cover for Donna when she goes home at night and vice versa. Both the private and communal document types play an important role in supporting staggered coverage. It is exactly in the overlaps between shifts that doctors and nurses establish their private notes and discuss their communal documents.

In contrast, the temporal structures surrounding document genres involving several groups, often with different occupational backgrounds, rarely follow the same rhythm. Each group brings its own rhythm of work to the use of local- and trans-local documents. These differences lead to conflicts as we see play out in the discussions about when to write Discharge Summaries. Hours are spent at staff meetings discussing when and where to use local and trans-local documents. These discussions, as we will see in the following chapter, grapple with how best to intersect the temporal structures associated with several document genres. The temporal structures sketched so far pertaining to the four types of document genres only capture rudimentary aspects of coordination taking place within and across primary care, ER and inpatient wards.
This being said, we are still left without an answer as to why doctors and nurses find it necessary to use more than one document genre to record a patient's history and why a doctor or nurse often records the same history in up to four different documents.

2. The Content, Purpose, and Form of Medical Documents

In this section I continue my genre analysis by considering the purpose (why), content (what), and format (how) of document genres in order to address the question: why do these extremely busy nurses and doctors who routinely work 12 to 36-hour days find it necessary to maintain such an abundance of document genres?

2.A. Why: "Medicine is about repetition"

When asked directly why they document the same patient's history so many times, doctors and nurses often find it difficult to provide an answer or to distinguish the purpose of their different documents. To many, the purpose of their various documents remains the same. That is to record the patient's history and care. When asked, house-officers typically give didactic, legal, or supervisory reasons for the repetition.

House-officer 1: "Medicine is about repetition. You learn by doing and writing about the same things again and again. That is the way you learn and remember."

House-officer 2: "They want us to learn to write good notes."

House-officer 3: "If you haven't written it you haven't done it."

House-officer 4: "To please the powers that be, you have to leave a paper trail."

House-officer 5: "Inefficiency!" [Accompanied by a slap on the shoulder]

These answers resonate with well-established findings in medical sociology and medical anthropology describing reasons for documenting in healthcare. Nevertheless, these answers do not help us understand why one finds different types of document genres.

Whereas Donna, the intern, is hard pressed to come up with reasons as to why she documents Sophie's history in four different documents, I find in my observations of her
that she makes clear distinctions in practice between her four versions of Sophie's history. The same observation pertains to the other doctors and nurses. To better understand these practiced distinctions among document genres, let me turn to the content (what) and format (how) doctors and nurses use when documenting patient histories.

2.B. What: “Aim for the Birds in the Tree”

Nurses, doctors, clinical assistants, and secretaries do not include all the compiled information about a patient in all documents. As illustrated in the Nurse Report example, nurses and doctors strive to shorten their verbal and written histories to a minimum.

Succinctness stands out as the overarching rule for both the oral and recorded histories. For instance, one attending doctor has made it a habit to repeatedly stress the importance of writing short and concise summaries of cases when starting a rotation with a fresh group of interns. Her little introduction includes a call for conciseness:

"Discharge Summaries shall not contain everything. Rather they should emphasize the key points of the case. The rest of your career will depend on your ability to write good Discharge Summaries."

Over lunch after the attending doctor's introduction, the interns share war stories from their previous rotations. One intern, just out of her surgical rotation describes how the senior pounded the point that to him interns were nothing but information hunters and bell ringers - the bell referring to his being warned of an abnormal test result or a suddenly deteriorating patient. Otherwise, he did not want to hear from them. He insisted that their Progress Notes should be no longer than seven lines long and that they should leave space for his note at the bottom of the Progress Note sheet. If not, he would tear up the sheet.

Senior residents on Long Stay and Short Stay also see it as one of their main functions to develop the medical students' and interns' ability to give and record good histories. One morning after Gabriel's medical student gives another long-winded patient history, the senior resident insists that Gabriel helps his medical student improve his histories.

Senior resident: "You need to talk to Marc [medical student] about his histories. What was he doing today talking about morphine?"

Gabriel: "He wants to become a surgeon. He has a surgery focus."
Senior resident: "But he was waaay off the mark. You need to tell him to aim for the birds in the tree."

What exactly these birds are can be difficult to discern, not only for the medical students. Interns struggle with their histories and senior residents often spend hours editing each other's Senior Notes down to their assumed essence. One resident gives the following answer when asked why he has just spent 45 minutes editing entries originally initiated by other senior residents:

"I'm anal. I want the notes to follow a specific setup. No empty spaces. Look at this one [pointing to a particular voluminous patient entry on the screen]. It's so long that you think that it's a complicated case, but it's just a 4 month old with bronchiolitis."

Nurses emphasize their documenting equally strongly. A typical feedback during nurses' yearly evaluation is "You need to improve your paper work." This means that the nurse should spend more time updating the Management Plans or filling out the assessment section of the Flowsheet.

The various document genres are associated with different degrees of detail. These variations do not fall along the lines of the four types of document genres. The private documents tend to be mere lists of keywords. For instance, the ER house-officers never fill in all the subjective data, objective data, assessment, and plan outlined on their Temporary Note. In the vast majority of cases, residents just jot down the patient's name, age, notable parts of the history, lab results, names and phone numbers of doctors they need to call, and things to do. Referring to one of his Temporary Notes, an intern, Tim explains:

"No one else is going to understand what this means. This is very specific to what I do. Most people just jot notes to themselves -- you know: '5 year old, nasal foreign body, 10 days out of 21 days, thick discharge, yellow green, treat with XYZ, contact primary.' There is no time line in it; there is no thought process. I know what this means because I am here. But no one else will be able to make sense of it."

In the history this intern describes, he has summarized the medical problems he faces as an ER doctor: nasal foreign body in a 5 year old. Equally important he makes a list of what to do next: treat boy with medication XYZ and contact primary care doctor. Similarly, the Long Stay and Short Stay interns use their on-line HOSO notes to describe
what they need to do next. Consider the excerpt from a Long Stay intern's HOSO pertaining to a six-year-old girl (i.e., second entry) with right peritonsillar abscess and strep throat found in Appendix 1. The note starts with the patient's chief complaint or in this case diagnosis. The rest of the entries spell out things the intern and her three fellow Long Stay interns have to do.

Under medications we can see how much and how often each medication should be administrated. "Morphine 1 MG IV Q4" means that the girls should be given a certain dose of morphine every 4 hours. The plan section spells out other pending activities facing the interns. For instance, the note reminds the interns that they need to coordinate with the Continuing Care Nurse on 9 West, and talk to the family in order to decide on a PICC line and home therapy, and to continue IV fluids due to poor intake of fluids per mouth.

Interns become more meticulous in spelling out these “to-do” lists the last few days of their rotation as a new group of interns is soon to take over. They do the same before major holidays when staffing is lighter. However, interns strive to avoid this by discharging as many patients as possible before the end of a rotation. An incoming intern on a team will find it unfair if an outgoing intern signs-out a patient that could have been discharged before the new rotation team takes over. Similarly interns strive to discharge patients before weekends and in particular holidays when staffing is lighter. Planning discharges is often discussed in relation to these temporal markers. Before a major holiday, such as Thanksgiving, one can find a team working hard to discharge as many of their patients as possible. Members put an extra effort into making sure that tests or procedures do not slow the patients' path and they will do their best to push consultants to make faster or more positive evaluations of patients. In their Discharge Summaries, the interns do summarize the patient's past medical history pertaining to the present illness. What is written as a “to-do” list in the HOSO becomes a description of the course of treatment in the hospital. Still the Discharge Summary ends with a short list of discharge instructions including medication, follow-up tests and procedures, when to see primary care doctors, or services following the patient in outpatient care.

Senior residents who do not spend as much time together as the interns do write more complete histories with nearly full sentence structures. Still these short summaries
emphasize pending tasks and issues the senior residents should pay attention to. Among the local document genres one finds both lists of abbreviated statements and categories, comparable to the intern's HOSO, but also more short paragraphs with full sentences as in the physicians' Progress Notes. The trans-local document genres include, for instance, both Discharge Summaries and the Expect Sheets. The Expect Sheets include a few key words capturing the patients name, age, chief complain, and a list of suggested tests or interventions.

In summary, analysis of the content that nurses and doctors put in their documents helps us understand what the senior resident is referring to when he talks about aiming at the birds in the tree. The birds seems to be what Garfinkel (Garfinkel, 1967) has called the "practical problem par excellence: 'What to do next?'" This raises the question of whether or not Donna documenting Sophie's history four times writes the same "to-do" list four times. Or do we find variations in the content and format of each document genre? In other words, we are still left with the question: what distinguishes Donna's four types of document genres? In search of an answer, let me turn to the format guiding doctors' and nurses' entries in their four types of document genres.

2.C. How: SOAP and Tables

One finds two main kinds of formats organizing medical histories. First, there is the "SOAP" format. SOAP stands for subjective data, objective data, assessment, and plan. Figure 5.3 (following page) summarizes the issues subsumed by this acronym.

Nurses and doctors apply this narrative structure when presenting individual patient histories both verbally and in writing. Many medical schools and teaching hospitals strongly promote this organizing structure for history giving.¹¹

¹¹ The SOAP builds on a near universal genre for medical histories in the US, established in the early nineteenth century. Structured formats for history recording can be found as early as the beginning of the seventeen hundreds (see Epstein, 1995). The present system began to be established in the early nineteenth century and became codified in the last decade of the century. Even more recent influential innovations have roots in the nineteenth century, noticeably Weed’s “problem-oriented patient record.” (Weed, 1968). Health care providers generally know Weed’s work as the “SOAP,” Lawrence Weed introduced the “problem-oriented patient record” in an attempt to design and depict clinical work as a type of experimental or “scientific” activity. Weed explicitly labeled the distinct steps in the clinical process as elements of the scientific method. The hope was to lay open medical practice to scientific analysis in a new and thorough
Figure 5.3 – SOAP: Subjective Objective Assessment and Plan

<table>
<thead>
<tr>
<th>Subjective Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifying Information</td>
</tr>
<tr>
<td>Chief Complaint (CC)</td>
</tr>
<tr>
<td>History of Present Illness (HPI)</td>
</tr>
<tr>
<td>Past Medical History (PMH)</td>
</tr>
<tr>
<td>Medication and allergies</td>
</tr>
<tr>
<td>Family History (FH)</td>
</tr>
<tr>
<td>Social History + habits (SH)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review of Systems (ROS) (including an ordered list of every relevant organ, noting the present or absent symptoms referable to that organ)</td>
</tr>
<tr>
<td>Physical Exam (PE)</td>
</tr>
<tr>
<td>Labs</td>
</tr>
<tr>
<td>X-ray</td>
</tr>
<tr>
<td>Special tests</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis or differential (list of possible diagnoses)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment regimen or other action taken by doctor or nurse</td>
</tr>
</tbody>
</table>

Second, one finds a table or matrix format governing documents used to keep track of more than one patient, staff or bed. Patients or beds are typically organized in a table in relation to a number of units, teams, or staff members (see Figure 5.4 below). Whiteboards, Admission Sheets, and Schedule Sheets stand out as examples, but most other document genres presented so far incorporate elements of this table format. Staff use this table organizing principle to depict the beds in a unit or units in an institution, and the distribution of patients and staff among these beds or departments. I will discuss each format in turn.

**Format I: SOAP**

The ER house-officers' Temporary Note illustrates the pervasiveness of the SOAP format. As seen in Appendix 2, the first quarter of the sheet leaves space to record the patients' identifying information. Apart from name, sex, age, record number, these include the name of primary care doctor and their authorization number. In addition, this section includes the patient's weight and vital signs; information found in most pediatric histories.

The individual steps of the experiment, the definition of the starting point, the planning of the intervention, and the observation of the outcome should be discerned and judged. Through the problem-oriented record, the doctor "is able to organize the problems of each patient in a way that enables him to deal with them systematically" (Berg, 1997: 23; Weed, 1968). For a thorough discussion of Weed's work and its attempts to standardize medical work see Berg (1997).
A textbox leaves space to document the subjective data, most notable chief complaint, history of present illness, past medical history, medication and allergies, and if needed family history and social history. Pre-specified categories outlining the patient's objective data take up the majority of the page. The house-officers can check off, for instance, whether each organ group involved in the physical exam is normal or not. Another textbox at the bottom of the page allows the user to note the assessment and plan. The latter specifies possible consultants to call. The SOAP format and the sub-categories do not only provide an outline for the recoding of the patient's history, doctors also use it as a guide for how to handle a case. It is a to-do list for their interactions with each patient. A house-officer is expected to assess the patient condition on arrival partly based on vital signs (i.e., first line on Temporary Note sheet), then gather subjective data, which can be entered in the clinical notes section. The objective data gathering involves, as specified by the Temporary Note sheet, a physical exam of all major organs, and possible X-rays, procedures and laboratory tests. Doctors should consider ordering a consult and speak to the primary care doctor before a plan is set in motion (i.e., last part of objective exam section). Finally, the physician must decide whether the patient should be discharged or admitted. Notes pertaining to this last part of the ER work are entered at the bottom of the page, concluding with the time of discharge. I have never observed house-officers fill in all this information. As in Samer's case, house-officers jot a few words on the patient's medical history and history of present illness and specifically tests or observation in need of follow-up.

The ER and inpatient nurses' Flowsheets contain the same elements but leave space for the nurses to detail their activities and changes in the patient's vital signs and general appearance as seen in Appendix 3A-B (representing a Flowsheet's four pages). Categories on the first third of the ER Flowsheet's front page leave space to record the patient's identifying information and subjective data. In addition, ER specific categories can be found, including triage status, how the patient arrived, exposure, and precautions.

On the remaining four pages of the Flowsheets the nurses can record the patient's objective data. As for the house-officers' Temporary Note, the nurses' Flowsheet can be seen as an elaborate to-do list. Nurses are expected to check off boxes reminding them to
take account of each major organ group in their physical exam. In addition, the Flowsheets introduce a temporal dimension as the nurses record the changes in the patient’s "objective data." They do so in neatly organized matrixes with rows for vital signs, observations, interventions, patient responses, medication, intake and output, all including the time of these events. A small section allows nurses to document their discharge teaching. One should notice the sequence in the subjects covered in the Flowsheet. It starts with triage, identifying information, and subjective information. Then, a full physical exam followed by repeated assessment of the patient and administration of medication. The sheet closes with discharge teaching. The Flowsheet stands out as a guideline for ER nurses work. If one nurse was to take over from another, it is easy to see what has happened and what still needs to be done.

The medical Flowsheet is the most generic. The Asthma, Psych, and Surgical Flowsheets include categories tailored to each group of chief complaints. The Flowsheets found in the inpatient wards can be seen as variations on the same format. I will not spell out the details here but simply point out that nurses apply a rather fine-grained temporal composition when recording their own practices and changes in their patients’ case. Physicians do not record these temporal changes in the same degree of detail.

The preprinted Encounter Sheets found in most primary care clinics adhere to the SOAP format as religiously as the nurses’ Flowsheets and doctors’ Temporary Notes. And, the categories included on each Encounter form read like a long itinerary or to-do list.

As seen in Appendix 4 A-B, the first half of the Sick Visit form in Sophie's primary care clinic leaves space for identifying information and subjective data. Clinical assistants, nurses or doctors can choose among twenty common chief complaints to check off. One quarter of the page is dedicated to the physical exam containing a list of organ groups to be included in the examination. The last quarter leaves room for notes on assessment and plan. The age-specific Health Check forms repeat this format, one difference being that each form contains categories relevant to the age group. For instance, the Four Month Health Check form includes categories concerning elimination, sleep, vision and hearing among other things, whereas the form for the ten to thirteen year olds contains categories on peer relations, school performance, sexuality and tobacco. Nurses and physicians only
record information under any of these categories if they perceive the patient to have a problem in that general area. In one large provider network clinic I found a new computerized record system. The pediatricians in this clinic generally dislike the age-specific templates, they contain too many categories that require too much follow up, writing and editing. As an alternative, several physicians have developed their own templates while others don’t use them at all. The head of the clinic, for instance, has reduced the more than 20 predetermined templates to four, one for sick visits, and three short age-based templates. The four lists he crafted can easily be compared to the house-officer’s Brain Notes and nurse’s Note Cards if one discounts the specific categories included. It is a simple guideline for what to do during his patient examinations.

Tinkering with existing documents and information systems is not unique to this one clinic. In most settings, doctors, nurses, or clinical assistants would introduce me to forms that they themselves had developed or modified to represent what they think their work should involve. One day in Sophie’s clinic a nurse came up to me after learning about my study.

Enthusiastically, she shows me the “Human Service Intake” form that she developed and which is now being reviewed by the clinic management. The form has "Human Service Intake" printed vertically in large bold letters along the page’s right margin and leaves space to document a number of family, living arrangement, and social support issues. The nurse explains:

"I hate forms. But this one prompts you to what you should do and it's easy to find in the chart. Before those issues were often missed."

The Expect Sheet, EM Chart, and Discharge Summaries follow the same general format with a few variations. The EM Chart format nearly mirrors that of the Temporary Note. As mentioned earlier, the house-officers can generate those notes by simply using the mouse to click on predefined categories for chief complaint, medication, allergies, review of systems and physical exam. They also have the option of typing up the note. Appendix 5 shows a typical EM Chart. The summary contains the basic elements of the SOAP. Apart from patient identification information, the note starts with "subjective data" including a few sentences on history of present illness (HPI) followed by past medical
history summaries in list form. The Discharge Summary represents "the objective data" as the physical exam and treatment and course, both in list form following organ groups and test results. The last two lines give "assessment" and "plan" in reverse order. The plan/disposition is to admit the boy to the hospital and the assessment is to rule out upper gastrointestinal bleeding. On the ward receiving this boy the house-officers reading this note will know to check if blood tests results are back and to contact the GI consultant. Apart from these four elements one notices a line stating: "PCP info not collected." This means that information on the patient's primary care provider is not gathered, which means that the house-officer will have to do that, or that the boy does not have a primary care doctor.\textsuperscript{12}

In summary, the overwhelming majority of documents follow the same structure, the SOAP format. Variations come in the detailing of each of the SOAP's four parts. For instance, what "subjective and objective data" is most relevant when a primary care doctor examines a 4 month old? A different form outlines specific tasks associated with assessing the overall health of a 10-13 year old. The general SOAP structure and each document genre's details serve as guidelines for not only the documenting of patients' care but also for nurses' and doctors' unfolding work.

\textbf{Format II: "The Whiteboard is My World"}

The second formatting principle is most clearly articulated in the Whiteboards, Admission Sheets, and Schedule Sheets. These can be described as simple tables with units or patients on the vertical axes and then a number of categories pertaining to the units or patients on the horizontal axis. The Whiteboards found in the ER, and inpatient wards illustrate this simple principle. On the large Whiteboard in the main part of the ER nurses, secretaries, and doctors sort patients, staff, and rooms by the four teams (blue, red, black, and green). As illustrated in Figure 5.4, each team takes up a section of the board. Nurses enter their name under the team they signed up for the start of their shift. Underneath each team, individual cells summarize the patient's name, physician's name, time the physician

\textsuperscript{12} The last four lines in the EM Chart specify the level of care provided to the patient, their urgency - used for billing purposes, and finally highlighting that the attending doctor did sign the note signifying that the discharge summary now can be shared with others outside the ER.
signed up, and the nurse's name. The top part of the board contains the names of all the physicians and their pager numbers. In the left side column, nurses summarize what rooms are currently free and the rooms with new patients and the time the patient was placed in the room. When house-officers sign-up for new patients they wipe out that room number in the left hand column.

The Whiteboard can be seen as a map of the main ER. As with all maps it only highlights some elements, while others remain invisible. The Whiteboard does not represent any non-patient rooms, such as the medicine room, the staffing room, charting area, conference room, dentist clinic, rooms for non-urgent patients, registration and triage, just to mention a few. It makes no mention of medical consultants, COPPs, the administrative staff, clinical assistant, security officers, social workers and janitors. In short, the Whiteboard provides a map of the emergency department where specific elements are distributed in a particular relationship of co-existence. Patients are sorted into teams and rooms. The ER staff assigns themselves into each team. Residents and fellows also get assigned to teams whereas the attending doctors oversee all teams. Whether room, patient, or staff member, each element has its proper place. In the words of an ER attending standing in front of the Whiteboard after finishing round:

"The Whiteboard is my world."

**Figure 5.4 – ER Whiteboard**

<table>
<thead>
<tr>
<th>MD</th>
<th>Paul #784</th>
<th>Brenda #876</th>
<th>Samer #874</th>
<th>Tim #243</th>
<th>Julie #745</th>
<th>William #392</th>
<th>Kate #312</th>
</tr>
</thead>
<tbody>
<tr>
<td>RN</td>
<td></td>
<td>Black</td>
<td>Red Clara</td>
<td>Green</td>
<td>Joyce</td>
<td>Blue</td>
<td>Ann</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ann</td>
<td>Mary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R9/10:00</td>
<td>8 Nathan/</td>
<td>15 Zoe /</td>
<td>19 Caleb /</td>
<td>26 Juan /</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Samer 8:00</td>
<td>Samer 9:45/</td>
<td>Kate 10:10</td>
<td>Tim</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R20/10:30</td>
<td>9 Pierre/</td>
<td>16 Cameron /</td>
<td>20 Brittany/</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12 Jonna/</td>
<td>Tim 6:50/</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13 Miranda /</td>
<td>Emily/ Julie</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Samer 8:50</td>
<td>9:15/Clara</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14 Lucal/</td>
<td>18 Daniel/</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kate 9:05</td>
<td>Julie 7:10/</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R38</td>
<td>32 Michael/</td>
<td>23Jennifer/ Dr.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>William 7:45/C</td>
<td>Julie 8:05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R25</td>
<td>33 Mary/ William 8:40/C</td>
<td>39 Hailey/ Kate 7:50</td>
<td>38 Xavier/ Kate 8:50/Clara</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The COPP nurses' private document informally referred to as the "Admission Sheet" serves as another example. As seen in Appendix 6 A-B, the sheet has four pages, each signifying sub-spaces of the COPP nurse's domain, which is all admissions to all wards. On the first page, the COPP nurse classifies each new admission with respect to the time they are expected to get admitted, name, medical record number, age, diagnosis, attending doctor, the unit to which the patient is going, and two slots where the COPP can mark whether the unit and admission office has been notified. On the second page, divided by horizontal lines, the COPP nurse notes possible admissions to keep in mind. That could be a child just arrived in the ER who the doctors think they are going to admit but have not yet reached a decision. The third and fourth page each point to places of particular significance to the COPP, the intensive care units (ICU) and transportation team, respectively. The ICU, in particular, takes up a lot of the COPP nurses' time and energy. It is here that bottlenecks emerge. A patient requiring an ICU bed can go to no other place than to one of the two ICU units in the hospital, whereas a non-urgent asthmatic child, for instance, can and routinely will be placed nearly anywhere the COPP can find a bed. Despite their individual significance, each of these four pages should be read as a whole.

The COPP nurse's primary concern is not the number of patients getting admitted and discharged from a unit, say the ICU unit; that is a matter for the ICU chart nurse and attending doctors to worry about. As illustrated in the following case, the COPP deals with the temporal and spatial organization of work in the ICU only because it affects the entire flow of admitted patients in the hospital. Always at their side, COPP nurses use the Admission Sheet format to keep track of the constantly changing flow of new and potential admissions that they need to handle before they go home; in addition to the specific timing, people and places they need to involve in these admissions. In short, the Admission Sheet is the COPP nurse's world. It is her map of the hospital.

The mapping element is not restricted to Whiteboards, Admission Sheets, and other matrices. Most documents discussed so far encompass elements of this general format. For instance, the Senior Note on-line system has two parts as seen in Appendix 7 A-B. In the first part, senior residents summarize information about the interns and attending doctors (and their pager numbers) with whom they work during that particular shift and the
patients they cover. In the second part, patients are grouped depending on where in the hospital they can be found. A header for each patient summarizes the patient’s name, record number, attending service, admission date, and name of intern in charge, age and list of key symptoms or diagnosis. Much like the Whiteboard in the ER, the senior residents use this first page in their Senior Note printout as a map of the hospital for this current shift: where do they have patients and who are their collaborators? Comparably, when interns generate their Brain Notes in the morning by printing out sections of their communal HOSO they sort patients by department and name. In the process they sort their patients much like the ER chart nurses do when placing patient Flowsheets in the Gray Rack. The same principle plays out when Karen, the inpatient ward nurse sorts her Note Cards according to the sequence in which she sees patients, or when Samer, the ER intern, places the patients getting admitted at the top of his Temporary Note pile.

In short, the two general formats structuring the many documents doctors and nurses use highlight two important aspects of these documents’ use. One the one hand, doctors and nurses keep their Brain Notes, Whiteboards, HOSO, and Flowsheets to map out, so to say, where to work and with whom. The senior residents, for instance, organize patient entries in their Senior Notes according to the patients’ location in the hospital and collaborators on the case. These elements are configured in a relationship of coexistence. The senior residents assign each element a proper position in regard to the other elements. On the other hand, the SOAP format and specifically the detailing of each SOAP element provide guidelines for what to do next. Much like an itinerary, doctors and nurses use their renderings in each document to structure their activities and help them decide what to do next.\footnote{I chose the term itinerary carefully as it implies people’s coordination across time and place. Hereby, I want to emphasize the temporal and spatial guiding of doctors’ and nurses’ work. Their movements within and across departments, clinics, and wards are not random but guided by their use of documents.}

3. Maps & Itineraries: Where and When to do What

If we accept that doctors and nurses use each document genre as a map and itinerary for their unfolding activities that may explain why they employ not just one
document genre to record a patient’s history, but up to four and five different document
genres. I am proposing that doctors and nurses utilize each of their many documents as “to-
do” lists demarcating the flexible space and temporal frame within which a specific
constituency has to deal with those tasks outlined in the document. Each constituency
requires their own targeted map and itinerary in order to share their knowing effectively
and coordinate their unfolding activities. Each document genre is maintained in order to
extend targeted social relations in time and space.

In order to investigate this further let me turn to a discussion of each of the four
types of document genres. The question becomes: do doctors and nurses use each of the
four types of document genres as maps and itineraries for their unfolding activities? If so,
how do the maps and itineraries differ among the four types?

Private Documents

Karen and the other nurses in the ER, Long Stay and Short Stay units start their 12-
hour shifts by generating a pile of Note Cards, each Note Card representing a patient. On
each Note Card, Karen records the patient’s name and record number followed by a list of
things she needs to do with regard to that patient. As mentioned earlier she writes for a
three-month-old girl with bronchiolitis: “obstructs, O2, nebs Q2. Social: Mother today.” As
described in Chapter Four, she constructs her Note Cards based on the Nurse Report and
Management Plans. A more general discussion of how she and other nurses and doctors
build their documents from other documents will follow in Chapter Six. Throughout the
day Karen pulls out these cards to either read or add to them. This typically takes place
when deciding what patient to see next and just before entering a patient’s room to refresh
her memory about the tasks that lie ahead, or if she sees a need to add to the notes after
engaging in a conversation with another staff member about the patients. The cards play a
central role in Karen’s decisions about the sequence and timing of her ongoing activities.
“Is it time to go for lunch yet?” “Do I have time to take one more patient before the CCS
meeting?” “Should I see Noah before Beatrice?” It is important to notice that the temporal
structuring of these activities falls within the boundary of a nurse’s 12-hour shift. At the
end of the day, Karen discards her pile of Note Cards. Karen uses this pile as her itinerary

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for the day. It is not a fixed list but one that changes throughout the day as she updates her notes, discards one card and adds a new one.

Equally important, the Note Card genre helps Karen and the other nurses guide their spatial practices, where do they do their work. When asking herself what patient to see next, Karen does not only determine the temporal sequence of her moves, but also where to move physically in space. Each card signifies the location of a patient and also her collaborators on the case. As a pile, the cards allow her to demarcate the space within which she operates for that particular shift. As we saw, the boundary between the Long Stay and Short Stay units is fluid – depending on what rooms patients from each unit occupy. What is a Short Stay bed today may be a Long Stay bed tomorrow. I have often seen nurses start a shift, cards in hand, by strolling past each of the rooms where they have patients, peaking through the glass windows or poking their head in the door, as to mark off their territory and see who they are dealing with and whether parents are present. The Note Cards are Karen’s world for the day.

Communal Documents

If each document genre supports a specific set of practices one should at first glance assume that the senior residents and interns working together in the Long Stay unit (or Short Stay unit for that matter) would use the same document genre. On each medical team one senior resident spends most of the day in close collaboration with the four interns. They gather for rounds in the morning, see new patients together, go to radiology rounds, noon conferences, and share meal breaks. In the afternoon the senior works closely with one or more interns in the team’s conference room writing notes or going to patient rooms for joint interviewing and patient examination. As in Sophie’s case, it is not uncommon to see a medical student, an intern, and a senior resident all bent over the same child, each with their stethoscopes on the young patient’s chest.

These groups obviously share practices, they regard themselves as teams, yet they do not share the same document genres, but spend hours each day writing about the same patients in two different on-line notes. Donna documents Sophie’s history in the HOSO and Lucy, the senior resident, documents it in the Senior Notes.
These differences are particularly apparent during morning rounds when interns and senior residents can be seen equipped with starkly different types of documents, each describing the same patients in slightly different formats. The interns shuffle long lists summarizing test results, placed in rows down the page, one for each patient, and with the latest results at the top and going back in time as one moves down the page. In the same pile they will have a printout from the interns’ HOSO online system. As seen in Appendix 1, these list all the patients seen by the team in alphabetic order including important information on problems, medications, and tests on each patient. In contrast, the senior resident on the team holds a printout neatly stapled together with small concise narratives summarizing individual patient cases (see Appendix 7 A-B).

A closer look at the on-line HOSO and Senior Note documents reveal that the part of the HOSO used by the four interns covers only patients on the Long Stay Unit whereas the Senior Note contains patients in the entire hospital. Donna uses the HOSO to generate a Brain Note containing only her patients. Lucy, the senior resident, generates a Brain Note with all 25 patients currently admitted to the Long Stay unit and spread over six wards.

If we return to the day where Donna and Lucy both examine Sophie we find that in the late afternoon, just before going home Donna signs-out her patients to one of her fellow interns, Paul staying in the hospital overnight. They use the HOSO to structure their conversation. Overnight, Paul uses the HOSO as an itinerary for his activities. And if anything happens to Sophie, he will add the event to the HOSO.

As mentioned before, this collective on-line document summarizes all the team’s patients and in what departments they can be found. It helps this small group of interns to structure where they need to go within the hospital. It also structures their use of time. The HOSO gives the times and places where tests should be taken, procedures preformed and patients seen. As an itinerary it is more than a mere list. The interns use the HOSO to capture both the times and places where they need to be in relation to each other.

The HOSO helps the interns demarcate a flexible space for their collaboration (see Figure 5.5 A). You can think of the HOSO as a kind of map, a flexible one. Patients like Sophie are distributed all over the hospital. The itinerary must change as new patients arrive in one department and other patients are discharged. So when Sophie gets admitted,
Simon who suffers from Sickle cell disease is discharged after 10 days in the hospital receiving an intravenous painkiller. Clara who has a heart condition deteriorates and is transferred to the ICU.

The HOSO is also a temporally structured map in constant flux, depending on how much work each patient requires. When Donna records Sophie’s case in terms of the tasks completed and pending, she creates an itinerary of temporally structured activities, which can be seen in relation to the tasks associated with other patients. For instance, she writes (as illustrated in Figure 5.5 B) that today we need to order a chest x-ray for Sophie, and organize a meeting with the pulmonary consultant, and call her primary care doctor. Tomorrow we have to make sure that we evaluate her status to see if we can decrease her steroids dose.

![Figure 5.5 A – Medical Document as Flexible Map](image)

The itinerary helps Donna and her fellow interns navigate in their shared space and coordinate their activities (see Figure 5.5 C). A glance at the HOSO allows Donna to plan her moves for the day and quickly redistribute her activities in relation to another intern when signing-out or in case their workload changes. For instance, when Clara deteriorates and requires the attention of two doctors Donna can cover her fellow interns’ patients while they stabilize and transfer Clara to the ICU.
Lucy, the senior resident examining Sophie, documents her history in the senior residents’ on-line system. She shares these notes with other seniors only. On her on-call nights, Lucy covers for not only the Long Stay unit but also the Short Stay unit. When the Short Stay unit senior signs-out, Lucy prints out a new version of the Senior Note containing all patients currently in both the Short Stay and Long Stay units. The Senior Notes printout can easily contain 30-40 patients spread over seven wards. The first page summarizes all the patients, their ward, record number, attending and intern in charge, and age and chief complaint/diagnosis. In its elements, this first page looks much like the ER Whiteboard. The rest of the document recaps each patient’s case in one or two paragraphs. It does not go into detail about the timing of medication, procedures, and other day-to-day care activities that the interns handle. Instead, the notes lay out the case and outline possible tests and procedures needed. Consider the following note on a nine-year-old girl with cervical adenitis (See Figure 5.6).

**Figure 5.5 B – Medical Document as Itinerary**

- **Things to do**

  The first part summarizes history of present illness, so that a senior resident who has never seen the patient before can understand the case. Interns, in contrast, listen to verbal histories of each other’s patients daily. Notice the last five lines of the Senior Note.
Here the senior resident outlines pending tasks and decision. These may or may not be part of the HOSO. The interns are not likely to include the issue of the possible CT scan before it has been decided, nor the consideration of involving the ID consult. In other words, not only do the interns and senior residents not emphasize the same tasks in regard to the patients, their itineraries do not look alike.

The interns and senior residents do not move in the same places nor follow the same rhythms. In the evenings senior residents will cover for other senior residents across the hospital. The group of patients they care for does not completely overlap with that of the interns, nor does the temporal rhythm of their daily and monthly rotations coincide. The four interns’ daily work schedules are synchronized so that they allow continuous coverage by the team. In this way their daily practices unfold within the same space and temporal rhythm.

Figure 5.5 C – Coordination Through the Use of Maps and Itineraries

A senior resident’s work practices are harmonized, not with the interns’ rotation cycle and daily schedules, but with the other senior residents. Spatially, senior residents cover the entire hospital. At night, they take responsibility for patients they may not have seen before and they will admit patients to teams that during the day are led by other senior
residents. The on-line Senior Note document genre allows them to maintain continuity in their particular cyclical rhythm of coverage.

Senior residents happily spend their breaks discussing the details and pitfalls of their rotation cycle and how it cannot be compared to that of the interns. One evening in the house-officers’ “dungeon,” a group of three senior residents and five interns eat their cafeteria dinners. On a large round table one finds remnants of other house-officers’ meals taken earlier in the evening and scraps of paperwork left behind. Bags and other personal items lay on available surfaces. An intern plucks random cords on a piano in the corner.

**Figure 5.6 – Excerpt from Senior Notes**

9 year old female with history of sore throat X5 days with fever to 105, chest pain, dysphagia and malaise, Seen by PMD. Rapid strep neg and monospot negative but started on augmentin b/c repeated strep throat in the past. Previous hospitalization for similar picture. Now decreasing pos UOP decreased to once daily, no eating or drinking. No cat no TB exposure no travel Exam: sym bilateral enlarged nosil and nodes, also tender. WBC 9.4 P 78 L 10. Brother with n/o MAI
ID: IV unasyn; spiked to 40.8 on 12/12; blood culture negative to date; PPD planted left arm 12/12 2pm; consider adding clinda if toxic; consider ID consult tom am;
ORL: neck CT 12/12 with huge LAD but no necrosis yet; repeat CT in 48 hours?; needs T&A before discharge

Seated around the table, three senior residents discuss a particularly weak point in the way senior residents sign-out (take over from each other) during the weekend. During the weekend the reduced number of senior residents do not have time to go to all the morning rounds, which means that no senior resident will see patients admitted overnight by the night-float (a third year resident on night duty). Sean, one of the seniors states in a grave voice: “So, there may be some patients who have been here for 24 hours and nobody has seen them or knows what the issues are. It’s scary!” The intern at the piano says in a small voice: “But the interns have seen them and know.” To which Sean promptly reply: “Oh yes, but we have the code pagers (the pagers called if a patient goes into a coma or experiences a sudden and serious deterioration of health). If you get a code you would like to know who the patient is and what the problem is.” Another senior adds” “Yeah, you come up to the floor, who is this? Is it asthma, strep... ?
On 10 East, Karen and the other nurses may work in the Long Stay unit one day and the Short Stay unit the other. While on Long Stay the nurses use the Nurse Report and Management Plan genres as a way to demarcate where they have patients (i.e., not Short Stay patient) and what activities the Long Stay group face as a collective. In their report nurses summarize what to expect during the next shift. Though each nurse cares for their own subset of patients that day, they still listen through the entire report. That way a nurse can easily take over from another if the workload should change or one patient unexpectedly needs extra attention. The Management Plans deals with all the unit’s patients and their treatment plan. As an itinerary it points further into the future than the Nurse Report. For instance, the Medication Administration Record (see Appendix 8 A-B), which is part of the Management Plan lists all the medications used, their name, dosage, route, frequency, and hour/date due. The Nurse Report does not cover this level of detail. Nevertheless, medication times serve as one of the main structuring devices for interactions among nurses and patients. Nurses can largely tell their temporal rhythm of work during the day by glancing at this sheet. Sophie, for instance, requires nebulizer treatment every two-hours starting at 8 am and at 10 am she gets her steroids. The nurses caring for Sophie will often bundle other activities together with her medication times. While Sophie sits in her bed, nebulizer mask covering her face, the nurse trains the family in the use of a home nebulizer machine, peak flow meters, or teaches Sophie the physiology behind asthma attacks, medication, and how to control asthma triggers.

I did not observe the Long Stay nurses utilize the Nurse Report and Management Plan as map to the same degree as interns and senior residents with patients spread over several wards. A Whiteboard and the large nursing schedule sheet are used to map out patients’ locations. This being said, the nurses do apply the Nurse Report and, in particular, the Management Plans to locate collaborators inside and outside the ward. The Management Plan – Part 1 includes a section outlining not only the primary nursing team but also the physicians, primary care provider, community agencies, and consultants involved in the care, as well as important phone numbers of relevant family members or other legal guardians. Likewise, nurses will often highlight in their report if outside caregivers will have to be involved and to what degree. In other words, the Management
Plans and Nurse Reports map the locales, present or at a distance, that nurses interact with at a given time.

**Local Documents**

The ER Whiteboard described earlier is not solely used as a map of the emergency department. Doctors and nurses utilize the Whiteboard as a rough itinerary for their collective activities. In the ensemble of actors and activities that make up the ER, I shall consider only how it is possible to read off of the Whiteboard 1) each patient’s time-space path through the department, 2) the overall flow of patients through the ER and the itinerary of activities associated with those patients.

Patient time-space path: A few temporal and spatial markers outline three stages in the patients’ paths though the ER. By looking at the board, members of the emergency department instantly get a rough sense of what has been done and what is left to do before a person leaves the unit and where they are going. First, a nurse marks the time when a patient enters the room on the board together with the child’s name, and the nurse’s name, as described above. The nurse also writes the particular room number in the vertical column on the left hand side of the board. It is now visible to everybody how long the particular family has been waiting in the room. The few patients arriving by ambulance bypass triage and registration by going directly to a patient room. In those cases the nurse will place a red square under the patient name signaling to the secretaries that they need to register the particular patient.

The second marker in the patient Whiteboard path occurs when a doctor signs up for the patient. The residents and fellows write their names in the cell for the particular room. At the same time they record the time they do so. That allows all staff groups to monitor how long it takes house-officers to attend to new patients. Furthermore, it gives knowledgeable staff members a rough sense of when a decision about the patient will be reached and ultimately when the room will open up. Patients typically have blood sent for tests or need x-rays. Using the time the doctor signs on as a temporal reference point, experienced ER staff members can tell the approximate time when the doctor will have the data to move on with the case. However, this is an inexact science. Many factors can play
into the time it takes for a patient to leave the ER, either as a discharge or an admitted patient to the hospital. For instance, it can take time for a consultant to find an opportunity to evaluate a diabetic patient or because new tests are suddenly needed. Typically one can hear the chart nurse or attending doctor call into the charting room where house-officers congregate around the computer terminals writing their notes, looking up lab results and chatting with colleagues: “There is this nice family in room 21 that has been waiting for ages. Will somebody please take a look at them?”

In the third marker, staff members apply a number of signs to represent the time and direction of a patient’s path around the point when they are leaving the ER. This is particularly true for patients getting admitted to the hospital, which involves the coordination of a large number of occupational groups including nurses, COPP nurses, attending doctors, orderlies, janitors, and secretaries. For discharged patients, a nurse or doctor will simply draw a black line through the patient’s cell indicating that they are leaving. A red line cutting diagonally through the cell communicates to janitors that the room needs cleaning. When the patient has left the ER the nurse will clear the particular room’s cell, only to fill it up again shortly after with a new patient. When residents reckon that a patient will most likely need to be admitted they will draw a broken line under the patient’s name. The line signals to the staff members involved in the admission to keep an eye on the particular patient/room. When residents or fellows, in collaboration with an attending doctor and/or consultants, reach a decision to admit, they will circle the patient’s name. This signals the beginning of a number of activities. The Charting Room secretary calls the COPP who will need to find a unit with an available bed. Nurses get their admission forms ready. The resident calls the admitting resident on the floor and the patient’s primary care doctor to inform them. When the COPP assigns a bed the secretary will write the particular unit on the board, e.g., 10 West (regular medical unit) or SSU (short stay unit medical unit), Endo (Endocrinology). Finally, a red dot placed by the doctor marks the accomplishment of all the admissions preparations. The patient is ready to be wheeled up to the unit by an orderly.

The ER staff uses the Whiteboard to more than simply represent each patient and their time-space path through the locale. Doctors and nurses use it to get an overview of
the department and its operational state at any given time. One attending physician puts it this way: "The Whiteboard -- it's a snapshot of the whole department." However, the Whiteboard yields more than a snapshot. The Whiteboard can be read as a constantly updated string of snapshots, almost a moving picture of the flow of patients through ER, the work tasks being carried out, and the jobs still to be completed. In this way, the board resembles an organizational ultra-sound monitor, revealing the inner working of the emergency unit and its flow of patients. Through multiple groups’ collaborative effort to keep it updated, the board is used to reveal not only the current state of the unit but point into the future. Like a film segment in slow motion of a man leaping over an object, we can, even if the film stops as the man starts jumping, anticipate what will happen and where he will land. When the chart nurse and attending doctor gather for rounds in front of the Whiteboard this is exactly what they are looking for. What patients should they focus on in order to open up more rooms for the patients waiting? They assess each patient in regard to the entire patient population in the main ER. Less informed users, such as consultants, medical students, and some interns, generally use the Whiteboard as a map only, to locate particular patients or staff members. More informed users oscillate between either seeing the board as an order of patients and staff and a list of things to do, an itinerary for organizing patients’ movements through the department (the patient arrives in room... and gets admitted or discharged).

**Trans-local Documents**

One finds few explicit guidelines for practice in the documents doctors and nurses send across locales to healthcare providers with whom they do not collaborate on a daily basis. The guidelines that one does find in Discharge Summaries address the patient more than the doctor and nurses of the receiving setting. For instance, one Discharge Summary (Appendix 9) from the Short Stay unit about a 16 year old girl with pertinomisellar cellulitis simply states: “If you start to have worsening pain, fevers, or are unable to take in fluids please call your doctor.” In addition, the note specifies that she should take 450 mg of Clindamycin per mouth every eight hours for eight days. However, the patient will not see this instruction. The nurses translate the Discharge Summaries into patient discharge
instructions which nurses give to patients. In that sense, the Discharge Summary serves as a guideline for the nurses’ discharge instructions and teaching. If a test result is still pending at discharge the summary mentions this fact. In brief, the Discharge Summary does stand out as a patient-centered document where doctors recount what they consider important aspects of what took place during the patient’s hospitalization.

Other trans-local document genres are used to give explicit guidelines. The Admission Sheet faxed by ER nurses to the inpatient wards half an hour before sending up a new patient is designed to let inpatient nurses know what they need to do to prepare for the admitted patient. As seen in Appendix 10 the Admission Sheet contains basic SOAP elements in addition to questions like “O2 Yes or No, Mist Tent: Yes or No; Bolus: Yes or No, Amount? Maintenance Fluids?” If the ER nurse has checked off Exposure to varicella, measles or TB the inpatient nurses must isolate the child, complicating the nurses’ work.

The Expect Sheet developed out of an explicit sentiment among primary care doctors who wanted to have a higher degree of influence on their patients’ care in the emergency department (see Appendix 11). Primary care doctors can fax, email, voice mail or call in brief descriptions of the patients they are sending to the emergency room, including doctor’s name, patient’s name, chief complaint. They include a brief history of the patient’s complaints, a list of test results and what test and procedures the primary care doctor wishes the emergency room staff to do. The Expect Sheet contains guidelines addressed to the ER physicians. The ER staff approach these documents as an expression of the primary care doctors’ expectations, but rarely follow these orders. In the words of one nurse with 20 years tenure in the ER:

“The doctors call in and say: I'm sending in a patient. This is how old he is, his name and this is what is wrong. And sometimes they will say: and this is what I want done. We don't always do that. We will do an evaluation. But sometimes they'll ask for something that when our doctors assess him [the patient] they will say: he does not need to have that. For example if they call in and say that they need a CT of his hips. We'll say: He does not need that. It let's us know what he thinks needs to be done, so let's see. If the kid has been somewhere else and had labs done, blood or urine, they will tell us what those were, and we will put them in.
Q: Do you check them again?
A: Oh yes, we don't trust their labs half of the time and we also wants to see if it got worse.”
Where doctors and nurses within one locale generally follow each other’s instructions, the same cannot be said about trans-local document gerres. We will return to this issue in the next chapter, but for now I want to stress that nurses on the inpatient wards rarely follow the directions specified in the ER Admission Sheet.

An analytical attention to the production of the Expect Sheets and other trans-local documents easily implies a patient-centered focal point. It is difficult to envision what role the document will play in the receiving locale. When Karen adds a new Note Card to her breast pocket she can do so with an awareness of the pile of which the new card is becoming a part. When interns send off a Discharge Summary to a primary care doctor in the suburbs they can only imagine what concerns and constraints may guide the other party’s reading of their document.

The patient-centered focus evaporates if one examines the production and use of the Expect Sheets. ER Staff members approach the Expect Sheets as a pile, and not simply as an itinerary for one patient’s care. When showing up for work, ER nurses often check the Staffing Sheet and the three piles of Expect Sheets. They rarely look through the Expect Sheets but simply judge the size of the piles as a rough measure of how many patients are going to show up in the next few hours. If they do read a particular sheet they do so in the context of their present work in the ER. They place the information of the Expect Sheet in the context of the general workload facing the ER. For instance, an Expect Sheet indicates where a patient is coming from. When asked if that information is important data to them, ER staff will typically answer yes. This, however, is not, as one may assume, because they are concerned about the previous stop in a patient’s care path or details about the particular ailment. Rather, they read the information in regard to the general patient flow through the ER. When asked if it is important to know where a patient is coming from an experienced nurse answers:

“Yes, it’s important in order to know how much time we have to set things up. If he is coming from Maine we will have 3 hours -- or around the corner.”

In summary, the ER staff use their piles of Expect Sheets as a window to the street. How many patients can we expect in the next few hours? They use the Expect Sheet piles as a map of the patients not yet arrived at the triage desk as they use the gray rack as a map
of the waiting room. Similarly, Discharge Summaries sent across institutional boundaries become part of medical record systems developed to fit that particular institution or locale’s patient management, in much the same way as the ER staff’s use of the primary care physician’s Expect Sheets. In other words, trans-local documents may be patient-centered at their source but end up becoming practice-centered as they get integrated into the temporal and spatial rhythm of work in the receiving locale.

**Conclusion: Navigating Medical Spaces**

It is time to return to the question I posed in the beginning of the chapter: why do doctors and nurses find it necessary to document the same histories again and again in different documents? To be a little more specific, why does Donna document Sophie’s history in four different documents?

Donna records Sophie’s history four times. One document, the Brain Notes, serves as her personal note; a second, the HOSO, she shares with her fellow interns; a third, Progress Notes, she records for nurses, secretaries and physicians in Sophie’s unit; and a fourth document, Discharge Summary, she writes for physicians and caregivers outside the hospital.

Figure 5.7 illustrates the importance of the participants, time and place in regard to each of Donna’s four document genres. In the case of the HOSO the participants are four interns and their use is structured by the daily and monthly rhythm of their rotation cycle. They access and share the HOSO on terminals found in the doctors’ conference rooms across the hospital. The Progress Note participants include doctors, nurses, and secretaries in Sophie’s unit. Staff members time their use of the Progress Note to the morning rounds and before and after they see patients. The Progress Notes can be found outside patients’ rooms. If we return to the framework outlined in Chapter Two, we could argue that Donna maintains each of these documents in order to extend her communicative practices across time and place. For instance, the four interns use the HOSO document genre to extend their communicative practices across time and place. They do not need to be face-to-face every time they need to communicate about their patients. Likewise, multiple groups involved in,
for instance, Sophie’s care, maintain the Progress Notes to communicate with each other despite the fact that they rarely are present in the Long Stay Unit at the same time.

Table 5.7 – Donna’s Four Document Genres

<table>
<thead>
<tr>
<th>Genre Type</th>
<th>Communicative Practices</th>
<th>Non-communicative Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>Brain Notes</td>
<td></td>
</tr>
<tr>
<td>Who</td>
<td>Donna</td>
<td></td>
</tr>
<tr>
<td>When</td>
<td>Any time during one shift</td>
<td>When to do in the course of one shift</td>
</tr>
<tr>
<td>Where</td>
<td>In Donna’s coat pocket</td>
<td>Where to find patients across locales</td>
</tr>
<tr>
<td>Communal</td>
<td>HOSO</td>
<td></td>
</tr>
<tr>
<td>Who</td>
<td>Four interns</td>
<td></td>
</tr>
<tr>
<td>When</td>
<td>Daily and weekly rotation cycle</td>
<td>When to do in relation to other interns</td>
</tr>
<tr>
<td>Where</td>
<td>Terminals in doctors’ conference rooms</td>
<td>Where to find patients and colleagues across locales</td>
</tr>
<tr>
<td>Local</td>
<td>Progress Note</td>
<td></td>
</tr>
<tr>
<td>Who</td>
<td>Doctors and Nurses</td>
<td></td>
</tr>
<tr>
<td>When</td>
<td>Rounds, before and after seeing patients</td>
<td>When to do in relation to other practitioners</td>
</tr>
<tr>
<td>Where</td>
<td>Outside patients’ room</td>
<td>Where to find patients and collaborations within a locale</td>
</tr>
<tr>
<td>Trans-local</td>
<td>Discharge Summary</td>
<td></td>
</tr>
<tr>
<td>Who</td>
<td>Doctors, Nurses, and Secretaries</td>
<td></td>
</tr>
<tr>
<td>When</td>
<td>End of care, Beginning of care</td>
<td>When to do in relation to other practitioners</td>
</tr>
<tr>
<td>Where</td>
<td>Institutions’ central record system or in ward</td>
<td>Where to find practitioners across locales</td>
</tr>
</tbody>
</table>

Donna also uses her four document genres to extend her social relations involved in her non-communicative work practices. The four interns maintain the HOSO as a communal “to-do” list, where should they do what in relation to each other. However, it is more than a mere list of activities. Through a carefully structured format and content they generate a flexible map for their shared activities, locating where they currently have patients. They also give a temporal structure to these activities; for instance, Sophie needs her medication every two hours. Returning again to the framework discussed in Chapter
Two, we saw that people can utilize maps and timetables to extend social relations across time and place. Following this line of thought, we could argue that the interns use the HOSO as map and timetable in order to extend their social relations, i.e., their shared work practices across time and place. Obviously, these are not the kinds of maps helping captains find their way to China or timetables regulating train traffic in and out of Grand Central. Nevertheless, I have attempted to show that the HOSO and Donna’s other document genres do include temporal and spatial markers that can be used to navigate the rough seas of healthcare. The use of the HOSO provides a flexible coordinative structure creating expectations about, on the one hand, when to do tasks in relation to other interns, and on the other hand, where patients are located within the hospital. In a similar fashion, the Progress Notes create expectations about when to do tasks in relation to other occupational members, and where to find patients and collaborators. In short, each of Donna’s and Karen’s documents serve as an itinerary and map shared with specific other collaborators. The same can be said about nurses, physicians, and clinical assistants both in the hospital and primary care clinics. They all maintain multiple documenting practices that facilitate their collaboration with particular other constituencies. They use each document genre to generate guidelines for what to do next, when, where, and in relation to whom.

This brings us back to the question of how doctors and nurses share knowing. From Chapter Two we recall that knowing can be described as the ability to “go on.” Thus, we can consider documents that people use as “to-do” lists, providing a map and itinerary for their unfolding work practices, as expressions of such knowing in practice. That Donna meticulously enters more or less the same facts about Sophie’s history in four documents is not the point. The information in and of itself does not fully express Donna’s ability to “go on.” The facts do not give a direction to her time-space path. It is only when she tailors this information to a particular set of collaborators organized around a map and itinerary, that it supports her “going on.” In short, each document genre supports the sharing of knowing among a specific group of people by allowing them to represent their collective “going on.” One document would not do. Donna needs one document for each constituency with whom she works.

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So far, I have been dealing with documents as more or less isolated entities. However, nurses and physicians frequently recombine documents in the process of their daily work. In the next chapter, I will consider to how doctors and nurses relate their many documents to each other and what consequences this has for how they use them as itineraries and maps, and more importantly, for their coordination of care within and across healthcare locales. A focus on the recombination of documents allows us to further articulate how nurses and doctors use documents once they are produced. Documents are often not used one-by-one but in a continuous recombination with other documents.
Chapter 6 – Recombining Documents

Documents do not exist in isolation from one another. The careful recombination of documents takes up a major part of nurses’, doctors’, and clinical assistants’ daily work. The COPP nurse, for instance, continuously circulates through the hospital, from the ER, through the Intensive Care units and other inpatient wards pouring over documents at each place, only to repeat the cycle again. In each locale she looks at the Whiteboards, nursing Scheduling Sheets, and in the ER, Expect Sheets and maybe a few Flowsheets. Based on these document genres, the COPP nurse takes notes in her Ongoing Log, Staffing Log, and Admission Log. She uses these three document genres to summarize the state of affairs in the hospital in regard to free patient beds, patient beds opening up and staffing needs. The staff in neither of these locales uses their Whiteboards or Scheduling Sheets with the purpose of managing the placement in the entire hospital. The COPP nurses recombine the many different documents through their continuous circulation among them. In the process, they create a new set of documents with a different point of reference, that of the entire hospital. In this chapter, I will explore how doctors and nurses recombine documents from the perspective of their spatial and temporal organization of work. I distinguish two basic types of recombination. In the first type, doctors and nurses compile and compare several existing documents within a relatively short time span, and in the other they stretch the recombination over time by using one document genre as the basis for generating or updating another document genre.

I choose the notion of recombination\(^\text{14}\) here, as it hints at both the fluid and highly structured relations among documents. Some recombinations take the form of genre

\(^{14}\) I adopt the term from genetics where “recombination” is defined as “the processes of crossing-over an independent assortment of new combinations of genes in progeny that did not occur in the parents.” I use the term as it refers to the repeated combination of elements that in the process creates something new that was not part of the original. In other words, by recombinating documents, doctors and nurses generate new maps and itineraries for their unfolding practices. I use the term both as a noun, the new map/itinerary generated through the recombination, and as a verb, doctors and nurses constant recombinating of documents. To facilitate the flow of a sentence I substitute “recombination” with “combination” from time to time. One could also adopt the term “recombinant,” which refers to a recombination reached through genetically reengineered DNA (Britannica, 2002). However, I avoid the term in order not to confuse my argument with an earlier adaptation of the term by William Mitchell (1995). He introduces the notion of “recombinant
systems: well-coordinated and socially recognized communicative moves combining several genres that accomplish a certain interaction (Yates & Orlikowski, 2002; Yates et al., 1997). Other recombinations are improvised and occur on the spur of the moment. These improvised combinations of documents draw on the large repertoire of genres found in the various healthcare settings. Equally important, the notion of recombination points to the creation of something new in the process of combining different documents. The COPP nurse creates a new map and itinerary through the combination of Whiteboards and Scheduling Sheets in each department. The ER staff routinely recombines the Flowsheets in different piles used as maps and itineraries of different sections of the ER. At each stage, the new recombination serves as a point of reference to which various staff members can refer, can orient themselves, and find clues on what to do next.

Practically, the notion of document recombination helps us further comprehend the intricate documenting practices found in the various settings Sophie travels through. On the one hand, the recombination of documents hinges on larger organizational structures of work. On the other hand, staff members in each setting work out unique recombinations of document genres. These localized combinations give a palpable texture to the rhythm of work in each ward and department. From a theoretical standpoint, the recombination of documents in a social setting becomes important in furthering our understanding of how doctors and nurses use documents to generate maps and itineraries for their unfolding activities and share their knowing. By recombining local and trans-local documents, doctors and nurses allow themselves to appropriate maps and itineraries produced in other settings. These recombinations of maps and itineraries allow staff members to share and coordinate their local “going on” and allow them to appropriate trans-local documents into their particular temporal and spatial organization of work. In short, recombination enables the sharing across settings. Nevertheless, problems often surface as the maps and itineraries of one setting may be in conflict with the temporal and spatial organization of work in another locale.

This chapter has five parts. The first three sections each introduced a general type of document recombination. In section one, I describe how doctors and nurses routinely

architecture” in his book City of Bits celebrating the “information age” and its supposedly unlimited power to dissolve and reconfigure places through the use of information technology.
recombine documents through proximity in folders, charts, racks, and on-line systems. Section two outlines how doctor and nurses recombine documents by moving among them, as in the case of the COPP nurse. In section three, I argue that staff members habitually sequence their document genres, in the sense that they use one document genre to write another document genre. They tie genres into genre systems (Yates & Orlikowski, 2002). Section four and five addresses some of the enabling and constraining aspects of recombination. On the one hand, each setting can be described in terms of a unique set of document combinations, which gives texture and structure to the local work. On the other hand, this can create tensions when sharing documents within and across locales.

1. Recombination Through Proximity

Doctors and nurses facilitate the combination of some documents by simply placing them next to each other. The recombination of ER Flowsheets serves as a simple example. One finds ER Flowsheets in four different places in the emergency department. First, the triage nurses place them in a rack outside the triage examination rooms. The triage nurses sort the Flowsheets so that they serve as an itinerary for the clinical assistants and triage nurses when calling up patients for their initial physical exam. Secondly, the Flowsheets move to the Gray Rack in the main ER. Here, as we have already seen, the ER staff arranges the Flowsheets according to the patients' perceived urgency and in what part of the ER they should be seen. This adds up to a map of the patients in the waiting room and an itinerary for future activities, who to call in next. Thirdly, the Flowsheets are placed outside the room assigned to the patient. At this point, the nurse and doctors working on that one patient coordinate their activities by using the Flowsheet's predefined categories and the information they entered as guidelines for their collaboration. Finally, the Flowsheet follows the patient if admitted or ends up at the registration desk in a pile of discharged patients, where a registration clerk uses them when contacting primary care doctors to obtain authorization for insurance purposes. In each instance of recombination, the Flowsheets provide a different temporal and spatial reference point for the staff members, whether for newly arrived patients, the waiting room, the patients currently under care, or patients now gone.
Likewise, when the ER staff compiles all the primary care doctors' Expect Sheets into three bins and uses the size of the piles to judge the number of patients on their way to the ER, they perform a recombination by placing documents in proximity to each other. While the primary care doctor writing the individual Expect Sheet anticipates it to be a guideline for the care of the one patient he or she is sending to the ER, the emergency room staff appropriate the document into a new point of reference—patients on their way to the ER. One could also apply this general principle of proximity to the interns' Brain Notes and Temporary Notes, and the nurses’ Note Cards. If one considers each note a document outlining the care for one patient, then the compiling of the notes in the coat pocket allows doctors or nurses to approach all their cards as one recombined document. They can address this pile (i.e., recombination of single note cards) from a new reference point: “all my current patients.” Following the same line of logic, Senior Notes, HOSO, and Nurse Reports can be seen as recombinations of individual patient recordings. Most ER nurses recombine several documents as their first task upon arrival for work. On their way to lock up their coats they glance over the staffing sheet and flip through the Expect Sheets, often following up with a comment: “Staffing looks good, no bad expects.”

Proximity is achieved in several different ways. In the case of the Flowsheets and Expect Sheets, recombination through proximity take two forms. On the one hand, they are compiled into various bins and racks, much like a patient’s medical record, and on the other hand, their changing position in regard to the physical layout of the department plays an important role. I will detail three ways to achieve proximity: physical layout of clinics and departments, medical records, and computer systems.

**Physical Layout**

The physical layout of a unit or clinic typically builds around one or more document-dense areas. In the ER one finds three document-crowded zones: the triage desk, registration desk, and charting room. Expect Sheets and Flowsheets can be found in each of these places in addition to a host of other documents specific to that area. In the Charting Room, house-officers constantly switch between reading their Temporary Notes, accessing test results on old green dumb terminals, looking at x-rays, glancing at the
Whiteboard, presenting their cases to attending doctors, and scanning the ER Admission Sheet found near the Charting Room Secretary. Samer, an intern looks at the Whiteboard to see if any "interesting" patients have arrived, then quickly goes through his Temporary Notes and checks his half completed on-line EM Charts before deciding to sign up for the new patient. An ER attending doctor scans the Whiteboard, the Gray Rack, house-officers' EM Charts and Temporary Notes spread around the terminal before asking one of them to sign-up for a family that has been waiting in room 11 for more than an hour. From the other side of the ER, an experienced nurse, like Ann, scrutinizes the Whiteboard, checks her Note Cards, and looks at what the house-officers are doing before deciding whether she should place an IV on a new patient or let the house-officer take care of it.

On 10 East, members of the Short Stay and Long Stay units perform most of their documenting practices in and around the central nursing station but maintain their separate places. Doctors and nurses alike gather to do document work in the small cramped Short Stay nursing station. The house-officers record to-do lists under each patient on the small Whiteboard found here. During rounds, patients perceived as possible discharges get a "pacman" drawn under their name. When the interns have filled out half the "pacman" it means that the patient will go home today. When the pacman is filled out entirely, the interns have written the Discharge Summary and the nurses can proceed with their part of the discharge. Short Stay interns and nurses keep an eye on the Whiteboard and will often both look over their Note Cards and the Whiteboard before deciding what to do next. Nurses fill out their Admission Papers. Interns access their HOSO and Discharge Summaries on a lone computer terminal. They follow each other's progress and the updates on the Whiteboard. Their writing is interwoven with ongoing conversations about patients, parents, staff members, partners, and plain gossip.

Doctors, nurses, and clinical assistants use these information dense places for more than writing and socializing. Talking rounds, sign-outs, and reports are typically given in these places. All of these verbal communicative genres involve the retelling of all their patients' histories supported by readings from and changes to the Whiteboard, Note Cards, Brain Notes, sheets of test results, HOSO, and Senior Notes.
Interns and newly hired nurses often find it difficult to perform these subtle combinations of documents. One evening, for instance, an intern comes up from the ER to spend her break with pals from a previous rotation now on the SSU team. Seated in the nursing station, the ER intern describes how she gets yelled at from all sides in the ER:

"I can never tell how busy it is [in the ER]. The board is always full."

What the ER intern does not know yet, is how to recombine her reading of the Whiteboard with the Gray Rack, the Expect Sheets, and preferably a couple of Flowsheets.

The registration desk in primary care clinics usually stands out as the place where documents can be found and stored. In Sophie’s primary care clinic, the nurses keep their communal documents at the registration desk, the medical records are stored in a narrow room extending from the back for the registration desk, and the clinical assistants maintain racks of Encounter Sheets on waiting patients and a pin board with phone numbers, clinical guidelines and other routinely used documents. As an exception the pediatricians predominantly do their documenting work in the exam rooms or in their offices, where some generate quite impressive piles of records still in need of notes, schedules, reference books, and teaching material.

**Medical records**

In the medical record, documents that are not related at the outset get compiled into one or more folders.¹⁵ Progress Notes, Flowsheets, and Order Sheets are typically added on the left side of the binder so that one looks at the most recent Progress Note and Flowsheet when opening up the record. In consecutive sections, placed on the right hand side of the folder, one finds correspondence about the patient, consult reports, discharge summaries from other settings, graphs from different laboratories and other auxiliary services. An infant starts out with an empty medical record and depending on the child’s health it fills up slowly or quickly. I often found primary care doctors and nurses assess a patient’s general health status simply on the thickness of the medical record:

"Oh, she is a three binder."

¹⁵ In the hospital, medical records are also known as the patient chart.
The size of a medical record largely reflects a patient's interaction with the specific institution and not their complete medical history. Kilstham sends Discharge Summaries from the ER and inpatient wards to primary care doctors whereas the Flowsheets, Progress Notes, consult reports, tests results and all the many many other documents remain in the hospital's patient record. Likewise, primary care doctors do not send their Encounter Sheets and other clinic-related documents to the hospital. Each organizational subsection of the hospital or clinic has its own dedicated place within the record, either a whole section, or a separate form, or merely a few parts of a single form. One finds several 'parallel' patient records in the hospital. Several outpatient clinics, e.g., the asthma clinic, keep their own patient records. The same is the case for most other hospitals (Berg, 2000). Each place keeps their own section separations and preprinted forms reflecting, not so much the patient's care, as the work practices of staff members, the organizational design, and needs of the institution.

Doctors and nurses rarely, if ever, read through an entire medical record but selectively combine documents in their reading. As in Sophie's case, most primary care physicians read the most recent Encounter Sheets on the left side of the binder, going back to the last health check form, before seeing a new patient or while taking the history. If the clinic keeps a problem list and medication list in the record they may also look over it. In addition, they glance at the right hand side of the open binder for any hospital or specialist reports added recently. Drawing on clues like colors of different forms, handwriting of colleagues, and thickness of sections, and so forth they find previous entries with startling speed. By recombining some of the compiled documents, the physician or nurse reads up on the patient history but equally importantly establishes the general course of their exam and history taking. If a problem stands out in any of these documents, the doctor or nurse makes sure to include the issue in their questions and exam. One teenager, for instance, shows up for a health check complaining about acne. The primary care physician can see that the lad used to complain about wheezing related to physical activity, which can be a sign of asthma. In his history-taking, the physicians slip in the question: "Are you still wheezing when you do sports?" A little later during the exam he continues: "Let me just listen to your lungs."
On the inpatient wards, staff members rarely use documents from previous hospitalizations compiled in the medical record file. On the Long Stay unit, the interns occasionally look up an old consult report. Predominantly, they access old Discharge Summaries, outpatient reports, problems, and medication lists. In the record file placed in a bin outside the patient rooms, house-officers and nurses focus their readings on the current Flowsheets and Progress Notes. In the ER, the medical record rarely makes it up from the basement before the patient has moved on to an inpatient ward or been discharged. If anything the physicians look up old EM Charts and Discharge Summaries.

**Documents On-Line**

The use of on-line resources raises the question of proximity among documents in computer systems. Can we compare the use of documents compiled in a record or placed next to each other in the nursing station with documents compiled in an on-line system? From the limited use of old Discharge Summaries and EM Charts online I did observe that the house-officers recombination of current and past documents does not differ notably from the primary care physicians’ use of paper-based records. Much like the primary care physicians, the house-officers look back at the last major health incidence for indications of problems or issues not revealed through their history taking and exam.\(^\text{16}\)

Who can perform the recombination of documents does diverge. While most doctors and nurses can access paper documents, Whiteboards, racks and other non-electronic records, computer systems and on-line documents are clearly limited to specific user groups. House-officers and hospital-based attending doctors have the broadest access of the clinical staff. The computer terminals in the doctors’ conference rooms across the hospital allow access to several separate information systems of which they mainly use three: the Clinical Document Viewer (CDV), the test result system, and the email system. One can also find senior residents looking for articles on the Medline web site when preparing to teach the interns a particular topic. Interns also regularly search for contact information for particular primary care providers on the system. The most heavily used

\(^{16}\) The relative little use of medical records is partly explained by the field of pediatrics. Given the age of the patients, pediatric medical records rarely reach the volume and complexity of their adult counterparts.
system, CDV enables access to information from patients’ hospital clinic visits, past Discharge Summaries, EM Charts, radiology, and problem and medication lists. In addition the system allows residents to work on their current Discharge Summaries, HOSOs, Senior Notes, or ICU notes. The doctors can also access the administrative system, ARTERY containing insurance and other demographic information. However, I have rarely seen doctors use this system.

Nurses, in contrast, can only access the hospital library, a request system for repairs and work orders, patient provider relationships, medical literature searches and the email system. One lonely computer terminal can be found in the 10 East nursing room. Its old and meager appearance in a corner reflects nurses’ general relationship to the hospital-wide computer system. Apart from occasionally checking their email, nurses rarely use the system. Nurses depend on the paper-based medical records to read up on a patient’s past medical history. Typically, they look over old Management Plans and Discharge Summaries. Primary care doctors rounding on the wards can only access the medical record kept outside the patient’s room or at the bedside. Even one primary care doctor, Larry working as a “hospitalist” for a large provider network organization cannot get to the online resources. Larry accesses his own network’s on-line system from his office in the basement of the hospital. When rounding he checks the Whiteboard at the nursing station to locate the patient. Before he enters the patient room he skims the nurses’ Flowsheets and only then the physician’s Progress Notes. When asked what documents he relies on, Larry answers:

“The nursing assessment and Flowsheets are the most important to me. I look at them first. I also look at the doctors’ Progress Notes, but often nothing has been written since the first day (admission). The house-officers use their HOSO. I don’t have access to that system.”

Issues of access are not restricted to on-line resources. Larry does not go into the nursing station to read the nurses’ Management Plans or doctors’ Order Sheets. In general, only staff members on the Short Stay and Long Stay unit make use of information found within the boundaries of the nursing station and conference rooms. Everybody else may glance over the Whiteboards but depend on the documents found in the patients’ charts at the bedside or in bins by the door. In brief, on-line resources are only accessible anytime
anywhere for a select group of physicians. Where interns can peek at the nurses’ Management Plans but seldom do, nurses do not have the same option.

Overall, documents get compiled in two places. Close to the patient one finds, in the medical record, many local and trans-local documents used by both local and outside caregivers including Progress Notes, Flowsheets, Discharge Summaries, and Consult Reports. In staffing dense areas, communal and local documents focusing on departmental workflow are placed in close proximity. In this way, the location of various document genres is part of the overall zoning of each locale as described in Chapter four.

Equally important, doctors’ and nurses’ recombination of documents speaks to how documents are used once produced. As we see in the case of clinic patient records, primary care doctors rarely read a Discharge Summary from the hospital as a message in a bottle. The primary care doctor interprets the Discharge Summary in combination with other documents compiled in the patient’s record according to the clinic’s local principles for composing such a pile. When Sophie shows up in her primary care clinic with her asthma attack, Dr. Roth skims through the documents compiled since her last health check. Has she been in for other asthma attacks since then? Any hospitalizations? Did the family talk to the asthma nurse? Do they keep up on medication? Quickly, Dr. Roth flips through a subset of documents on which basis he listens to the family’s story and examines Sophie. In short, documents are rarely used as isolated entities but in recombination with other documents. If we want to understand document use we have to further articulate the dynamic process of recombination.
2. Recombination Through Movement

Not all documents that doctors and nurses recombine can be found next to each other, compiled in folders, racks, or online. Staff members routinely move from document to document in an effort to recombine elements of each document as illustrated for the ER in Figure 6.1. Morning rounds on the inpatient wards stand out as a highly institutionalized and daily recurring genre involving the recombination of documents. Morning rounds can be seen as extensions of what historically were chart rounds, working rounds, and attending rounds (Bosk, 1979).  

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17 Chart rounds resemble pre-rounds where a house-officer walks to read up on all their patients’ charts and sometimes talk to the nurses. Working rounds took place in the morning and afternoon, comparable to morning rounds and sign-out at Kiltham. Attending rounds used to take place at least once a week. The
On most wards, pre-rounds, talking rounds, walking rounds, and radiology rounds constitute morning rounds. Interns do not pre-round in the SSU. Talking rounds are conducted in the physicians’ conference room on Long Stay and in the nursing station on Short Stay. Walking rounds take the team from patient chart to patient chart. The Long Stay team only sees patients that are considered particularly interesting from a diagnostic or teaching standpoint, which on most days adds up to none or at most two patients. This can be a patient with Kawasaki’s decease, a rarely seen diagnosis or a boy with recurring and unexplained ear infections and deep abscesses, which the senior resident hypothesizes are caused by a rare genetic ailment. The team stops in the departments that lie on the way to the radiology department. As mentioned earlier, the attending and senior resident stand in the nursing station while interns check the charts and talk to the nurses they did not get to during pre-rounds. Only in the Short Stay unit do the physicians walk into every patient room to glance mostly at sleeping children and their parents. The attending, senior resident, and one intern look through the record stored at the bedside. Only if the patient is awake do they quickly listen to the child’s chest or perform other targeted exams. More than once did an attending doctor make apologetic comments about the practice of walking into the patient rooms. In the words of one Short Stay unit attending on the first day of my rotation with him: “We move in hoards in case the patients should attack us.”

Long Stay and Short Stay morning rounds combine all documents pertaining to the team’s patients accessible to ward physicians with lengthy verbal recounts of the history during talking rounds. The Short Stay rounds are the most comprehensive in the sense that they involve not only physician’s communal documents but also the nurses.’ Nurses, as we will remember, participate in Short Stay talking rounds where house-officers and the senior resident bring their Brain Notes, HOSO, and Senior Notes. They all face the Short Stay Whiteboard. During walking rounds, involving only the physicians, members of the team look over all Progress Notes and Flowsheets. The Long Stay team recombines their communal documents (i.e., HOSO and Senior Notes), Brain Notes and at times the

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18 Radiology rounds take place in the radiology department where the rounding team and radiologist discuss x-rays and other images relating to all their patients.
Whiteboard during talking rounds. Patient charts containing the Flowsheets and Progress Notes are seen either during pre-round or walking rounds or twice if considered interesting. At times, non-urgent or routine patients will be left out and only mentioned briefly during talking rounds. This could be a patient like Sophie who, on most days would have ended up on the Short Stay unit, but who was admitted to the Long Stay team after Short Stay filled.

In their recombination of documents during morning rounds, the team addresses both patient-specific care issues, overall patient flow in the unit, and teaching issues. The senior resident keeps one eye on the clock and makes sure that the team gets through all their patients and makes decisions about the progression of care. Routine patients are allotted little time and attention and the interns are expect to have a plan ready during talking rounds. On the Long Stay team, teaching plays a prominent role and senior residents and attending doctors often accentuate cases or groups of patients that are considered good examples of common ailments or good exercises in the process of developing a “differential” and reaching a diagnosis.¹⁹ Short Stay morning rounds focus entirely on patient flow and developing plans for each patient, seen in regard to the rest of the workload facing the team. The attending doctor makes sure that interns do not lapse into elongated histories. Teaching takes place during “breakfast rounds” in the cafeteria after radiology rounds.

Consultants who cannot attend rounds and primary care doctors attending to their own patients perform their own hospital rounds. The Hospitalist Larry, mentioned above, attends to a large number of patients in the hospital every day. Larry takes the elevator to the top floor and makes his way down through the building with a list of the HMO’s patients to see in the different units. Looking at a small Whiteboard at the nursing station he finds each patient’s room. Then he searches for the chart. He skims through the nurses’ Flowsheet to see if the patient’s situation has changed and reads the Progress Notes. He looks for the nurse and if he is lucky he will also find the intern. If he finds the patient and a parent he takes the history and exam. He documents the history, exam, assessment and

¹⁹ A “differential” is a list of possible diagnoses based on the patient’s history, physical exam and test results. The process of developing a differential through well articulated logical reasoning is considered an art form on the medical teams.
plan in the Progress Notes. When he gets back down to his basement office, he documents the histories once more for the primary care doctors in his network. Larry mainly relies on the Progress Notes to communicate his assessment and plan to the interns, as they can be difficult to locate. They may be seeing patients on a different floor, attending a conference, rounding in the Radiology department, or coffee rounding in the cafeteria. On one particular morning, after paging two interns but without any response, Larry grunts: “This is a marriage in need of counseling.”

ER rounds focus solely on workflow related readings of documents. Details on individual patient cases as described in Flowsheets and Order Sheets are only discussed to the degree that they facilitate the overall flow of patients through the ER. Patients are not examined but the team may ask a parent if they have already been in x-ray or other procedural issues. The rounds, described extensively in Chapter four, include all local documents including the Expect Sheets, which are trans-local documents appropriated into a local recombination. Attending doctors, chart nurses and COPP nurses include the Whiteboard, Gray Rack, Expect Sheets, and Flowsheets found outside patient rooms.

The Rounds described so far all constitute well-established genre systems associated with expectations about participants, times, place, format, content and purpose. More importantly, the team develops through their recombination of all these documents a picture of the overall flow of patients through the department and what bottlenecks they can expect in the near future. To put it differently, by recombining all these documents during the rounds, the ER staff creates a new temporal and spatial framework for their interactions.

Each ER Flowsheet, placed outside a patient room, is used by a nurse, two doctors and maybe a consultant to guide when and where to do what in relation to each other in regard to that patient. During rounds, the staff recombine many Flowsheets and other documents, and in the process create a new itinerary with a different configuration of participants, time and place. As they recombine the documents during rounds, staff members create an itinerary involving all staff members in the ER. This new itinerary helps them specify when and where to do what in regard to the entire patient population in the ER. Their combination of multiple documents creates an itinerary for the overall flow
of patients through the ER. In other words, by recombining documents, doctors and nurses create a new itinerary helping them to determine when and where to focus their activities within a larger activity system, the entire ER. In this way, a document (i.e., an instance of a specific genre) can be part of more than one genre system.

Drawing on genre system analysis (Yates & Orlikowski, 2002), one can argue that by recombining document representing different genres, doctors or nurses create a new genre with a new format, content, and purpose (i.e., itinerary), without taking away the original purpose and use of each document genre. The ER Flowsheets compiled in different racks become part of a larger format and sorted in relation to other Flowsheets. The users are no longer just the nurses and doctors caring for one patient, but ER staff who want to know about the workload seated in the waiting room. The recombination, however, does not have to involve changes to the time and place expectations for each document genre. By moving between documents, staff members do not have to reorganize the general timing and locale of the documents’ use. In other cases, local staff groups do tinker with the time and place of individual document use in order to facilitate particular combinations with other documents.

Recombination through movements is not unique to the hospital setting. The clinical assistants working in primary care clinics typically perform the equivalent of hospital rounds. Lydia, the clinical assistant in Sophie’s clinic relentlessly keeps her eyes on two things: a pile of Encounter Sheets in the registration desk containing all patients in the waiting room and the Encounter Sheets sitting in bins on the physicians’ and nurse practitioners’ doors. Much like the ER round, Lydia walks up and down the hallways flipping through the Encounter Sheets still hanging on the doctors and nurses’ doors, then returning to the registration desk to look through the Encounter Sheets waiting to be triaged by her. “I need to know where we’re at,” she explains in her heavy Latin accent. Lydia repeats the round after bringing a patient to the clinical assistants’ room, having another clinical assistant take vital signs and putting the chart together. Walking down the hallway Lydia flips through the remaining Encounter Sheets hanging in the door bins. She moves one chart from a doctor who is getting behind on his cases to one of the nurse practitioners who is moving along faster.
Clinical assistants in other clinics engage in the same patterns of rounding. In the clinic near the housing project and cemetery the clinical assistant, a Haitian woman, constantly circulates between her clinical assistant room and the doctors and nurses offices to keep track of patients and where to send the next patient. In addition, she finds and files records, sorts faxes, and serves as the clinic’s Haitian translator. As she sorts charts in the narrow cramped record room she explains: “I do a lot of paperwork. It’s frustrating with the administrative people [Funding agency]. They only want to look at the time we spend with patients. There are all these others things that need to be done.” As she finishes her sentence she picks up a faxed sheet with test results from an overflowing trash bin in the record room. “That’s not supposed to be there.” In contrast to Lydia, she does not venture into the waiting room but has instructed the receptionist to kick on the wall separating her office and the reception desk every time a new pediatric patient arrives. She will then kick back to let the receptionist know that she got the message. If the receptionist’s kick is not answered she will kick again a little later until she gets a response. A black splotch marks the favored spot on the wall.

Not all clinic layouts require the clinical assistants to round as a way of intersecting Encounter Sheets and other local documents in order to facilitate patient flow. A large provider network clinic in an upper middleclass neighborhood has reduced the need for rounding by combining an open physical layout with a flagging system. The nurse assistants work out of a large desk buffering the registration desk facing the waiting room and a large open space with examination rooms along the walls. The clinical assistants distinguish between “being up” and “being down.” The latter involves working the phones, booking appointments, and putting together patient charts after the registration desk clerk enters the patient into the HMO’s brand-new computer system. When “being up” the clinical assistants bring patients from the waiting room to an examination room, take history, check and record vital signs in the Flowsheet. Outside the room the clinical assistant will operate seven brightly colored flags mounted on the doorframe. The top four flags each signify a doctor, the bottom three whether the patient is first second or third in line for the particular doctor. After adjusting the flags the clinical assistant walks down and places the Flowsheet in a bin on the specific doctor’s door. The doctors’ offices are located
away from the clinical assistant desk in a hallway along the outside walls of the building. The system does not work perfectly. Doctors often forget to close the flags when exiting an examination room and the clinical assistant “being up” often round the nine examination rooms to see if patients are still in there and “correct” the flags.

In a small community hospital clinic the clinical assistant, Bonnie has accomplished the same with less means. Her preferred linoleum tile, as she puts it, lies between the admission/waiting room area and a hallway with examination rooms. Standing in the doorway Bonnie has a straight view of a rack mounted in the registration desk containing newly registered patients. Bonnie can also look down a narrow hallway with examination rooms. From a rack on the wall next to her and bins on the examination room doors she can tell the number of patients in the waiting room, what rooms are open, who needs to be seen, and who is in the middle of an exam. When the registration desk secretary places a Flowsheet in a rack, Bonnie will fetch it at the first opportunity and place it in a rack holding Encounter Sheets of patients still in the waiting room. In the same rack she keeps a sheet with the names of the scheduled visits and the new sick calls. Bonnie will mark if somebody is late and uses it to organize the order in which patients are assigned examination rooms and doctors. Meanwhile, she stands in the doorway greeting patients as they arrive. “I’m the greeter,” she smiles – winking to a boy – a regular. “Go and look at the aquarium. We’ve got a new seahorse.” The mother comes up to inquire how long they are likely to wait. Glancing at the rack next to her and then down the hallway Bonnie answers: “You are seeing Dr. Timmerman. Her rooms are opening up pretty fast.”

Genre systems such as those governing the use of medical records, physical location of documents, and rounds provide a structure for the clinical assistants, nurses, and doctors’ combination of documents. The recombination itself, which allows them to generate new maps and itineraries, takes place in the doctor or clinical assistant’s head or articulated through their ongoing discussion during rounds. In other situations, doctors and nurses summarize their recombination in a designated document. For instance, the COPP nurse summarizes her readings of local document into her own Admission Log and Staffing Log. Doctors and nurses’ selective reading of the involved documents draw on
spatial clues embedded in the medical record, the physical layout of the ER charting area, or their practiced moves around the locale. Temporally, the recombination takes place within a relative limited time span. Doctors do not sit around to watch the Flowsheet change. The readings and moves assess the state of affairs at a given time. Spatially, either the physical proximity of documents or the moving between documents located within and across settings characterize this type of recombination. The answer as to why staff members find it necessary to move among some documents while being able to compile others in the same place should be sought in the individual genres and other genre systems associated with each document. For instance, interns do not expect nursing Flowsheets from across the hospital to be brought to them when they pre-round. Instead, they accept the general expectations for Flowsheet use in each ward and walk from Flowsheet to Flowsheet. Staff members adhere to the general expectations associated with each document genre in regard to participants and the time and place of use.

3. Recombination Through Sequences and Requests

The recombination of documents can also take place over time, where one document genre forms the basis for a second document genre and so forth. In this way doctors and nurses routinely draw on one document genre to write or update another document genre. The sequences represent habitually enacted genre systems as defined by Yates and Orlikowski (2002). In the process doctors and nurses incorporate elements of one document into another document governed by other genre expectations. At times three document genres habitually build on one another in a sequential relationship. The sequential recombination of documents mainly takes place among doctors and nurses in the hospital and is rarely seen in primary care clinics.

One finds sequences among some of the nurses’ document genres. As illustrated in Karen’s case (Chapter Four), nurses on the Long Stay unit initiate their individual note Cards based first and foremost, on the Nurse Report and secondarily, on the Management Plans that they bring with them to the report. At the end of the day, nurses uses their Note Cards to update the Management Plans and finally as a guide when recording their part of the taped Nurse Report.
Nurses on the Short Stay unit do not give Nurse Reports. Instead they participate in the physician’s morning rounds in the nursing station. In the afternoon, individual nurses give reports one on one when taking over each other’s patient, comparable to the interns’ sign-out. If we consider the verbal morning round as a genre in itself, one can argue that the Short Stay nurses sequence their Note Cards with the local communicative genre of Rounds. Furthermore, they do initiate and update Management Plans based on their Note Cards.

Interns and senior residents apply several documents in sequential relationships. Typically these involve a private note followed by a communal and/or trans-local document genre. Before morning rounds, Long Stay and Short Stay interns electronically recombine their Brain Notes from the HOSO. Donna creates a new document, the Brain Note, by extracting from the HOSO sections pertaining only to her patients. She creates a similar document from the online test result system. These 4-8 pages are printed out from the terminal in the doctors’ conference room and find their way into the doctors’ coat pocket. Whereas the nurses rewrite their individual notes every day during Nurse Report, the interns generate a fresh set of Brain Notes daily by recombining elements in the HOSO. The rest of the day they will add to them in long hand. During Donna’s admission interview with Sophie and her mother, Donna scribbles key words on the back of her HOSO printouts. When she has time, typically in the afternoon, she updates the HOSO based on her hand-written notes on the sheets. One intern working in another hospital substitutes the printouts with his Palm Pilot. He downloads the relevant parts of the HOSO to the Palm Pilot at the beginning of a shift and adds to the notes during the day. Before sign-out, he edits the notes and downloads the changes to the HOSO.

The Senior Residents recombine their Brain Notes and the Senior Resident on-line system in much the same way. Just before Morning Rounds the Senior Resident compiles a documents from the Senior Resident note system that contains the Long Stay or Short Stay team’s patients at that point in time. During Rounds and the rest of the day, the senior takes notes on the printouts. Like Donna, the senior resident Lucy records her notes during Sophie’s admission interview on the back of her Senior Note printouts.
Long Stay sign-out always takes place in the doctors’ conference room. Lucy takes time to edit the online Senior Notes before signing out at the end of the afternoon. When on call, Lucy and Donna compile a new set of Brain Notes from their Senior Notes and HOSO respectively, to accompany them through the night. The outgoing intern seated at a computer terminal skims the sections of the HOSO covering her patients as the other intern highlights section on his printout of the same HOSO. For instance, on one afternoon Donna is in the process of signing-out an infant boy with presumed sepsis transferred from the ICU the same day. She highlights what other services are involved in the case. If the consult comes around after she leaves, Donna wants to make sure that Gabriel, the on-call intern, reminds them of tomorrow’s multi-discipline meeting on the case. Some afternoons when an intern signs-out many or very complex patients he or she uses the floor to ceiling Whiteboard in the doctor’s conference room to write lists for each patient and the expected activities. In this way the Whiteboard lists complement the HOSO. Either way, the resulting documents serve as the on-call intern’s individual note for the night. The next morning, known as “post-call day,” the intern will start a fresh batch of notes generated from the HOSO. By 7:00am the rest of the team has arrived and the Post-Call intern is back to caring for his or her patients.

The Short Stay interns recombine their Brain Notes with not only the HOSO but also the ER Admission Notes. In the morning, interns generate a document based on the HOSO. The first half of the day interns focus on discharging patients. By mid-afternoon new admissions start arriving. From this point on, the interns print out the ER Admission Notes on the new patients and add them to their Brain Note pile. In the late afternoon and the rest of the evening the on-call intern types up these notes in the Short Stay Unit HOSO whenever he or she has time – which often stretches into the wee hours of the night.

Pierre, an intern on-call, is hanging over his notes at the computer terminal in the Short Stay nursing station. The large clock on the wall is fast approaching midnight, which is also apparent from Pierre’s droopy eyes. His workday started at 7 am with rounds in the Short Stay Unit. Asked what he is working on he explains: “I have to write my HOSO... Oh man! I’m going to be up all night.” Eager to do anything but write his HOSO he continues, pointing to the notes in front of him:
“These are my Brain Notes. I go and copy a stack of admission notes. Then I’ll carry around a stack and then I can use them to write my HOSO. It’s also what I use when I sign-out to the on-call person. We go through the pile. I discard the sheets as I discharge them [patients]. Then you always can see who you are dealing with and skim what their problems are.”

The next morning the HOSO serves as Pierre’s and the other interns’ first draft of the Discharge Summary. The Short Stay interns sequence Discharge Summaries with their Brain Notes and HOSO. In other words, we find three document genres tied in a sequential relationship: Brain Notes, HOSO, and Discharge Summaries. Pierre explains:

“The HOSO is what we turn into Discharge Summaries. Often we write the Discharge Summaries right away – just leaving a few spaces open, like ‘patient is leaving . . . . Patient left looking well, breathing comfortable.’ Though, sometimes things don’t end up as you expect and you have to change it.”

Long Stay interns enact a comparable sequence, however, often stretched over a longer time period when patients stay in the hospital for days or weeks. Donna and her fellow team members base their Discharge Summaries on the HOSO. This takes place in the late afternoon upon completion of other duties, including procedures, tests, meeting consultants, and examining patients. Long Stay interns rarely write their HOSO in the format of a Discharge Summary. With a patient staying in the hospital for five days it is only towards the end of the stay that the intern starts turning the HOSO entry from a list format into a Discharge Summary. One does find variations among interns, however, and some will write up their HOSO entries in neat Discharge Summary sentences from the beginning and then gradually add to them, as they get closer to the actual discharge.

The ER house-officers’ sequencing of documents is notable for its lack of a communal document. As we recall, ER house-officers do not use a communal document genre. Their patients rarely stay in the ER beyond one doctors’ shift. In the majority of cases house-officers make sure to either admit or discharge their patients, before they go home. When house-officers leave without having discharged or admitted all their patients, they verbally sign-out their patients to a newly arrived doctor. Typically the two house-officers find adjacent chairs in the Chart Room and the outgoing doctor goes over the patients he is signing-out based on his Temporary Notes. The other doctor initiates a fresh set of Temporary Notes. A strong informal canon among house-officers refrains them from
Sign-out patients expected to be admitted to the hospital, as the new doctor will have to redo a lot of the history taking and exam in order to be able to write the ER Admission Note. When it does happen, the house-officer makes sure to write up most of the ER Admission Note before going home.

Nurses write Discharge Instructions, as we saw in Karen’s case. In contrast to the interns, the nurses do not build the Discharge Instructions on their Note Cards or Management Plans, but on the doctors’ Discharge Summaries. The Short Stay and Long Stay interns draw on the ER notes and ICU notes when writing their Discharge Summaries. Both can be found online and, as we saw in Donna’s case, interns regularly, and against hospital policy, copy the initial history and exam straight from the EM Chart. If the patient is transferred to the unit from ICU, the intern often edits down the ICU note to a length and content fitting the expectations associated with Discharge Summaries in their unit. That means a one-page Discharge Summary for the Short Stay unit and four to five pages for the Long Stay unit. Senior residents on Short or Long Stay receiving a patient from the ICU, often base their own Senior Note on the ICU Senior Note.

In summary, the sequential relationship among private, communal, and trans-local document genres can, with variation, be found among both nurses and house-officers in the hospital. The sequence between private and communal documents takes on a cyclical progression as in the case of the Long Stay nurses who compose and update their Note Cards on the Nurse Report and Management Plan only to update them 12 hours later with the Note Cards. All of these sequential relationships constitute habitually enacted genre systems, which are deeply rooted in the cyclical rhythm of hospital work and medical training.

We recall from Chapter Four that each community (e.g., four interns, nurses on Long Stay, and senior resident) follows a schedule that builds around a “temporal complementarity” (Zerubavel, 1979), which allows them to continuously have someone present to care for patients. The cyclical and sequential recombination of private, communal, and trans-local document genres stands out as a central element of this temporal scheme, without which the “temporal complementarity” of schedules may not
function. Doctors and nurses maintain the sequential recombination of documents as a way to stretch their social relations across the day and week.

The question remains: What do people accomplish by rewriting the same stories in neatly organized sequences? What characterizes this form of recombination? The recombination performed during rounds and by flipping through adjacent documents allows staff to establish the state of affairs at a given time covering a given space and participants. Sequential recombination spans time. A cyclical sequence ties together activities across the day and week in a rhythmic repetition. But what exactly changes as a nurse or doctor uses the entries in one document genre to establish or update another in a sequential relationship?

First, the participants (who) do not remain the same in each document genre. As Karen, the nurse, retypes her Note Cards into the Management Plan and records it in the Nurse Report, she moves from an audience of one to a communal audience. When starting a new shift by initiating a fresh set of Note Cards she reverts to a private focus. Similarly, on the medical wards, Donna alternates between the communal HOSO to the private Brain Note. Furthermore, she moves from the communal HOSO and the Discharge Summary that encompasses a larger and relatively undefined audience, including primary care doctors, nurses and secretaries, possibly clinical and organizational researchers, and if the patient were to be admitted to the hospital again, future house-officers and nurses. The ER interns skip the group level and jump straight from a private document to a trans-local document.

Secondly, the temporal and spatial guidelines (i.e., itinerary and map) change as one moves along in the sequence from one document genre to the next. In the nurses’ case, Karen uses the itinerary of her Note Card document genre to update the Management Plan itineraries embedded in larger temporal and spatial structures. Her use of the Note Cards provides loose temporal guidelines and demarcates the places for her activities within a 12-hour shift -- guiding her unfolding practices. When tape recording the Nurse Report based on her individual Note Cards, Karen participates in the creation of a new repository covering all the activities associated with the Long Stay patient population within 10 East. The report’s time reckoning is not as clear-cut as the 12-hour time span governing the note
cards. The activities mentioned in the report may point to things that took place in past shifts or need to take place beyond the next 12 hours. As the nurses listen through the report they share a sense, not only of their own pending tasks, but also those of the entire group. In a similar way, Karen recombines the limited time frame of her Note Cards with a larger temporal outline when writing in the Management Plans. The Management Plans' temporal guidelines stretch further than those found in the Nurse Reports, as the Management Plans include (or presume to include) all patient care tasks for the unit at that point in time. Some of these tasks are currently unfolding activities such as medication, while others point several days into the future, as in the case of specific tests, discharge procedures, or outpatient care arrangements. The patient rooms currently occupied by Long Stay patients demarcate the spatial dimension of the Nurse Report and Management Plan. Furthermore, nurses use the Management Plans to map their current collaborators within and beyond the ward at any given time. At the beginning of a shift, Karen recombines the Nurse Report and Management Plans' larger temporal and spatial guidelines into the restricted frame of her shift.

Donna and the other interns at the Long Stay and Short Stay units enact similar processes of switching different temporal and spatial guidelines as they use their Brain Note document genre to update another HOSO document genre, and use the HOSO to compile a new set of Brain Notes. When creating the temporal and spatial guidelines embedded in the Discharge Summaries, Donna and the other Long and Short Stay interns use the HOSO. I never saw them write a Discharge Summary based on their Brain Notes, as is the practice among the ER interns. The limited duration of the Brain Notes does not allow interns to capture a ward admission's length and complexity of involved stakeholders. In contrast to the ER doctors, the inpatient ward interns need the intermediate steps provided by the HOSO. In short, as doctors and nurses recombine their documents they alternate between different temporal and spatial guidelines, against which they hold their patient histories: a new composition of times and place become the reference points as doctors or nurses recombine a set of documents. The patient information and their own tasks are organized around a fresh set of temporal and spatial reference points. As we will
see in the following section, the time and place of the connection (i.e., recombination) become important reference points in their own right.

The multiplicity with which people recombine these document genres complicates the analysis of genre purpose. Focusing on an individual document genre, say the HOSO, may reveal a socially recognized purpose of coordination among four interns. If we approach the HOSO as one cog in the wheel of a larger genre system, including the Brain Notes and Discharge Summaries, the purpose shifts slightly to the linking of individual intern’s management of their unfolding activities to the larger monthly rotation cycles among a larger cohort of house officers. Analyzing the temporal and spatial structures of documenting practices facilitates such distinctions.

4. Locales: Unique combinations of documents

Staff members’ compilation and recombination of documents both enact larger trans-local structures and define local compositions of documenting practices. In an effort to understand the relationship between these larger structures and the uniqueness of individual locales, I will first explore them separately staring with the larger structures.

Recombination and Trans-local Structures

We notice that change of shifts, and the rounds associated with them, serve as particular important times and places for the recombination of documents. For instance, as I have shown, interns regard sign-out as one of most significant times of the day.

The time and place of each document recombination provides important temporal and spatial structures for the use of each document genre. The timing of rounds provides the most explicit and least improvised temporal and spatial markers for each of the involved genres. The times and places of a recombination signify, not only important times and places for the genre system itself, but equally important the time and place of each document genre’s use. For instance, one finds next to no variation in the time and place nurses initiate their Note Cards based on the Nurse Report at the beginning of a shift, and recording the Nurse Report based on their Note Cards at the end of a shift. Beyond these
intersections, the temporal and spatial expectations associated with the use of nurses’ Note Cards are lax and improvised. Nurses’ use their Note Cards when they deem it necessary and they can, in principle, write in the Management Plans at any time and place; yet, it tends to take place in the last half of a shift in the nursing room. Neither does anybody question when Donna fiddles with her Brain Notes. But she is in trouble if she has not updated her HOSO before sign-out or waits until 6:00pm just before the nurses go home to write the Discharge Summary for a patient that the day nurse is expected to send home.  

The daily, weekly, monthly duty cycles match intricately with the cyclical rhythm of use associated with Rounds and private and communal documents. Nurses go through two daily cycles of Note Cards and Nurse Reports, the day shift and the night shift. Every day, the interns cycle through one or two sets of Brain Notes and HOSO writing that mirror the rhythm of their swing day and on-call shift rhythm. On the medical floors, the sequence involving the Brain Notes, HOSO and Discharge summaries tie into, though do not emulate, the interns’ rotation cycle. The interns rotate to a new service every fourth or fifth week and do their utmost to discharge as many of their patients as possible before leaving.

At the local, level the parallel sequential structures of these genre systems facilitate the maintenance of continuous patient coverage. Nurses’ and doctors’ work is organized into paper/people chains that allow them to periodically interrupt the continuity of their coverage of one or more patients. It is partly the nurses sequencing of Note Cards, Nurse Reports and Management Plans that allows Karen to take over from the night nurse or help out a colleague suddenly busy with a deteriorating child. The same can be said about the interns’ sequences relieving one intern to take over a patient for a few hours, during the night, or indefinitely at the end of a rotation. The sequences help smooth transitions by providing guidelines for “successors,” who have to assume responsibility for patients about whom they may know practically nothing. They rely on an immediate source of

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20 Over the weekend and holidays the time and place of some recombinations change slightly. Not all interns are present during the weekend leaving more work for the ones on-call. Consequently, the timing of the paperwork is pushed back. Gabriel puts it this way: “Friday is bad because you have to present all the patients Saturday morning, so you have to get going on the paperwork early. Saturday is the worst. You have to take all the patients all day and then present them in the morning (i.e., Sunday morning).”
information and reference point from the very moment their colleagues go to lunch, go to
bed or leave the hospital.

These cycles constitute a fundamental component of the temporal structure of
social life in the hospital and are dealt with as more or less self-contained and discrete units
(Zerubavel, 1979: 35). Other activities, even purely medical events are forced into these
rhythmic patterns. Moreover many of them run independently of one another, as is the case
with the ER admissions and ward nurses shift cycle. Nobody attempts to coordinate them.
This does not mean that they are independent in practice. As we will see shortly, conflicts
often arise when people need to coordinate across these independent rhythms. Ultimately,
the patients’ time-space paths are subsumed into the cyclical sequences embedded in the
many different genre systems found among the nurses, doctors and other staff members in
the hospital.

Recombination and Unique Locales

With the existence of these larger cyclical structures that characterize most
inpatient and outpatient care, each locale takes on a unique composition of compiled and
recombined document genres. Let me point out some dimensions along which staff
members in each locale generate distinctive compositions of document genres. First, in
each setting we find a different set of document genres. Some document genres can only be
found in one setting, e.g., Admission Sheets used by the ER charting room secretary.
Others, like Flowsheets in the ER, Short Stay, and Long Stay units may have common
features. Nevertheless, their content and the specification of activities, and references to
times and places varies. Second, not all types of document genres described in Chapter
Five can be found in all locales. Primary care clinics, for instance, rarely use private
document genres, just as ER house-officers do not use a communal document genre
equivalent to the HOSO, Senior Note, or Management Plans.

Third, the physical locations of documents in relation to each other, patients, and
staff vary among locales. Doctors and nurses ascribe great importance to relatively modest
variations, for instance, whether the patient’s chart can be found at the bedside or just
outside the patient room. The attending physician who developed the Short Stay Unit
happily spends 15 minutes explaining how important it is that doctors and nurses are forced to read the chart at the bedside, and are not allowed to avoid meeting the patients on a regular schedule by merely reading the chart in the hallway. Likewise, proponents of the Short Stay unit hail the fact that the Short Stay Flowsheet integrates the Order Sheet, Medication Administration list, Progress Notes, nursing Flowsheet and assessment sheet in one four page document. In Long Stay, these exist as separate documents some found in the chart, others in various binders at the nursing station. The entry of one or more document genres into a computer system can be seen as one way of compiling documents in relation to each other. Who has access to the system becomes as important as where terminals can be found in determining the way staff members recombine the on-line and off-line documents.

Fourth, in most locales people work out numerous ways to recombine documents through rounds and other types of moving from document to document. Again, it becomes significant who participates in these rounds, whether it is strictly physicians’ business as on Long Stay or a genre system that brings together nurses and doctors as in the ER and Short Stay unit. Fifth, different department, occupation, or sub-groups work out their own ways of sequencing two or more document genres, where they recombine the content in one document through their update or initiation of a different document genre. Consequently, one finds distinct document genres and genre systems in each locale. These add up to a loosely structured but unique genre set characterizing a unit or clinic. Nurses, doctors and other staff members tie some genre systems together through their moves, the timing and placement of documents; other genres remain restricted to specific communities.

At 3:00am a second year resident summarizes this point while working on his Progress Notes at the nursing station in one medical unit:

“You know, each department has got its own idiosyncrasies. I go down to the end of this floor [a different medical unit] and they have another way of placing the order. Their orders are part of the chart. Here, they are separate documents. Upstairs in the ICU, it’s a another game all together.”
Concerns for Local Combinations of Documents

It would be easy to discount this assortment of local document genres and their combinations and compilations as inconsequential variations on the same theme. Nevertheless, interns struggle to adjust every time they start a new rotation; even when it means swapping from Short Stay to Long Stay. Gabriel, the Long Stay intern on Donna’s team, earned the nickname “Mr. Rebounce” after two weeks on Long Stay. On his past rotation, in Short Stay, he had become so accustomed to the quick patient turnaround that he started focusing on getting discharge planning ready as soon as the patient arrived. The result was that many of his swiftly discharged patients showed up in the ER a few days later, accompanied by jittery and sleep-deprived parents.

Lengthy discussions, about the possible improvements to specific document genres or their recombination, often monopolize departmental staff meetings, whether in the ER or the primary care clinics. One typical ER staff meeting illustrates the issue. In the meeting recounted in the following vignette, five nurses, two secretaries, and three physicians discuss, among other things, how best to call attention to new orders so as to improve the way doctors coordinate patient care with nurses. In the course of an hour-long meeting this seemingly simple topic elicits a number of interdependent issues, including: the visibility of work, the synchronizing of multiple occupational groups’ movements within one locale, the recombination of document genres, and whether doctors or nurses are liable for breakdowns in communication.

Vignette: ER staff meeting

Just past 10am a small group of nurses and secretaries enters the ER library/conference room, hidden in the back of the ER at the end of a hallway. Several large slabs of raw pork sides with tubes and needles protruding from them swathe the table. A handful of pleural effusion management kits and manuals accompany the meat. The ER secretary manager

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21 Fluid that accumulates in the pleural space because of trauma or disease is called pleural effusion. The pleural space is a shiny, thin, transparent membrane that covers the lungs and prevents them from making contact with the chest wall and the diaphragm. A Pleural Effusion Management Kit consists of specialized needles and tubes that allow a physician to penetrate the chest wall and drain the pleural space of excess fluid.
sighs: “The Docs have been playing again.” The nursing manager, Joyce heads back out into the hallway to find the residents and fellows responsible for the mess. She does not succeed. “I’m not going to touch that stuff,” she exclaims. As we deposit the last two pork sides, tubes and all in the trash bin behind the door an older nurse Clara enters the room, pauses and states dryly: “I didn’t know that we were seeing patients in the library.” John, an ER attending doctor, William an ER fellow, and Sharon a nurse trickle in as we get started. During the first third of the meeting the group discuss how to improve on the Expect Sheets. Should they join them in one bin instead of the current three and where should that bin be located? Many Expect Sheets never make it to the triage desk or the patients charts before they are discharged and their paperwork ends up back at the registration desk. If they gather them all in triage, will it mean that the triage nurses have to take all the expect phone calls from physicians? The group does not reach a conclusion and the secretary manager, Brian promises to look into the issue. Joyce, the nursing manager, then brings up a request from the outpatient Asthma Clinic nurses. They would like to be informed every time one of their patients is seen in the ER for asthma-related issues. After debating the issues the group decides that they cannot accommodate the request. John, the attending: “Everybody wants to know who is coming through here [the ER].” The Asthma nurses are welcome to come down and look through our notes or look patients in the EM notes but the ER cannot organize a formal system. The asthma nurses are also welcome to contact the information systems department to see if they can set up some automated extraction of data on asthma patients from the ER note system.

The discussion turns to the issues of orders. As an experiment the department recently put up red and green flags outside each of the red team’s patient rooms. The doctors promoted the initiative. Usually when doctors write orders to nurses they place them in the bins found outside each patient room. In the red team, the doctors are supposed to flip out a red or green flag mounted on the doorframe and thereby signal to the nurses that they have an urgent or ‘emergent’ order pending. However, the flags do not seem to have the intended effect. Often red flags are displayed for a long time seemingly without anybody taking notice.

The discussion first turns to whether it is reasonable to make the orders, and thus nurses’ work, visible to everybody. Clara describes how she missed a red flag the other day. The patient’s family finally called it to her attention. “I felt awful!” Clara concludes. The other nurses all agree. The flags make them feel exposed by having pending work tasks made visible not only to colleagues, but also to the patients’ families.
John, the attending doctor attempts to justify the system. It is difficult he argues to find people, even doctors: "At night I give everybody [i.e., doctors] a phone. Then we can reach each other all the time and don’t have to go hunting. I receive calls in the restroom." William, the fellow suggests that the core problem is not that people cannot find each other but that the nurses should move around less. They should spend more time in the patient rooms. William argues: "The nurses spend a lot of time in front of the Whiteboard, while the Docs run around like headless chickens." Clara points out that the house-officers spend a considerable amount of time in the charting room. William insists: "Often it’s impossible to find out when one nurse has taken over from another nurse. We need to get people back into the patient rooms where they belong, not sitting in front of the Whiteboard or in the glass box [charting room]."

The group struggles to coordinate the time-space paths of doctors and nurses. As expressed by William, doctors often feel that they cannot find the nurses when they need to talk to them and do not know when they take over from each other. Nurses on their part regularly criticize the seemingly irrational rhythm of the doctors’ work and how doctors are often difficult to locate and coordinate with. Both groups face the problem of coordinating their work rhythms with each other, not to mention with the secretaries, consultants, COPP nurses, and technicians, just to mention a few other participants in the everyday workflow of a hospital.

As in all other meetings I attended, discussion of one document genre quickly leads to its relation to other document genres and how a recombination of several document genres may alleviate the pending problem. Sharon suggests that they place the flags on the Whiteboard. The group discusses whether the Whiteboard is not already too cluttered with other categories. Jimmy, a secretary brings up an idea. They allocate a slot for each team on the Whiteboard where a magnetic flag would indicate pending orders. If they rotate the information on the board 90 degrees they would make space for such fields. The suggestion is soon pushed aside by yet another idea from William. He proposes placing all the orders in racks under the Whiteboard. Each team should have their order box. The attendings and chart nurse can see if a team is getting behind on their orders or if there are any urgent orders hanging, he explains. They would not have to walk from door to door when rounding. William suggests and closes his discourse by arguing that it would help nurses detect when colleagues needed help. John likes the idea and expresses the often-heard technological dream: "What we need is a patient tracking system like all modern hospitals. One that will show you flags and time of order, labs [laboratory results], everything." Clara responds:

"Give us a 100 years and we will have it."
Changing the combinations of document genres often leads to undesired consequences for other carefully recombined document practices. As a response to William, Joyce tersely points out that bringing the orders to the Whiteboard would further take the patient chart apart. “You need the order with the Flowsheet.” William agrees. As it is, the chart already gets spread all over the ER. The secretary manager and Jimmy nod their heads in agreement. They know the problem. Daily they gather the charts when patients leave the ER, sort and send them to the record department.

The conversation moves to the issue of communication and liability. Sharon articulates a sentiment often heard among nurses. She worries that the flags become “a substitute for communication.” Nurses strongly feel that by communicating an order with a flag, and not through paper and face-to-face interaction, nurses lose the option to question and give input on an order. In their daily work, nurses check the calculations of doctors’ orders, suggest alternative possibilities, or simply want to know the rationale behind a particular order so as to be able to answer parents’ questions. The flags bring them a step further away from care decisions.22

William insists on the need for flags. “We need to find a more efficient way to handle orders – handle them in a timely manner.” He argues that it is a legal matter. “If somebody gets hurt, lawyers will sift through the entire system and records and look at how effective it is.” Clara and Sharon restless on their chairs get a little defensive. They do not find the system to be as defective as William paints it. “Anyway, it’s the nurses responsibility when the doctors have written their orders,” Sharon suggests. William disagrees: “The physician is always responsible. If the nurse does not take his order he should have done it himself.” Joyce seems surprised: “I always thought that when the doctor writes the order he pushes the responsibility to the nurse.” William: “No, it’s always the physician’s responsibility. I have only seen two cases where nurses were held responsible. If they intentionally ignore the order or if they give the wrong medication or dose.” A brief silence follows. Jimmy doodles on an abandoned pleural effusion management flow sheet.

It is past 11am and Joyce takes steps to close the meeting. She suggests that they should let the experiment with the red team flags go on for a bit longer. “It has not really been tested yet.” She stresses that the flags should not be a substitute for communication among nurses and doctors. John adds his two cents:

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22 For a detailed analysis of nurses’ and doctors’ negotiation of their division of labor around the use of orders and Whiteboards in another emergency department, see Østergaard (2000).
"The flags are just a substitute until the day we all have phones operated into our ears."

Joyce closes the conversation by suggesting that they look into the possibility of adding "order boxes" under the Whiteboard. William and John promise to bring it up at their next meeting with the ER attending doctors. With many issues raised and few resolved, the group trickles out leaving behind the raw spare ribs.

At first glance, the meeting stands out as a typical unorganized workplace meeting, which in fact is how many ER staff members feel and why they do not bother to show up. Nevertheless, the jagged course of the dialogue points to the multiple concerns that staff members have in the combination and use of their many document genres. Occupational groups rarely belong to the same temporal and spatial order. To ensure the coordination among doctors, nurses, and secretaries within the spatial boundaries of the ER, these groups continuously tweak with the combinations of their document genres. Some of these are turned into socially recognized genre systems while others remain loosely coupled. In the process, they produce unique combinations of documenting practices, which differ from the documenting practices maintained at the next ward down the hallway or the emergency rooms in other hospitals.

5. Using Documents Within and Across Locales

The unique combination of documents within a locale can make it difficult to use those documents in other locales or to use them to collaborate with colleagues in other locales. I will illustrate the issue with an example of the night floats who are expected to use set of ward local document genres while working outside the ward. Night floats are second year residents who are responsible for all admissions to the wards between midnight and 7:00am. As we will see shortly, the night floats refuse to use ward-specific document genres while working in the ER. However, non-use and other strategies to avoid document use do not only take place across locales. I find that documenting practices are problematic everywhere but they seem to be aggravated when stretching across settings. Three issues stand out. First, the use of the itineraries (i.e., to-do lists) generated by colleagues often creates tensions or requires ongoing negotiation. Second, the sequential
combination of documents where one group depends on another groups’ document completion routinely leads to complications. Third, I discuss the strategies developed by staff members to avoid such issues. Most notably each document exchange is accompanied by a face-to-face or phone conversation. If that is not possible, they avoid using the documents altogether developing their own document genre tailored to the particular needs of their constituency.

**Using Local Documents in Another Locale: Night Floats**

The case of night floats not using local documents points to the immobile nature of the tightly-knit combination of document genres and genre systems found in each locale. Between midnight and 7am, two night floats handle all new admissions from the ER to the hospital. That means that the night float works with the night nurses and clinical assistants in three to four wards. The night floats write orders and deal with any issue related to these new admissions to the inpatient wards until signing the patients out to the day medical teams during morning rounds on each ward. Despite the fact that the night float’s major collaborators are staff members on the inpatient units, they spend the night in the ER. Instead of running from unit to unit throughout the night, floats find it more convenient to see the admitted patients at the source, the ER. By being in the ER, the night floats can also be proactive and examine patients as soon as the ER doctors decide to admit a patient. On the floors, the night floats would have to wait for hours before a patient would come up, and they would end up with a backlog of patients to process long into the morning. One of the night floats, Heidi, puts it this way:

“It’s easier for me to work down here. I can do more things. Up there it takes a long time to get medication from the pharmacy and have tests ordered. Down here, we have it all at hand.“

During the night, Heidi keeps an eye open for dotted lines and circled patients on the Whiteboard to catch any new admission as early as possible. She also keeps an ongoing dialog with the attending doctors, residents and fellows admitting her patients. At 3:30am on a Tuesday morning, Heidi works at a computer terminal in the charting room. She keeps a running conversation with a resident seated next to her staring at another terminal. “Did
you see that her oxygen level is low?” the resident asks. Both are looking at the tests results from a 15-year-old girl who reports lower leg pains, recent spells of racing heart rhythm, and an episode of confusion this morning where she had a hard time finding words. Heidi and her fellow resident are not sure what to make of the symptoms. They discuss possible diagnoses.

Heidi: “Well, first of all it could be nothing. Two, maybe some interaction of medicine that we don’t know about.”

The resident adds: “She is getting some pain killer for a knee injury she got last week playing soccer.”

Heidi: “Three – her pediatrician suggested that she may have a blood slug in her legs.”

Resident: “I don’t know where she [pediatrician] got that from.”

Heidi: “What do you think?”

Resident: “My gut feeling is that if we do nothing for 12 hours the symptoms will go away.”

They continue their search. Heidi grabs a book from the back of the room and starts flipping through the pages. An attending doctor comes by and asks Heidi: “How is the girl in room 20 doing? Does she still look good?” The child came in with a urinary tract infection but the parents reported an episode of blue feet and hands. Heidi: “Yes, no changes.” They agree that if it had not been for the episode, they probably would not have admitted her. Heidi: “I better finish the admission note on room 20.” She continues writing her admission note on a generic Progress Note form, looks up the urine test results before copying them to the Progress Notes. Finishing her note she gets up to make a copy of it so that she can send it up to 7 West with the small girl.

Heidi clearly feels part of the ER’s local work setting during the night, even through she has worked on a rotation in the Short Stay unit earlier in her residency. At night in the ER, she aligns herself with some of the local documenting practices, discusses cases with her fellow doctors and may even write orders to the ER nurses to have them administer medication before sending her patients to the units. To a large extent, she shapes her practices to the rhythm of work in the ER. In Heidi’s words:

“When I’m down here [in the ER] it’s like being part of the team. When I work up there [on the floors], it’s us and them.”
Nevertheless, Heidi is accountable for the new patients at the inpatients units and must coordinate her work with the nurses there. In short, the night floats are required to use local documenting practices of the units they cover, while their work practices unfold in the ER, an all-together different locale. This has created some tension, as night floats rarely see the need to adhere to each locale’s particular canon for documenting but follow practices that serve their immediate interests in the ER. To put it differently, the night floats object to the use of documenting practices that do not envelop the temporal and spatial dimension of their direct work practices.

The night floats’ resistance to the SSU paperwork has created the most tension. The SSU nursing and physician management group has recombined into one document the nurses, Flowsheets, the physicians’ Progress Notes, Order Sheets, and Medication Administration List. The daytime doctors use them without any resistance, but not the night floats. One nurse manager puts it this way:

“The night floats don’t want to use the SSU paperwork. We have done everything to make them use them. We have given them a handy little packet with all the paperwork they need to carry with them. It has all the right forms. They still don’t use them.”

The nurses have a vested interest in the use of these forms as it directly affects their documenting practices. If Heidi does not use SSU paperwork when sending up an asthmatic boy to the SSU, the nurses will have to plead with a day doctor to copy Heidi’s entries over to the “proper” forms. The alternative is to accept that the documents are not tailored to the locale and its fine-tuned coordination among multiple occupational groups. The night floats like Heidi do not face this local reality of the SSU when working in the ER. It is just one among several departments they cover that night. To start taking the temporal and spatial organization of work as expressed in document genres into consideration becomes an unnecessary obstacle, avoided most easily by applying the generic “Progress Note” form found in the ER, a form also used by consultants when they see patients in the ER. The SSU local document genres, which support Heidi’s activities when she is on a SSU rotation, lose their appeal when applied out of context. From Heidi’s point of view the SSU document genres do not make her collaboration with the SSU nurses
easier and it does not support the local combination of documents in her present locale, the ER.

The attempt to apply a local document genre outside its locale largely fails. Heidi's unfolding practices do not match the concerns and stakes embedded in the use of the in-patient wards' documents, carefully tailored to the temporal and spatial coordination found in each of these locales. In short, documenting practices embedded in carefully combined document genres and genre systems do not travel well beyond the places where they serve to coordinate multiple occupational groups. The problems associated with "transporting" documents can be further analyzed if we focus on issues related to the sharing of itineraries associated with each document genre as well as the combinations of several documents. In the next two sections, I illustrate these points with separate examples.

**The Sharing of Itineraries: “The worst piece of communication ever”**

Sharing documents with colleagues, whether within a community, locale, across locales, entails using each others' “to do” lists. I have argued that these lists can be understood as maps and itineraries. Not surprisingly, the sharing of such to-do lists often requires some level of negotiation to adjust the expectations and details of the activities. During sign-out, interns discuss the entries in the HOSO and whether a particular test should be performed over the weekend when the intern in charge of the patient is off duty. The issue becomes particularly clear in the case of doctors' orders to nurses. In these orders, doctors specify medication and its administration, tests, and regular procedures such as feeding schedules and IV administration. The to-do lists prescribed by doctors' in the order, structure large parts of nurses' daily activities. The following example illustrates how interns often struggle to learn how best to write orders and collaborate with the nurses.

One morning at 7:30 am, Donna shows up rather bleary eyed for rounds in the Long Stay unit. During the night, nurses from 5 West woke her up and had her come down to explain an order that Gabriel, another intern, wrote the previous afternoon. The child has a feeding tube, yet Gabriel wants the nurses to let the child drink as much as possible by mouth. He had intended that whatever the child does not drink by mouth should be given
to him through the feeding tube. Gabriel apologizes profusely to Donna after rounds. Sleep is a treasured commodity among interns working 90-hour weeks. Frustrated Gabriel tries to justify his actions: “I believe I wrote the orders clearly. They [nurses] understood it during the day when I explained it to them. It’s always at night they get confused and then they call.” Donna and the two other interns agree. Jennifer, another intern on the Long Stay team:

“The nurses understand the easy things, like give medication Y three time a day. But the other day I wrote this order on Capposita, the 6 year old on 9 West. I wanted them to wean her medication slowly so she wouldn’t go into withdrawal. So, I write this long order specifying how they had to cut down on the medication each time. They didn’t get it.”

A week later, Gabriel is walking to 5 West with a new medical student on the team. Having just finished the exam of a 14-year-old Sickle Cell patient, Gabriel makes a point of telling the medical student how important it is to write the order and go over it with the nurse. Gabriel: “If you don’t discuss it with them you will get paged and you’ll have to explain it to them, anyway. You know, always take the time to go down and discuss the plan with them.” The patient suffers from severe pain in his legs caused by his Sickle Cell disease. Gabriel has ordered a strong painkiller for the boy and he wants the nurses to check his breathing every half hour and wake him up very hour to make sure that he is not sliding into a coma. The three of us find the nurse, Jonas, in the medication room. Back at the nursing station Jonas, the nurse meticulously goes over the order. First focusing on the medication Jonas suggests that Gabriel uses the pain medication guideline form. Jonas: “I think you can download it from the web. And you probably need to involve the Pain Team [medical consultants] on this one. They tend to get really upset if they are kept out of the game.” Then, reading aloud, audible to the other nurses, Jonas emphasizes the part where Gabriel wants him to wake the boy up every hour. In a mocking voice: “So, we should wake the poor lad up every hour. OK – I think I’ll have to wake you up every hour tonight to report on his breathing.” The other nurses laugh heartily. Gabriel sends them a tired and slightly stiff smile before changing the order to “wake up x 4 hours.” On our way back to the 10 East conference room, Gabriel explains to the medical student and me:

“You need to care of three things: patients, parents, and nurses. You just need to give the nurses time. They get really upset if you don’t write your orders right
away. We [the interns] often go and take a quick look at new kids. If they look OK, then we’ll go do other things. The nurses get really upset. They hate to wait because they can do nothing without our orders.”

We share an elevator ride in silence with a group of nurses. As we exit and turn the first corner Gabriel continues:

“You know, we can write anything, like have somebody watch this kid for 24 hours, but that will affect them a lot, their staffing. They also don’t like monitors, which is nothing for us to order. They go off all the time and have to be reset. They always come and try to change that and have us take the order off.”

Gabriel articulates a hard-learned lesson – how to collaborate with nurses. It has taken time for him to grasp the consequences of these orders for the nurses’ activities. Only after months in the hospital, does he realize that he has to negotiate the specific order with a nurse before writing it up in the order form. What ward the nurse works on makes a difference. It is not accidental that Gabriel’s problematic orders played out with nurses on 5 West and not 10 East. Conflicts between nurses and interns do not occur as often when they are based in the same unit. On 10 East, the interns and nurses hang out in adjacent rooms. The nurses can participate in the physicians’ rounds if they want to know about a particular patient. They share the same local documents on a daily basis and know the rhythm of work of which the documents are part.

Where tensions surface in the use of nearly all document genres, I observed the most animated reactions to trans-local documents. In other words, interns quarrel locally about the content of their HOSO during sign-out or primary care doctors wrangle with clinical assistants about the sorting of Encounter Sheets, but it is nothing compared to the anger doctors and nurses feel when receiving a document from another setting which is counter to their expectations. The example of one six-month-old boy admitted to the Short Stay Unit from the ER illustrates the situation. Approximately an hour before the boy arrives in the Short Stay Unit, a nurse receives an Admission Sheet by fax from the ER, briefly summarizing the patient’s case by giving name, age, chief complaint, diagnosis, and a short history of current illness. On the sheet, an ER resident has written under the heading chief complaint/diagnosis: “Bronchiolitis (pertussis?).” The parenthesis creates an
outcry among the staff in the Short Stay Unit. In the words of the chart nurse after reading the fax:

“If that is a question [pertussis] he is not Short Stay material. He’ll need a private room, monitoring, you name it.”

Another nurse adds: “This is the worst piece of communication ever!”

Where bronchiolitis is a common diagnosis among the babies admitted daily to the unit, pertussis is a very contagious respiratory disease associated with a whooping cough. The in-patient units are required by state law to place the patient in an isolation room and wear facemasks when they are within three feet of the patient. Furthermore, the unit is expected to place the boy on constant monitoring of his blood oxygen level. The fax resulted in several tense phone conversations between the SSU staff and ER nurses and doctors. The ER resident added the “pertussis” parenthesis to the admission fax as an afterthought. He heard a loud cough that he thought might sound like a pertussis cough. He did not realize the consequences the mere mention of pertussis would have for staff work practices on the in-patient unit. What had been speculation on a possible diagnosis in the ER with little consequences for the boy’s care and staff members’ work practices, clashed with the use of categories and their consequences for practice resulting from the Short Stay staff’s reading of the admission form.

A lack of explicit guidelines for practices in a document can be as problematic as including terms like “pertussis” in an admission note. Primary care doctors regularly complain that the Discharge Summaries that they receive from other health care settings lack information significant to them. One primary care doctor, Frida with 18 years tenure grumbled one afternoon about a Discharge Summary she had received that afternoon from a surgeon who had set her patient’s leg after a skiing accident a few days earlier. The teenager, Jacob, showed up in her clinic with a swollen leg and a rash. After examining Jacob, Frida explained to the ethnographer:

“This is a crappy note [from the surgeon]. It’s no help to me. He [the surgeon] does not even tell me what antibiotic he gave Jacob [after the operation] and how much. I have no way of telling whether the rash he presents with today is related to the antibiotics.”
Frida calls the surgeon’s office to clarify the issue. The surgeon has left his clinic at 5:00pm. His Discharge Summary does not provide her enough information to help her diagnose the problem. The surgeon summarized his setting of the leg but did not describe what to him is probably an inconsequential routine – the administration of antibiotic after surgery. In summary, the sharing of the itineraries embedded in documents often creates tension and becomes the basis for negotiation. As in the case of the order, these processes seem to be aggravated when the collaborators work in different locales. The doctors and nurses receiving these documents are guided not only by divergent conceptions of what to do (i.e., stakes), but how to organize their work around radically different temporal and spatial structures.

**Tensions and Timing of Document Recombination**

Departmental meetings, as discussed above, regularly address the combination of documents, and, in particular, the timing of their production and sequence. It is not solely the content that can create tensions among different users, but also the timing and location of accessing needed documents. Many people’s work depends on receiving a particular document. Often nurses or doctors cannot start an activity before they have the documents that come before it in a sequence. For example, countless activities inside and outside the hospital depend on Discharge Summaries.

Nurses cannot do their part of the discharge process before the house-officers have written the Discharge Order and Summary. Karen’s preparation of the Beatrice’s discharge papers as described in Chapter Four requires that the intern Gabriel takes the time to turn his HOSO into a Discharge Summary. Karen explains:

“I cannot write her discharge papers before that intern with the funny accent [Gabriel] finishes his Discharge Summary. It doesn’t help to tell them [the parents] that you are waiting for the doctors’ discharge notes. Some patents are a real pain. They start at 8am and continue bugging you all day.”

The recombination of Discharge Summaries with other documents goes beyond the coordination among the nurses and interns. The hospital administration, notably the head of Quality Improvement (QI), himself an attending doctor in general medicine, has been
pushing the interns to write their Discharge Summaries in the first part of the day as in the Short Stay Unit. The senior resident, Lucy presents the QI doctor’s proposal to change the timing of the discharge paperwork. QI finds that it takes too long to discharge patients. Often they could be out at noon after a decision to discharge is reached during the morning round, but they often do not get ready to leave until late afternoon or early evening. The longer stays are one of the key complaints of parents. “QI thinks that the problem is that interns take too long to write their discharge notes and get the paperwork in place. He wants us to speed up the process and do the discharge paperwork first thing after rounds and only work on the ongoing patients afterwards.” Lucy has a hard time hiding her dislike for the message she is delivering. During walking rounds and on their way to X-ray rounds, the discussion continues. Jennifer, one of the interns, thinks QI takes the wrong approach. Referring to the doctor heading Quality Improvement she concludes: “I find QI a little scary.” Lucy adds: “How can they be sure that the problem is the time it takes for the house staff to write their notes and not another problem?” Patrick agrees but tries to explain the rationale behind QI’s position. “Patients get billed for 24 hours starting at midnight. If the hospital can discharge a patient at noon instead of PM they have six hours of inpatient work involving nurses and other staff. Those 6 hours of free bed we could fill up with new patients.” Patrick thinks that it is an issue of contradicting incentives. The house staff wants to get going on their current patients first thing in the morning. Over lunch Patrick later explains to me:

“They [interns] want to call up consults, order tests and do all those other things that take time. They want to get the process started as soon as possible otherwise they end up waiting for the test results and may not be there when the consultant comes around. Consultants also want to know as soon as possible where they need go.”

The discharge papers become secondary in this process. It is not urgent and less interesting than working on new patients with exciting pathologies. Furthermore, the Long Stay team would rather spend time discussing each case in all its medical details, work out differentials (list of possible diagnosis), and teach. The same morning Lucy takes close to half an hour presenting key issues involved in herpes simplex virus infections among infants and discussing the most common manifestations and treatments. The political
overtones embedded in the timing of the discharge paperwork are not lost on the nurses. Karen explains:

“Frankly we have no reason to discharge them [patients] before midnight. That is when the new billing cycle kicks in. You know, the patient pays for 24 hours at a time starting at midnight. There is no reason to rush the discharge. All you get is an open bed that the COPP is going to fill with a new patient.”

Another ongoing conflict in the hospital centers around when ER interns write their Admission and Discharge Summaries based on the Temporary Notes. Around 7:00pm in the evening a large group of doctors end their shift. In the last hour leading up to 7:00pm a hefty group of patients gets discharged and admitted from the ER. In conversations with me, both ER and ward nurses pointed out this sudden emptying out of the ER in the early evening, but without being able to explain why. The ER nurses wondered why all rooms in the ER would be full from 5:00 to 6:30 and suddenly nearly all the rooms would open up. One nurse put it this way: “At six you might have a load of doctors – 10 doctors and all rooms booked solid. After the shift at seven you suddenly have 15 open beds?”

On the wards, the nurses complain that they receive a load of new patients right before the day nurses go home, forcing the outgoing nurses to start the admission process that they do not have time to finish and have to hand off to the night nurses. This bothers the in-patient nurses a great deal and one late afternoon, as described in Karen’s case, the nurses pull me in to see an asthmatic boy arriving on the ward 50 minutes before the end of the day shift: “Carsten, you have to go and see this one. We really need to study this.”

A closer look at the ER doctors’ documenting practices reveals that they themselves struggle over when to write their Admissions and Discharge Summaries based on their Temporary Notes. Two factors are at play. First, the house-staff operate with the informal rule that one does not sign-out an admission before completing all the paperwork. An ER fellow, William gets rather cross when one of the other fellows asks him to take over two of his patients as she has to pick up her children from daycare. The problem is not that she wants to sign-out her patients, which happens routinely. William is bothered by the fact that one of the patients needs to get admitted. His colleague has not found the bed yet nor written up the paperwork.
“You really should finish an admit before you go, because that’s when all the misunderstandings happen. I have to send up the Admission Summary and the Senior Resident or somebody is going to call me wanting to know all kinds of detail. I might as well take it from the top [re-take history and examine the patient].”

Consequently, ER doctors carefully time how many patients they take on and when they let them go. In signing the Admission or Discharge Summary, doctors relieve themselves of the patient – opening up a room with the expectation that they will take on yet another patient from the waiting room. Inexperienced ER interns often find it difficult to time their paperwork with the flow of patients. Temporary Note cards tend to pile up on them as in the case of Samer, an ER intern, who was told by an attending doctor to stop seeing new patients until he had written up his Discharge and Admission Summaries based on the large pile of Temporary Notes spread around him in the charting room.

On the medical floors, the interns operate with comparable informal rules about the timing of discharges. In the Short Stay Unit the interns are expected to discharge as many patients as possible before lunch. On one Wednesday morning patients fill all the Short Stay Unit beds and the post-call intern only points out two discharges during rounds. As the round comes to a close the Senior Resident summarizes the day’s plan for the two interns on duty:

“You better open up some beds early, if at all possible. If not, then one of you On-Call tonight will get slammed with patients waiting in the ER.”

In the Long Stay and Short Stay units the interns strive to discharge before weekends, major holidays and the end of their rotation. In Donna’s team the energy level changes markedly three days before Thanksgiving. The attending doctor, Patrick announces during morning round:

“Holiday is coming up – time to make decisions!”

Both the senior resident and interns shift into “discharge mode,” as one intern puts it. The pending holiday is repeatedly brought up during rounds and whenever discussing the plan for a patient’s further care. Oliver, one of the interns, struggles to discharge his most complicated patient who has been in the hospital for 18 days already. He is an eight-year-old boy with ataxia telangiectasia, chronic lung disease, immunodeficiency, and
chronic anemia. He was admitted with respiratory distress, but other issues have surfaced during his stay including difficulties obtaining nutrition. Five consultants are involved in his case: the Nutrition consultant, Immunology, Pulmonary, GI and Hematology. In addition to the ward nurse, the discharge-planning nurse is organizing the outpatient care. Oliver has written a six-page Discharge Summary and a two-page medication order. Four of the consultants conclude at a meeting that fluids in the lungs caused the child’s respiratory distress, but why he got the fluids and how to prevent the problem they do not know. The holiday is approaching and the mother wants to go home. The group consents to discharge him with homecare. Oliver scrambles to organize the discharge. The day before Thanksgiving Oliver realizes that the home nursing service does not set up IV and feeding tubes on a holiday. Oliver manages to persuade the two nurses that they need to get the parents to take care of the set up. Finally, the night before Thanksgiving Oliver prints out all the discharge papers, and the boy is set to go home the next morning. With a smile Oliver takes off for a long weekend without work. Gabriel is on-call the next day, and at lunchtime he realizes that the boy did not go home earlier in the morning. Yet, another consult had been requested after Oliver left. The consult, a specialist in eating disorders, convinced the other attending doctors on the case to make changes in the boy’s medication. A return to more normal diet after several weeks of little intake could affect the boy’s potassium level negatively. Gabriel fumes: “You can’t put a consult on the day you are sending the child home! He has been here for three weeks. Why didn’t they do this before? This is a holiday!” He later devises a plan: “We (the interns) and the attending decide what is going to happen. The consultant cannot decide what to do. We do that. I’m going to make up a story and see if they accept it. If you argue well enough they will normally accept.” Gabriel’s plan does not work and the boy is still in the hospital when Oliver arrives back from his long weekend.

In summary, the hand-offs marked by the Discharge Summary affect a number of people, not least the patients and relatives who often push hard to get discharged sooner rather than later. It is not the content, i.e., activities outlined in the document, that necessarily creates tension, but when the document is finished. The issues can become a point of conflict within groups of doctors (e.g., house-officers in ER and on wards), across
occupations (e.g., nurses and physicians), and across locales. Some locales try to preempt the issue by combining the writing of Discharge Summaries with other communicative genres. In the Short Stay unit, as already described, the interns are strongly encouraged to write the Discharge Summaries the night before on patients they expect to discharge. During morning rounds the attending doctor and senior resident try, but do not always succeed in, making sure that decisions leading to discharge are reached and that interns take steps to finish their Discharge Summaries no later than noon.

Avoiding Documents: Disney theme songs and used traumas

Given the difficulties associated with the sharing of documents it is not difficult to understand why interns regard sign-out as one of the most important times of their day. It is their chance to negotiate the on-call doctor’s activities. We also saw how Gabriel learned the hard way that talking to the nurses before writing an order makes life as an intern significantly easier and helps you get more sleep on your on-call nights. Many institutions require doctors and nurses to accompany trans-local documents with a phone call to their receiver. However, the physicians and nurses producing the documents may resent such policies. They often perceive it as unnecessary double work where they literally have to spend hours listening to Disney theme songs while on hold to talk to a pediatric primary care doctor. It is not uncommon to find doctors on Long Stay with two receivers to one ear, playing different theme songs, while editing a discharge note on a computer terminal. In most cases, the caller will not get the particular primary care doctor but a pediatrician covering for the particular doctor. In other words, the reality of most primary care sites where several physicians care for a community of patients rarely allows for a meaningful one-to-one interaction around a trans-local document.

Apart from follow-up phone calls, lack of trust in other groups’ documents expresses itself in several ways. An often-seen strategy is to rely on communal documents as an alternative or supplement to trans-local documents. Many primary care clinics and provider networks do not exclusively depend on Discharge Summaries from hospitals but attend their own patients in the hospital or have colleagues in their network cover for them. Some of the larger provider networks place fulltime doctors know as “hospitalists,” in the
most heavily used hospitals. Every morning Larry, one such hospitalist goes through local documents in the ER in order to report back to primary care doctors, his colleagues, if they had any patients seen in the ER the previous evening and night and for what problems. Then he makes his way through the entire hospital seeing the network’s patients admitted to the hospital. When facing a new patient, Larry introduces himself as a member of the primary care network. He always makes a point of describing how he is the overseer of care. “I’m at the top of the pyramid,” he normally introduces the topic. “The seniors, nurses, interns, and medical students are below me.” Most parents simply give a tired nod, getting ready to give their history once more. Now and then a mother will recognize him from the day before and greet him. After finishing his rounds of the hospital Larry walks to his office in the basement of the hospital. Here he writes a note on each patient in the network’s on-line medical record system. In this way, he circumvents a dependency on trans-local documents by producing a communal note for his colleagues within the network. Smaller primary care groups often engage in a less developed version of this practice. On a rotating basis they cover for their collective patients in the hospital relying on communal documents. Small or single physician clinics far from the hospital typically have little other choice than examining trans-local documents only. In short, to avoid the perils of relying on other constituencies documenting of a patient’s case, with the constraints that follows in description, itinerary, and the combination with other documents, they take another history and develop another document targeted to the needs of a particular constituency.

Patients transferred from other hospitals, habitually referred to as “used traumas,” bring plenty of paperwork with them – they come “fully loaded.” Physicians and nurses usually find the quality of these “loads” laughable and routinely redo most tests, procedures, and exams.

One morning an intern, Isabel attends to her new patient a few weeks-old baby transferred from a hospital in another state with a mysterious scab on the crown of his head. The scab, now gone, was diagnosed as herpes at the other hospital; an ailment which can be detrimental to newborn babies. Isabel and her medical student spend a couple of hours going over the Discharge Summary from the other institution. Isabel: “Frankly, I can’t make sense of their
conclusions. They just don't give me enough detail to make sense of their conclusion." The medical student agrees and they discuss whether to order the full record from the other hospital, which they expect to be massive with all the specialist reports and test results. Isabel seems overwhelmed and meanwhile she is eager to discharge the patient before she ends her rotation in the unit less than a week from now. The following day Isabel's herpes baby is the "cover story" during Talking Rounds. The senior resident has prepared a small teaching note on herpes and all the possible diagnoses associated with the symptoms with which the baby presents. They discuss in detail the different strains of the disease and its consequences and the particular tests results and reports Isabel managed to get from the other hospital after hours on the phone persuading the hematologist to send his team's report. Isabel wants to know why they want her to retake the herpes test when they know from the other hospital that at this point the baby would not test positive. Isabel: "I'm only asking for teaching purposes." The attending launches into a longer monologue on herpes. Some herpes strains seem to be associated with learning disability. Isabel looks tired. The attending continues: "This hematology report is no good. All they did was a visual test [using a microscope to analyze a specimen for signs of the herpes virus]. That is not good enough for us. We will never know what [herpes] strain he had." The attending wants Isabel to call the doctor who performed the test and get the interpretation directly from him or her. "Then we just have to trust what they say," the attending concludes. Meanwhile the senior resident is flipping through the Discharge Summary: "This is ridiculous – the quality of this report. Look here [pointing to a test result]. They don't even give the exact number – just high or low."

In the ER the repetition of procedures and in particular radiology tests are common. The quality of documents and prints are called into question and compared to what is regarded as a high local standard. Quality apart, doctors and nurses find it easier to redo the work performed in other locales. It is more efficient for the staff at Kithlam Hospital to order a new test, take another history and write a new document than find the contact information to another locale, order and read through tests and a Discharge Summary, get used to the description tailored to another institution's temporal and spatial organization of work. Resorting to a car repair metaphor, the Kithlam staff finds it easier to order a new transmission than to try and retrofit an old spare part from another model into a well-oiled machinery.
Summary

Over the course of this chapter I have examined how nurses and doctors recombine documents as a routine part of their daily work. Some of these recombinations take the form of habitually enacted genre systems. Others involve improvised document recombination. In the process, staff members generate new maps and itineraries by placing the recombined documents under a different temporal and spatial reference point. I point out two broad strategies for document recombination. One compiles documents either through proximity or movements among documents. What nurses and doctors accomplish is the assessment of a state of affairs in a given place, whether the entire hospital, a clinic, or waiting room. Another recombination builds on a sequential relationship among documents where staff members draw on one document genre as the base for a subsequent document genre. Each occupational group and locale works out unique recombinations of more or less tightly coupled documents. These recombinations allow them to coordinate locally and serves as a mean to appropriate trans-local documents into the temporal and spatial organization of work in their particular setting. Local users care deeply about these particular document combinations and staff meetings serve as a main venue for the improvement and changes to both tightly structured genre systems and loosely structured genre sets.

Problems persist despite the hours put into the continuous improvement of document genres and their recombinations. These relate, or the one hand, to the proliferation of itineraries among users, where one staff member must rely on the to-do list generated by another doctor or nurse. One the other hand, conflicts relate to the timing of document recombination, where one staff member or staff group relies on the completion of another staff members’ document. To avoid these problems, staff groups employ two main strategies. Either, they accompany a document with a conversation (face-to-face or ear-to-ear). Or, they avoid the document altogether, redo the work, take another history and test, and write another document, further propagating history taking and document use. Apart from adding to the number of histories taken and documented, the question remains: what happens to Sophie as she travels from primary care, through ER, and inpatient ward, to
outpatient care again? What does the present analysis of nurses’ and doctors’ documenting practices tell us about the overall sharing of knowing and coordination among distributed healthcare providers? The next chapter will address these issues.
Chapter 7 – Re-localization: Knowing in practice and the coordination of care within and across locales

Taking a step back, one may ask what happens to Sophie when she moves from primary care, through the ER and inpatient units, to outpatient care. As she wheezes her way through one history after another, she gets “re-localized” again and again, through multiple and recombined documenting practices. Doctors and nurses care not only for Sophie, but also for many other patients. In order to do their work, they use documenting practices to coordinate their distributed work with other caregivers. Some collaborators work in the same department; others work in different institutions. To put it differently, Sophie gets re-localized through the documents produced and used by numerous groups to organize their distributed work. If Sophie does not get documented, she does not get care. She falls off the map.

In the rest of the chapter I develop this notion of re-localization. First, I revisit Sophie’s time-space path recounted in Chapter One, by retelling the story from the perspective of the many documents used by doctors and nurses to capture Sophie’s case and care. Figure 7.1 summarizes the documents included in this analysis and suggests some of the relations among them. Second, I develop the notion of re-localization as a way to describe how doctors and nurses use documents to support their individual and collective knowing-in-practice within and across settings. As part of the discussion I compare the theoretical notion of re-localization to other conceptualizations of knowing within and across settings. Third, I discuss the implication of my findings for IT design, specifically the design of medical record systems.

The Re-localization of Sophie’s Many Histories

The document trail of Sophie’s current asthma attack starts with a Phone Triage Form used by the nurse in Childra’s Health Care Clinic. After completing her phone conversation with Sophie’s mother the clinic nurse drops off the Phone Triage Form at the registration desk where it is recombined with other Phone Triage Forms pertaining to other
patients on their way to the clinic for a sick visit. Lydia, the clinical assistant, and the registration clerk use this pile as an indication of how many patients are on their way to the clinic.

**Figure 7.1 – Re-localization of Sophie’s history**

<table>
<thead>
<tr>
<th><strong>Staff Member</strong></th>
<th><strong>Document Types</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Local</strong></td>
</tr>
<tr>
<td>Attending Doctor</td>
<td>Whiteboard</td>
</tr>
<tr>
<td>Senior Resident</td>
<td>Whiteboard</td>
</tr>
<tr>
<td>Intern</td>
<td>Whiteboard</td>
</tr>
<tr>
<td>Medical Student</td>
<td></td>
</tr>
<tr>
<td>Nurse</td>
<td>Flowsheet*</td>
</tr>
<tr>
<td>Night-Floater</td>
<td>Whiteboard</td>
</tr>
<tr>
<td>COPP Nurse</td>
<td>Whiteboard</td>
</tr>
<tr>
<td>ER Attending</td>
<td>Whiteboard</td>
</tr>
<tr>
<td>House-Officer</td>
<td>Whiteboard</td>
</tr>
<tr>
<td>ER Nurse</td>
<td>Whiteboard</td>
</tr>
<tr>
<td>Triage Nurse</td>
<td>Flowsheet</td>
</tr>
<tr>
<td>Primary Doctor</td>
<td>Encounter Sheet*</td>
</tr>
<tr>
<td>Clinical Assistant</td>
<td>Encounter Sheet</td>
</tr>
<tr>
<td>Nurse</td>
<td>Phone Triage Form*</td>
</tr>
</tbody>
</table>

Document moves

- - - Routine circular sequential recombination

- - - Routine sequential recombination

* Document goes into a medial record

Sophie and her mother arrive in the clinic. The registration clerk asks Sophie’s mother whether it is a sick visit or health check-up. As it is a sick-visit, she grabs a clean sick-visit Encounter Sheet from a pile next to her and start filling in the top part of the
sheet. A little while later, when Sophie’s mother has settled into a chair in the waiting room, the clerk uses the Encounter Sheet to find Sophie’s Medical Record. The clerk recombines the Phone Triage Form with all the other documents in Sophie’s record, includes a clean Sick Visit Encounter Form on top of the Phone Triage Form and other old Encounter Sheets in the record. With a much practiced sway of her arm she drops Sophie’s record in a rack and thereby recombines it with the Medical Records of all the other patients in the waiting room. Lydia, the clinical assistant, regularly sifts and sorts through this rack so that the records of patients she believes need to be seen first lie on top. When Lydia deems that there are only a few patients ahead of Sophie, she fetches Sophie’s Medical Record from the rack. Reading from the cover of the record she calls Sophie’s name into the waiting room. In the clinical assistant exam room Lydia flips the record open and records Sophie’s vital signs on the new Encounter Sheet initiated by the registration clerk. She also adds the doze of nebulizer treatment that she administers to Sophie leaving space for Dr. Roth to prescribe it after the fact. Upon completion of the exam Lydia brings Sophie to one of the exam rooms used by the physicians. The Medical Record she recombines with a couple of other records in a bin hanging at Dr. Roth’s door. She quickly browses through them and places the record belonging to an infant boy in front and considers transferring a teenager’s record to one of the other physician’s bins. Next time Dr. Roth passes his office door he browses through the charts trying to assess how much work lies ahead of him. It keeps changing.

Sophie’s turn comes around and Dr. Roth flips her Medical Record open to face the new Encounter Sheet. Habitually, he recombines the fresh Encounter Sheet with past Encounter Sheets going back to Sophie’s most recent health check-up, including a Problem List sheet. Asthma features prominently. He barely glances at the nurse’s Phone Triage Form. In the exam room with Sophie and her mother Dr. Roth jots a few notes on the Encounter Sheet about when Sophie’s asthma attack started and that her breathing sounds tight even after the nebulizer treatment. He sends Sophie off to the ER and completes his note in his office. Other Medical Records from today’s patients pile up on his desk waiting for their notes. From his desk, Dr. Roth retrieves a fax sheet with the clinic’s letterhead and his name. After addressing the fax (an Expect Sheet) to the Emergency Room at Kiltham
Hospital, he enters Sophie’s name, chief complaint, the nebulizer treatment she got in the clinic, and a short list of things that he believes need to happen in the ER. He does not blindly copy the information he recorded in the Encounter Sheet onto the Expect Sheet. For instance, the to-do list is not part of the Encounter Sheet. Dr. Roth drops off this new trans-local document at the registration desk with Sophie’s Medical Record. The Expect Sheet gets faxed and the record filed.

In the course of two hours, fragments of Sophie’s history have been recorded in two local documents (Phone Triage Form and Encounter Sheet) and one trans-local document (Expect Sheet). Lydia, Dr. Roth and the registration clerk have recombined these documents several times both with documents pertaining to other patients and to old documents in Sophie’s record. We find all three general types of recombination applied: recombination through movement, proximity, and sequence. Lydia relentlessly moves between the different racks with Phone Triage Forms, Encounter Sheets, and Medical Records as she facilitates the flow of patients through the clinic. As part of this process she and other staff members move the different documents. In the process these documents become part of various compilations of other documents.

Sophie’s medical record also serves as a compilation of documents, which Dr. Roth uses to get an overview of her most recent encounters with the clinic. Finally, Dr. Roth builds the Expect Sheet from the Encounter Sheet in a loosely structured sequential recombination. We notice that there is no one master document on which all other documents feed, nor a clearly defined sequence where one document takes its point of departure in a previous document. The Phone Triage Form does not define what goes into the Encounter Sheet. Often the Phone Triage Form does not even make it to the registration desk before the patient has arrived. Dr. Roth and Lydia recombine the Encounter Sheet with not only the Phone Triage Form, but also old documents in Sophie’s record and the Medical Record pertaining to other patients. Dr. Roth writes the Expect Sheet by recombining today’s Encounter Sheet with old documents in Sophie’s record.

Dr. Roth’s Expect Sheet arrives in the ER not long before Sophie and her mother. It ends up in a bin with other Expect Sheets by the triage desk. Through its proximity with other Expect Sheets the COPP, triage and chart nurses use this pile of Expect Sheets as a
window to the patients on their way to the ER. The triage nurses are busy tonight and they
do not get to Sophie’s Expect Sheet until long after they have seen Sophie and sent her to
an exam room in the major emergency area of the ER.

Arriving at the triage desk in the ER Sophie’s mother uses the word “wheezing” in
the first sentence she exchanges with the triage nurse. Immediately, the nurse selects an
Asthma Flowsheet and starts recoding Sophie’s history at the top of page one. This
Flowsheet follows Sophie throughout her stay in the ER and travels with her when she gets
admitted to 10 East. It becomes part of Sophie’s Medical Record in Kithlam Hospital, yet,
information is added to it only in the ER and few, if any, people read it once it leaves the
ER. Nurses and clinical assistants in the ER add information to the sheet. The triage nurse
records her initial interview, then a clinical assistant documents the triage physical exam,
and finally Ann, the nurse caring for Sophie in the main ER, documents her activities in
the Flowsheet up until the point Sophie gets wheeled up to 10 East. Along the way, the ER
Flowsheet is recombined with a number of other documents.

As the Flowsheet moves through the ER it becomes part of three different
compilations of documents, characterized by proximity. First stop is the Triage Rack, a
pile of ER Flowsheets concerning patients waiting to be examined by the triage nurse or
clinical assistant. One of the nurses regularly sorts these Flowsheets making sure that the
sickest children are seen first. Second, the chart nurse moves it to the Gray Rack in the
major emergencies area, a recombination of Flowsheets belonging to patients waiting in
the ER. The chart nurse routinely reshuffles the new and existing Flowsheets, sorting
according to urgency and work flow concerns. Third, the chart nurse uses the Flowsheet
when calling Sophie from the waiting room and then places it in a bin outside the door of
Sophie’s exam room. The bin compiles most of the paper documents relating to Sophie’s
care in the ER. The Expect Sheet also ends up here when a nurse gets time to sort the three
piles of Expects. Finally, Sophie’s ER Flowsheet becomes part of her Medical Record
including documents from her past and present hospitalization in Kithlam Hospital. At
each stop along the way doctors and nurses recombine Sophie’s Flowsheet with other
documents as they round the ER.
Sophie finally moves from the waiting room into an exam room in the main ER with access to nurses and physicians. A new phase in the documenting of her care begins. From now on until she leaves the hospital doctors and nurses simultaneously document her care in several documents. The chart nurse adds Sophie to the Whiteboard while the nurse, Ann, and the intern, Samer, each initiate a new private document where they keep track of Sophie’s care. Ann creates a new Note Card on Sophie, which she adds to her breast pocket combining it with Note Cards on all her other patients. Samer starts a fresh Temporary Note where he summarizes Sophie’s case. He recombines it with other Temporary Note sheets in his coat pocket. Before they do so they sign their names under Sophie’s cell on the Whiteboard. They check the Whiteboard on a regular basis and Samer keeps an eye on Sophie’s Flowsheet to see if Ann measures any changes in oxygen level in Sophie’s bloods after nebulizer treatments. Some of these numbers, including Sophie’s vital signs, he copies onto his Temporary Note sheet. Samer writes his order to Ann in an Order Sheet that they keep in the bin outside Sophie’s exam room. Ann regularly frequents the bin to see if Samer has added or changed any orders.

Past midnight Samer decides, with the attending doctor’s blessing, to admit Sophie. He signals this to the rest of the ER staff by drawing a circle around Sophie’s name on the Whiteboard. A flurry of new, predominantly trans-local documents comes to life. The chart nurse assigns Sophie to a bed in the Long Stay Unit at 10 East. Had Samer made the decision to admit before 11:00pm the chart nurse would have contacted the COPP nurse instead and asked her to assign Sophie a bed based on a brief summary of her history. The COPP nurse would have added Sophie to her Admission Log and later used it to update her Ongoing Log and Staffing Log. However, after midnight the ER chart nurse takes over the role as COPP nurse and will be responsible for all admission to the hospital until 7:00am with the day COPP nurse shows up. The evening COPP leaves the ER chart nurse a copy of the Ongoing Log when she leaves at 11:00am. The COPP nurses use this communal document to keep track of all the available beds across the hospital. The morning COPP picks up this sheet and integrates the changes made over night to her Admission Log and Staff Log. These, in turn, are used to update the hospital’s on-line patient census data.
system used in a number of settings across the hospital; thus they are trans-local
documents.

Samer, for his part, starts to summarize Sophie’s history in the on-line EM Charting
system. In a sequential recombination he builds the EM Chart from his Temporary Note.
When completed the attending doctor reviews this electronic document and signs off on it.
At that point it becomes accessible in the hospital’s on-line Discharge Summary system
used by physicians across the institution. A copy of the EM Chart is automatically faxed to
Sophie’s primary care clinic, if the information has been entered correctly at the
registration desk. In Childra’s Health Care Clinic the EM Chart is likely to end up in
Sophie’s Medical Record. However, it usually takes a couple of weeks before this happens.
As with many other primary care clinics, the Childra’s clinic struggles to keep up with all
the trans-local documents they receive on their patients. A hard copy will also be added to
Sophie’s paper-based Medical Record in Kilmington Hospital.

Ann, the nurse, fills in an Admission Sheet based on her Note Cards and Flowsheet.
Neither Ann nor Samer blindly copy the notes from their private documents into their
respective trans-local documents. Samer adds details of Sophie’s case not captured in his
Temporary Note. Ann does not include all the details on Sophie’s case from her Note
Cards or the Flowsheet. She sends the Admission Sheet to the Long Stay Unit through the
hospital’s tube system half an hour before she sends Sophie up to the ward. Both trans-
local documents are accompanied by verbal communication of Sophie’s case. The ER
chart nurse calls the chart nurse on 10 East briefly describing Sophie’s case. Samer finds
Heidi, the night float responsible for admissions to the Long Stay Unit from midnight until
7:00am. If he had admitted Sophie before midnight he would have had to call the Long
Stay senior resident and given a detailed account of Sophie’s case. A few hours later,
before he goes home, Samer calls Dr. Roth. He does not reach Dr. Roth himself but talks to
a physician covering for the clinic at night.

The night float, Heidi, records Samer’s detailed recount of Sophie’s history on a
Progress Note sheet that she uses as her Brain Note. With the summary in hand Heidi goes
to interview and exam Sophie. She retells Samer’s account to Sophie and asks if she or her
mother have anything to add. Heidi appends those to her Brain Note. She also fills in a
generic Order Form telling the night nurses in the Long Stay Unit the timing and dozens of Sophie nebulizer treatments. Sophie is ready to go to the Long Stay Unit and Samer affixes a red dot under her name on the Whiteboard. With a sign of relief he discards Sophie's Temporary Note sheet. Ann follows suit with her Sophie Note Card.

About 4:00am only a single patient waits to get admitted. Heidi edits her Brain Notes on Sophie and writes it into a fresh Progress Note sheet that will serve as a local document, not in the ER but the Long Stay Unit. She is supposed to use a specific Long Stay Unit form to record her Progress Notes but Heidi finds, as do the other night float, that it is cumbersome to keep switching between different types of forms depending on which ward a patient is being sent to. Instead she simply uses a generic Progress Note form that will go in the bin outside Sophie’s room on the ward.

Again, we find that there is no one document or sequence of documents that tie all the other documents together. Sophie is re-localized into multiple parallel and loosely related documents. Both doctors and nurses use the local documents in the ER (e.g., Flowsheet and Whiteboard). At the same time they keep their private documents, which they used in a sequential recombination with their trans-local documents, that is, the nurses’ Admission Sheet and the physicians’ EM Chart. We should notice that the ER documents do not simply fall into either a local or trans-local category. The Ongoing Log is a communal document used by the ER chart nurse and COPP nurses and pertains to all wards in the hospital. Likewise, Heidi, the night float, does read the Whiteboard and ER Flowsheet, but her Progress Notes written in the ER serves as a local document on the Long Stay Unit. A comparable process can be found among consultants. They maintain communal documents that bridge many wards in the hospital. In short, the re-localization of Sophie’s history in the ER does not simply entail a contextualization of her case into one place, the ER. Doctors and nurses re-localize Sophie’s history into multiple temporal and spatial rhythms some of which are strictly bound to the ER while others stretch across many locales and long time-spans.

In the Long Stay Unit the night nurse has received Ann’s Admission Sheet. She uses it to make the room ready for Sophie and find the appropriate forms including an inpatient Asthma Flowsheet, a set of Management Plan sheets and information material for
Sophie’s mother. She also adds Sophie to the Whiteboard in the nursing station, and initiates a pink Note Card on which she scribbles Sophie’s name and a few notes on her medication. The night nurse interviews Sophie’s mother while scribbling notes on her Note Card and in the Management Plan sheets. Around 4:00am it is time to give Sophie another nebulizer treatment. The night nurse records it in the Long Stay Asthma Flowsheet, noting that Sophie’s breathing still sounds tight. She repeats the nebulizer treatment and documenting around 6:00am just before getting ready to go home. She has already tape-recorded her part of the Nurse Report. Around the same time a very tired Heidi rounds all the wards on which she has patients. She glances over their Flowsheets, drops off her progress notes, and asks the nurses if anything happened over night that they did not call to tell her about while in ER. At 7:00am she joins the Long Stay Unit’s morning round. Heidi gives a brief history on each of the patients admitted to the unit since midnight, only to rush off to the next unit to participate in the morning rounds there. This repeats itself until she has covered all the wards on which she has patients. Finally, she staggers home.

By then, Donna, the intern, Lucy, the senior resident, and the medical student have each started a Brain Note on Sophie based on Heidi’s history during the morning rounds in the Long Stay Unit. They will later go and look over Heidi’s Progress Note and find Samer’s EM Chart on-line. Donna makes a note of Dr. Roth’s name and Sophie’s past hospitalization before they all three go to see Sophie, take her history and examine her. Later in the day the attending doctor on Long Stay, Patrick, examines Sophie and takes her history. He summarizes his observation in the Progress Notes. If Sophie’s primary care clinic would have sent one of their own physicians to attend to Sophie while hospitalized, Patrick would not have seen her.

By noon on the day of her admission to the Long Stay Unit the staff has recorded Sophie’s history in six different private documents, five local document types, including two Whiteboards (the physician’s Whiteboard and the Nursing Station Whiteboard), Order Sheets, Flowsheet, and Progress Notes, and four communal document types (Management Plan, Nurse Report, HOSO, and Senior Notes).

Donna ties her Brain Notes and HOSO in a cyclical sequential recombination basing her Brain Note on the HOSO every morning and updating the HOSO based on her
Brain Notes before going home. Lucy and the nurse perform a comparable cyclical recombination of their private and communal documents. During morning walking rounds the physicians recombine those private and communal documents with all the local document types within and beyond the Long Stay Unit. Documents describing Sophie’s case continuously get recombined with other documents describing her care and documents pertaining to patients within and across the Long Stay Unit, all depending on the individual or collective time-space paths that staff members attempt to support.

Donna discharges Sophie towards the end of her third day in the hospital. Sophie and her mother are longing to go home. The novelty of ordering her favorite foods three times a day and playing computer games in bed has worn off; her mother looks forward to her own bed, not wanting to spend another night at the foldout chair next to Sophie’s hospital bed. Sophie’s mother paces the hallways trying to get Donna to finish her Discharge Summary. The nurse cannot write her Discharge Instructions to Sophie before she has received Donna’s Discharge Summary. Donna, for her part, is busy with other newly admitted patients. She has written part of the Discharge Summary the day before by copying and pasting sections of the EM Chart into the HOSO. Now she needs to go over the document, add a section on Sophie’s state at the time of discharge, smooth things out, and make it readable. Sophie gets her Discharge Instructions from the nurse around nine. Her mother is fuming from the seemingly needless wait and barely listens to the nurse’s discharge instructions. When they finally leave, Sophie’s mother practically runs down the hallway paying no attention to the friendly giraffe engraved on the linoleum floor.

In order to make Donna’s Discharge Summary an officially documented part of the hospital’s Medical Record system Patrick, the attending doctor in the Long Stay Unit, has to approve it. He asks Donna to make a few changes before he signs the final version of the Discharge Summary. Dr. Roth will not receive a copy of Donna’s Discharge Summary until she has dictated it to a phone dictation service, which then transcribes the Discharge Summary and sends it to Sophie’s primary care clinic. The secretary on 10 East sorts through the papers left behind in the bin outside Sophie’s room. She sends the Flowsheets, Progress Notes, Order Sheets, and Management Plans to the hospital’s central medical record department.
Re-localizing Knowing in Practice

One does not find one document that mirrors Sophie’s time-space path as she moves from primary care, through ER and inpatient ward, to outpatient care again. Neither do we find an organized sequence of documents shadowing her movement or a completely disjointed set of documents without any apparent interconnections. Doctors and nurses do tie some individual documents into habitually enacted sequences; others remain improvised recombinations. Consequently, there is no existing document on which to build a global-patient centered record system. Some documents serve individual nurses or doctors, other documents support the collective activity in a particular setting, the communal collaboration among a group of staff members, or the coordination with doctors and nurses in other departments, institutions, and clinics.

In support of a patient-centered record one may argue that despite the lack of a document to model a global record on – there is Sophie’s history. The doctors and nurses share Sophie and her history as the common object of their toil. This assumes that Sophie has one history or at least a limited number of histories, which could be compiled into a patient-centered record. Proponents of the patient-centered record seem to assume that by relating some extrinsic aspects of Sophie’s case one can capture the presumed essence of her medical history and pathology. Such a formalization of Sophie’s history, they argue, would allow for its detachment from the local context without losing its essence. But, what if there is no complete history that can be shared as an object encapsulated in an electronic format? As illustrated in the description above, the real-time goal of doctors and nurses documenting practices is not completeness or even absolute accuracy. Sophie’s history does not become more and more abstracted or more true to the case, neither a necessarily better description of her case, nor a more complete history. The goal is to maintain high quality care for a continuous flow of patients – supported by a loosely structured chain of re-localized documents, which allows doctors and nurses to perform subtasks in response to their work with many patients while collaborating with numerous colleagues. Donna has no incentive to produce a complete history of Sophie’s care in her Brain Note, Progress Notes, HOSO, or even in her Discharge Summary. Comprehensive histories take too long
to write and read – if they are even possible. It makes much more sense to recombine documents when a present document falls short or simply redo the work by taking another test, or ask Sophie to give her history once more. Even if there was such a thing as an abstract ideal history of Sophie’s case – placing it in a patient-centered global accessible record would most likely not serve its purpose, which is to support doctors and nurses ability to go on caring for an ever-changing group of patients. An idealized account would not serve as a convenient map and itinerary for all nurses and physicians.

At this point one could conveniently slip into a polarizing position claiming that all that exists is situated knowledge embedded in the richness of the empirical world. This opposing position would argue that a patient-centered record which attempts to abstract a globally meaningful patient history is all but an impoverished version of the rich and textured situated knowledge held by local participants. However, as Berg (1997) argues, both positions picture the realm of the abstract and formal as hovering above the realm of the empirical everyday world. “The formal is symbolic, clean, abstract, homogeneous; the empirical is messy, heterogeneous, concrete and not (to be) ordered within one single scheme” (Ibid.: 406). One is the global patient-centered record; the other is the lived experience of patients, nurses, and doctors. Berg (ibid.), Markussen (1994), and Star (1995) among others call for reconfiguring this dichotomous opposition between the formal and the informal – the abstract and the situated.

Returning to Sophie’s story I find that in doctors’ and nurses’ everyday practices these two positions merge or at least live in a fruitful tension. Looking closer at nurses’ and doctors’ use of documents we find they do draw on other people’s representations of Sophie’s case. Yet, they do not approach those documents as messages in a bottle, the delivery of a body of knowledge from one staff member to another. Instead, they recombine the content with other documents and their own recordings, reading it in the context of their own unfolding work. At the same time, they return to the source and take Sophie’s interview once again, situating it in their own unfolding practices and the work already performed by others. In the process they produce maps and itineraries serving as guidelines for their unfolding practices. These maps and itineraries, then, are both abstractions from the complexity of the lived world and situated in their ongoing practice.
It is knowing-in-practice, supporting their ability to go on, whether individually or collectively. By leaving out some of the details in Sophie’s history and other people’s accounts of her case they graft practical to-do lists targeted to particular temporal rhythms and places.

With the term re-localization I attempt to capture this process: how doctors and nurses use documents to support their ongoing enactment of individual and collective knowing-in-practice. In their collaboration within and across settings doctors and nurses do not share knowledge in abstracted chunks. Neither do they build everything from scratch within a limited setting or context. Re-localization involves many doctors’ and nurses’ parallel and ongoing rewriting of a patient’s history based on the recombination of each other’s maps and itineraries and the patient’s own, and often changing, accounts of his or her symptoms. This weaving of knowing-in-practice draws its power from the tension between the concrete case and the maps and itineraries abstracted through the simplification of the complexity of the case. These simplifications render the subtasks doable (i.e., situated) but also make them part of the larger re-localization process, that is, to make sure that Sophie can go home feeling better. Documents do not stand in between the users and the work. Rather, they stand with their users. Doctors and nurses write and read them as resources and guidelines for their unfolding practices. Medical documents are not mere representations or re-representations of doctors’ and nurses’ work. The documents co-evolve with the ongoing process of “doing” medical work. We are dealing with practice-centered records, which neither means strictly situated records, nor solely patient-centered records – but both.

The tension between the abstracted and the local generated in doctors’ and nurses’ persistent re-localization allows them to extend their social relations across time and place. Documents serve as 1) communicative devices, 2) storage and encoding devices, 3) maps, and 4) timetables for doctors’ and nurses’ unfolding practices. One document can serve more than one purpose at the same time. Donna and fellow interns use the HOSO as a communicative device for their coordinated effort, as well as a map and itinerary for their collective unfolding activities. When Donna communicates specific details about Sophie’s case to her colleagues by recapping Sophie’s history in the HOSO, she contributes to the
maintenance of a collective map and itinerary. As a result, the HOSO document genre serves both communicative and non-communicative purposes. It is both an encoding of Sophie’s case and a practical guide for her unfolding practices. Donna’s entries are both an account of Sophie’s history and part of Donna’s ongoing accounting for her work. Her recordings guide her practices as she goes along producing and using the HOSO.

To put it differently, in Donna’s re-localization of Sophie’s case the local and the global merge. This interpretation counters recent theories describing the extension of social relations across time and space as a local-global relationship (Giddens, 1991; Gregory, 1994; Harvey, 1989; Jin & Robey, 2002; Schultze & Boland, 2000). In these theories the local and the global represent two modes of interaction: one local and face-to-face, another global and mediated by information and communication technologies. On the local level, people interact face-to-face and their interactions are constrained by specific times and places. At the global level, information systems and other communication and transportation technologies reduce or lift interactions beyond the constraints of organizing interactions around specific times and places. In the global “sphere,” knowledge is abstract and easily transportable. In contrast, as Sophie’s case demonstrates, doctors and nurses do not divide their time between two distinct modes of interaction, one characterized by face-to-face and another mediated by information and communication technologies lifting them beyond the constraints of time and space. Both are interlaced in their practices. Donna and her fellow interns maintain the HOSO in order to take care of each other’s patients without all being co-present; yet, they accompany it with face-to-face interactions during rounds and sign-out. This extension of their social relations does not divorce those interactions from time and place. In fact, the interns use the HOSO and other information and communication technologies to maintain tight temporal rhythms and clearly defined places within which they coordinate their work. The same can be said about other groups of doctors and nurses.

Through their use of documents, doctors and nurses tie local and non-local interactions into temporal rhythms enacted within and across specific places. They do so by regionalizing their practices. Their time-space paths stick to certain territories and work rhythms. These regions are both temporally and spatially structured as highlighted by
Giddens (1979; 1985) and Goffman (1959, 1974). In the case of Karen’s Note Cards, her 12-hour shift and current patients in the Long Stay Unit demarcate her region, just as Donna’s Brain Notes span several wards and stretch up to 36-hour duty periods. My analysis suggests that one finds four general kinds of regionalization represented by each of the four types of document genres: private, communal, local, and trans-local.

Doctors and nurses face a constant push and pull from different regionalized, temporal rhythms, many of which run seemingly independent of one another. By maintaining more than one document (i.e., map and itinerary), doctors and nurses strive to coordinate their time-space paths to several such rhythms. Donna coordinates her “going on” with not only her fellow three interns, but also Karen, the nurse, Lucy, the senior resident, and a host of other physicians and nurses involved in the care for her patients. In other words, doctors and nurses produce and use each of these types of document as a means to deal with issues of presence and absence. They cannot all gather around Sophie’s bed at the same time and place. Instead they employ different documents to manage issues of presence and absence with specific constituencies of collaborators.

Doctors’ and nurses’ management and coordination of their time-space paths and collective “going on” does not stop with their use of individual document genres. By recombing existing documents, they produce new maps and itineraries, placing the recombined documents under a different temporal and spatial reference point. This process both generates unique local recombinations of documenting practices and, at the same time, assists in the coordination of knowing-in-practice across locales. On the one hand, the fine-tuned, local recombination of documents found, for instance, in the emergency room facilitates the complex coordination of countless doctors and nurses. On the other hand, by recombing trans-local documents with local documents, staff members integrate the insights of other caregivers in other locales into their local “going on.” As in the case of the Expect Sheets, doctors and nurses do not necessarily use these documents as intended by the producer (i.e., the primary care physician). Nevertheless, the recombination of Expect Sheets that takes place during ER rounds plays an important role in managing the collective “going on” in the department.
The notion of re-localization suggests a relational approach to documents. A document genre takes on its meaning from the specific configuration of participants and the temporal and spatial point of reference in which it is placed. As doctors and nurses recombine a document by altering the participants (who), times (when), and places (where) of its use they also modify the document and its recognized purpose, thus producing an instance of a different document genre or genre system. The recombined documents serve as new guidelines for the practices of a different configuration of participants. In other words, the notion of recombination offers a dynamic approach to genre and genre system analysis. A document can becomes part of many different genre systems and genre sets. As a doctor or nurse recombines a document into a new guideline for a different constituency of people enacting other temporal rhythms and regions, they may also alter the purpose of the document.

Thus, the re-localization of Sophie and her fellow patients involves the integration of their care – not into a singular locale – but into an underlying mosaic-like crisscrossing of regionalized practices enacted by individuals and communities of doctors and nurses. Doctors and nurses use documents to structure their everyday gathering of medical data, facilitate their communication, and allow for the comparison over time and between different settings and patients. They do so by reducing the details from several sources including their own interactions with Sophie and other staff members’ documents. In other words, documents are abstracted, selective, and structured maps and itineraries of more richly textured work practices.

The effects of these deletions are inevitable felt. Tensions arise. The documents embody what stands out as an improvised version of what a group’s or individual’s work is like. People working with documents need to re-add details through a recombination with other documents or the retaking of the history. Not surprisingly, doctors and nurses rarely trust the documents arriving from places where they have little understanding of the work routines from which these documents are extracted. Instead of attempting to re-add the details, it is often easier for them to redo the work and take another history. Furthermore, conflicting temporal rhythms often lead to problematic recombination of documents. For instance, when a nurse’s discharge of a patient depends on the completion of a Discharge
Summary, conflicts become almost a routine. Often little is done to coordinate such
temporal rhythms across locales which leads to numerous clashes.

In short, tensions over improvised documents are an inevitable part of the re-
localization process, adding another obstacle to the dream of the global patient-centered
record. The loose structure of the documenting practices involved in Sophie’s care
suggests that attempting to mold all the heterogeneous participants into one smooth and
interlocking set of subtasks is a utopian ideal. The re-localization that takes place as
Sophie’s time-space path unfolds does not exist in a static equilibrium. Rather, it is
characterized by never ending frictions, loose ends and unforeseen consequences of the
kinds that staff meetings in the ER and other departments and clinics painstakingly deal
with on a weekly and biweekly basis. Staff members continuously refine and adjust these
by inventing new recombinations, altering routines, and work. In the process they patch
recurrent frictions, but at the same time produce new problems which yield fresh tensions.

Disagreements due to the reliance on other people’s maps and itineraries occur both
within and across locales. The doctors and nurses in the ER, for instance, often struggle
over their use of Order Sheets. These tensions are brought up and discussed at many ER
staff meetings. Drawing on documents from other locales often adds to the confusion and
distrust. A primary care physician does not know enough about a surgeon’s routine work at
another hospital to identify what antibiotic he gives his patients post-surgery. The primary
care doctors cannot re-add the details left out by the hospital doctors. Nevertheless, sharing
across a locale, for instance, between a primary care clinic and the ER does not by
definition entail the problematic recombination of documents and enactment of individual
and collective knowing-in-practice. While the exchange of documents and admission of
patients may routinely lead to problems between some clinics and the ER, it may not
happen with other clinics. Several of my informants in the ER observed that the further
away a clinic was located the more likely conflicts became. The primary care clinics
located close to the hospital generally experienced a smoother coordination of care and
exchange of documents. Yet, distance was not the only factor distinguishing these two
groups of clinics. The physicians working close to the hospital often hold half-time
appointments in the hospital, teach part time at the affiliated medical school, or attend to
their own patients in the hospital. They thus find it easier to re-add the details when recombining documents from the hospital with documents from their own locale.

In short, cohesion does not necessarily go hand in hand with local enactment of knowing in practice; neither does co-located work always lead to tensions. Conflicts emerge both within and across locales. The crossing of a temporal or spatial boundary or sharing of document across communities does not breed conflicts in and of itself. The local is not the locus for the smooth enactment of knowing in practice, neither is the community. The ongoing work that members of a locale or community put into smoothing out the inevitable deletions created in the process of producing and using maps and itineraries may partly explain why one finds fewer conflicts within locales and communities.

Casting doubt on the association between community and cohesion ultimately questions some of the reasoning behind the literature on communities of practice. As noted earlier, shared practices presumably lead to a common stock of situated knowledge. But what exactly does it mean to share a practice? For example, at first glance Donna, the junior resident, and Lucy, the senior resident, would seem to belong to the same community of practice. They spend most of the day working side-by-side, listening to the same kids’ chest at the same time. Nevertheless, they document their work in different online systems, which they do not share. Their lack of sharing could suggest that they belong to separate communities of practice. If so, when do people share a practice and when do they not?

One way to approach this conundrum may be to further specify Donna’s and Lucy’s practices in terms of their time-space paths. By specifying how their time-space paths crisscross the same locales but follow different rhythms, it becomes possible to differentiate their practices and describe what practices they do and do not share. Then, one could argue that Donna and Lucy are members of multiple communities of practice. However, this may be no more than a convenient analytical distinction. The continuous brokering and negotiation of their practices may not be due to multiple memberships but rather an inevitable aspect of a re-localization process that by definition involves tensions and the recombination of heterogeneous sources. Donna and Lucy routinely engage several maps and itineraries – each in an effort to coordinate their time-space paths with distinct
constituencies. This involves the ongoing recombination of multiple documents and retaking of histories in an effort to support the ongoing care for patients involving the enactment of many and often conflicting time-space paths.

Power, stakes, and invested interests are deeply embedded in this re-localization process; thus, the use of documents to enact individual and collective knowing-in-practice. Documenting practices represent the heart of doctors’ and nurses’ ability to “go on.” Not surprisingly, doctors and nurses are highly invested in these documents and their recombination. Changes in documenting practices go hand in hand with changes in their work practices. As illustrated in the ER staffing meeting vignette, even simple alterations in the recombination of documents raises concerns relating to the division of labor among doctors, nurses, and secretaries, and who has the right to engage in what kinds of care decisions. A further exploration of these forces would profit from a closer look at the way doctors and nurses manage their regionalized practices in relation to each other. Here, Carlile’s (1997; 2002) analysis of the stakes that practitioners invest in certain artifacts may be a helpful tool to approach the question of how doctors and nurses stake out their interests within and across different healthcare settings through their production and use of multiple documents.

**Implications for IT Design**

The theoretical perspective and empirical findings I have outlined here have consequences for information system design. While these implications must, for now, be speculative, they are worth addressing. My findings suggest that the design of medical information systems should take as its point of departure the work practices of doctors and nurses, and only secondly the medical history of the patient. A system should do so by supporting doctors’ and nurses’ use of documents as maps and itineraries and their continuous recombination of documents within and across locales. This is not done by building large global information systems with a unifying taxonomy for the entry of medical information. Any account of patients’ histories always remains an improvised version of the real case and the work involved in providing situated care. It is better to support a multiplicity of recordings and instead make the work of recombining these and
turning them into useful maps and itineraries easier. A system should not strive to reduce the number of histories taken from Sophie. But it should facilitate doctors' and nurses' ability to generate the maps and itineraries that they use to guide their unfolding work practices and enact their individual and collective knowing-in-practice within and across settings.

Returning to the hypothetical case of Mr. Jones' heart attack, I do not negate the need for readily available medical information. I believe that building medical information systems that can support the information needed to save people like Mr. Jones should be a goal towards which medical informatics ought to strive. What I am contesting is whether this information system should be built around Mr. Jones as the sole organizing principle.

One must accept that the documenting of patient histories does not rely on any form of central control. Rather than building centralized and universal medical information systems, I propose a focus on decentralized systems developed and implemented at the level of individual departments and sub-disciplines. This would make the work of recombining these different, decentralized systems crucial. Resources should be put into gradually connecting information systems within and across healthcare institutions. Such an endeavor would involve supporting doctors' and nurses' use of multiple information systems at the level of local departments and sub-specialties.

Slowly, by focusing on the recombination among these many documenting practices, one could extend the specific systems across sub-specialties and institutions. This would require some platform on which these heterogeneous systems could be linked. I imagine that some form of secure web-based system may provide a base on which to establish connections among systems. Kitham Hospital, then, should allow each department and sub-specialty to develop their own record systems with few if any restrictions on the taxonomies they use to organize their medical information. In addition, the hospital should support the ad hoc linking of these heterogeneous systems. When the outpatient asthma clinic, for instance, wants to know when their patients are seen in the ER, they should be able to develop a system that helps them recombine ER documents in a fashion best suited to them and the ER staff. Such an ongoing linking of local systems would allow the involved parties to reach a negotiated order, taking into consideration the
various stakes, temporal rhythms, and invested interests involved in the recombination of documents.

Given the use of documents as maps and itineraries, any local system should provide many different formats and selections of information (i.e., how and what). Doctors’ and nurses’ data needs vary, and the formats and selection of specific information depends on the map and itinerary doctors or nurses are building. In other words, Donna should be able to pull up information in four different ways. One would help her coordinate with her fellow interns, another would serve as her individual notes, and so forth. In the design process each of these types should be classified according to the documents’ participants, time, and space.

Doctors’ and nurses’ continuous recombination of documents can be compared to query strategies. Some of these queries are highly structured and embedded in routine activities; other queries are improvised. Give this diversity it would be appropriate to allow users to write free form queries to various databases. Here, natural language processing of the query would be a helpful tool in facilitating the connections among multiple decentralized systems, allowing different constituencies to retrieve the information that supports the particular temporal and spatial organization of their work practices.

In order to support such a decentralized record system one would need to give IS professionals a central role in the daily work of individual healthcare settings. Right now IS professionals are more marginal than janitors. In one of the hospitals I studied, the IS professionals worked in a trailer literally at the fringes of the hospital. They could not have been more out of touch with the daily workings of the hospital. This seems incongruous when looking at the amount of time other healthcare professionals spent discussing how best to integrate existing information systems. In each medical unit and clinic I observed, I participated in regular, if not bi-weekly, meetings where doctors, nurses, and secretaries discussed how better to integrate existing information systems and documents. Few of these participants had the capability to engage in changing the electronic information systems, and the changes they could implement most often simply involved changes in paper forms. In order to implement decentralized changes in information system use, one would need to have IS professionals participate in these meetings and be able to contribute
to the discussions. It would also be helpful if doctors and nurses had some basic comprehension of these technology issues. An integration of information system management into the medical curricula or offering elective IS courses targeted to the medical field would serve as a first step in this direction.

Such an approach building on a gradual linking of local information systems would not make Mr. Jones’ medical information accessible in Florida in the foreseeable future. But neither would another failed global patient-centered medical record system. When it comes to Sophie, she was discharged from the hospital when she required nebulizer treatments less than every four hours. Her hospitalization is likely to lower the barrier for a new admission next time she shows up in Kiltham Hospital’s ER. Whether Sophie and her mother persuaded Sophie’s grandfather to stop smoking I do not know, but my qualified guess is that the rabbit stayed on in the garage.
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Appendix 1 – Excerpt from HOSO Showing Two Entries

KILTHAM HOSPITAL
HOUSE OFFICER SIGNOUT
Thursday, October 10, 2000 06:56:12

10E MARIA JONES #123 8H1 10/07/00 48.8Kg 15 Yrs ATT: PATRICK INTERN: DONNA

PROBLEMS:
MCTD
MONONEURITIS MULTIPLEX
H/O PERICARDIAL EFFUSION
RIGHT INDEX FINGER CELLULITIS, ? OSTEOMYELITIS
RESTRICTIVE LUNG DISEASE
CHRONIC NEUROPATHIC PAIN

PROCEDURES:
NONE

MEDICATIONS:
PERCOCET 2 TABS PO Q 4 HRS
MS CONTIN 90 MG PO TID
PREDNISONE 10 MG PO BID
PROCARDA XL 30 MG PO QHS
PROZAC 20 MG PO QD
NEURONTIN 400 MG PO TID
COLACE 200 MG PO QHS
PCA-DILAUDID BOLUS 1 MG, LOT 7 MIN. CI 1.5 MG/HR, NO 4 HR LIMIT
VANCYMYCIN 1 G IV Q 12 HRS
CEFTAZIDIME 1.5 TV Q 8 HRS

ALLERGIES: NKDA

PLAN/ON CALL SCUT:
ID: On Ceftazidime and Vanco for R. index finger cellulitis and osteo
ID consulting
Hand Surgery (Dr. Cutter) to see
CV: stable, on CVR monitor echo today - no pericardial effusion h/o chest pain - resolved with pain meds.
Pain: On baseline meds plus Dilaudid PCA for mononeuritis multiplex Pain Service following.
Rheum: continue baseline meds. F/u SPA results.

PLAN/ON CALL SCUT: NONE

DISCHARGE CRITERIA: NONE

10E NORA ZAGGY #234 10/07/00 25Kg 6 Yrs ATT: PATRICK INTERN: DONNA

PROBLEMS:
RIGHT PERITONSILLAR ABSCESS
STREP THROAT

PROCEDURES:
P. NECK CT

MEDICATIONS:
TYLENOL 320 MG PO/PR Q4HR PRN
UNASYN 1.25 G IV Q 6 HR
CODEINE 12 MG PO Q 4 HR PRN
MORPHINE 1 MG IV Q 4 HR PRN WHEN NPO
MOTRIN 250 MG PO Q 6-8 HR PRN

ALLERGIES: NKDA

PLAN/ON CALL SCUT:
ID: Peritonsillar phlegmon - on day 3 Unasyn
Continue IV unasyn x 7-10 days due to size, location, and poor vascularity of mass.
Family to decide re: PICC line and home therapy
Coordinate with 9 West Continuing Care Nurse
CV: Continue CVR monitor at night
FEN: IVF at maintenance due to poor po's

PLAN/ON CALL SCUT: NONE

DISCHARGE CRITERIA: NON

BEGAN ENDED DATE
10/07/00

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## Appendix 2 – ER Temporary Note

**TEMPORARY NOTES**  
*Discard After Use.*  
*Not Part of Medical Record.*

<table>
<thead>
<tr>
<th>Time Seen</th>
<th>Condition on Arrival</th>
<th>Age</th>
<th>WT</th>
<th>T</th>
<th>P</th>
<th>R</th>
<th>BP</th>
<th>O/Sat</th>
<th>Comments</th>
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</table>

**CLINICAL NOTES**

- **PE**
  - Norm
  - Comments

- **Gen**
- **Head**
- **Eyes**
- **Ears**
- **Nose**
- **Mouth**
- **Throat**
- **Neck**
- **Lungs**
- **Chest**
- **Back**
- **Heart**
- **Abd**
- **Rectum**
- **Genit**
- **Ext’r**
- **Skin**
- **Neuro**
- **Psych**

**ARTS PROCEDURES**

- **Time ordered:**
  - Chest
  - US Abdomen
  - C-spine
  - US pelvis
  - Abdomen
  - CT head
  - Skull
  - CT abdomen
  - Extremity
  - Face/neck
  - Pelvis
  - Other:

**LABORATORY**

- **Hgb**
- **P**
- **L**
- **M**
- **Ht**
- **Pt**
- **Wt**
- **BUN**
- **Cr**
- **SGOT**
- **SGPT**
- **Bil**
- **Ptc**
- **Tc**
- **Cr**
- **Total**
- **Protein**
- **RBC**
- **WBC**
- **Plat**
- **Glu**
- **Prot**
- **B**
- **G**
- **pH**
- **pCO2**
- **pO2**
- **Bcarb**

- **Time ordered:**
  - O2 Sat

**CONSULT:**

- **Time ordered:**
  - Surg
  - Nurg
  - Ortho
  - Plastics
  - Neuro
  - Other:

**Additional Notes:**

<table>
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<tr>
<th>Discharge Time</th>
<th>Physician’s Name</th>
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Appendix 3A – ER Flowsheet (Medical) Page 1-2

<table>
<thead>
<tr>
<th>MECHANISM OF INJURY</th>
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<tbody>
<tr>
<td>MVC - PASSENGER VEHICLE</td>
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<tr>
<td>BURN</td>
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<tr>
<td>STRIKING OBJECT / PERSON</td>
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<tr>
<td>SPORT</td>
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<td>INJURY</td>
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<tr>
<td>FALL</td>
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<td>KNOCKED OVER</td>
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<td>STABBED</td>
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<td>LII</td>
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<td>OTHER</td>
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**ASSESSMENT**

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<tr>
<th>VITAL SIGNS</th>
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<th>INTERDENTAL</th>
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<tbody>
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**EXCEPTIONS / ADDITIONS**

**DIAGNOSIS**

Date/Time

**DISCHARGE**

1. Instruction sheet given
2. Prescription / medication reviewed
3. Access to medication: Yes No
4. Treatment / assignment explained: Yes No
5. Home care referral: Name of agency

**COMMENTS**

**RN Signature**
Appendix 3 B– ER Flowsheet (Medical) Page 3-4

### Intake

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<thead>
<tr>
<th>Time</th>
<th>A</th>
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<th>D</th>
<th>E</th>
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### Conscious Sedation Discharge Score

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<td>Respiration</td>
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<td>Coughing or command or crying</td>
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<td>respond to both verbal and physical stimuli</td>
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<td>Not responding or absence of protective responses</td>
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<td>Room Air Oxygen Saturation</td>
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<td>Total Score</td>
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</table>

### Discharge Observation Criteria

- **Ready for discharge**: > 9
- **Re-evaluate in 30 minutes**: 7-8
- **Continuous monitoring until stable**: ≤ 6

**Comments**: [Blank]
Appendix 4 A – Primary Clinic Encounter Sheet: 4-Month Check-up

HEALTH CENTER
Health Maintenance Visit
Four Months

Date: _____________________
Age: _____________________
Meds: _____________________
Allergies: _____________________

Parental Concerns:

Phone: _____________________

Development:
Follows 180° Y
Puts hands together/reaches Y
laughs Y
Responds to sound Y
Bears weight Y
Rolls over Y
Head up 90° prone Y
Parental concern about hearing? Y or vision? Y

Social Hx:
Living situation/caretakers
Resources/involved agencies
Insurance/economic issues
Other risks

Interim History:

Nutrition:
current diet

Elimination:

Additional History:

Physical Examination:
Ht cm/in % Wt kg/lb % BC cm/in %
Gen:
Skin:
Head:
Eyes:
ENT:
Chest:
Card:
Abd:
GU:
Extremities/musculoskeletal:
Neuro:

Assessment and Plan:

1. Anticipatory Guidance:
   Safety: __________ Car safety
   Falls ________ Burns prevention
   Name: ________ Other ________
   Immun: ________ Local management
   Parenting: ________ Stimulation

2. Immunizations:
   --- HPPD
   --- DTPa
   --- OPV/PPV
   --- Hib
   --- HIB

3. Referral:
   --- inter-institution referral
   --- Network Referral
   --- IC

4. Other: ________ T08
   ________ Other ________

Signature: _____________________
Signature: _____________________
Appendix 4 A – Primary Clinic Encounter Sheet: 10-13 Year Check-up

HEALTH CENTER
Health Maintenance Visit
Ten to Thirteen Years Old

Date: ____________________________
Age: ____________________________
Phones: ____________________________

Allergies: ____________________________

Parental Concerns:
Behavior/Risk Taking:
(?) Exposure to tobacco, alcohol, drugs, violence

Interim History:
Puberty/Sexuality History:

Nutrition/Sleep/Elimination:
Social/Family History:

Peer Relations:
Additional History:

School Performance:

Physical Examination:
Height cm/m
Weight kg/lb
BMI
Blood Pressure mmHg

Skin:

Head:

Eyes:

Ears:

Nose:

Neck:

Considerations:
Extremities/musculoskeletal:
Neuro:

Assessment and Plan:

1. Anticipatory Guidance:
   Safety:
   Bicycle and Sports Safety
   Drown
   Violence/Gang Fighting
   Risk Taking Behavior:
   Tobacco, Alcohol, drugs
   Injury Risks
   Fighting
   Primary:
   IL development, any questions?
   Nutrition:
   Healthy Diet
   Exercise:
   Sleep
   School/Social network
   Activities:
   Communication
   Like Setting
   Other:

2. Immunization:
   DPT
   MMR
   IPV/OPV
   Hib
   Others:
   Other

3. Screening:
   CBC
   Hgb
   Urinalysis
   Vital Signs
   Dental

4. Other:
   Referral
   Other
   Other
   Other

Signature ____________________________
Appendix 5 – ER Discharge Summary

KILTHAM HOSPITAL EMERGENCY DEPARTMENT

Last Name: JENSEN  
Medical Record ID#: 987  
Home Phone: 617-2530-1000  
PCP info not collected  

Sex: M  
DOB: /90  
Date of Service: 2/11/01 10A5 PM

11yo boy with ataxia telangetasia, now with blood per mouth and nose. 
Was c/o some abdominal pain all day. 
About 1 hour prior to arrival, had an episode of blood per nose and mouth.

Mom feels that he vomited blood as opposed to swallowing blood from a nose bleed.

PMH
hosp: ataxia-telangetasia at 5yo  
surg: none  
NKDA  
Meds: none

progressive ataxia-telangetasia. Wheelchair-bound.

PE:

APPEARANCE: Wasted  
HEAD: Normocephalic, atraumatic.  
EARS: TM's intact. Light reflex normal. No retraction or perforation.  
NARES: some crusted blood in little's area.  
THROAT: No tonsillar enlargement. No pharyngeal erythema or exudate. No stridor.  
CHEST: Lungs clear to auscultation.  
CARDIOVASCULAR: Normal S1, S2. No rubs, murmurs or gallops.  
RECTAL: heme neg, nl tone  
MENTAL STATUS: Patient alert, oriented, cooperative and conversant.

TREATMENT & COURSE:
WBC 4K  
HCT 39  
PLT 336  
IV placed. Clot sent to blood bank. NG placed and gastric lavage performed--no BRB.  
Coags sent.

DISPOSITION/PLAN: Admitted to hospital in stable condition.

ASSESSMENT:
r/o upper GI bleed

CPT-4:  
Level5:  
Status: Emergent

Electronically signed by:
Appendix 6 A – COPP Admission Sheet

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<th>MR #</th>
<th>AGE</th>
<th>DIAGNOSIS</th>
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<th>MD</th>
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DATE: __________

**TRANSPORTS**

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<th>MD</th>
<th>Hosp.</th>
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<th>End Call</th>
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<th>UNIT</th>
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Appendix 7 – Excerpt from Senior Note

LONG STAY

GENERAL PEDIATRICS TEAM

Wednesday, October 16, 2001

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<th>SENIOR RESIDENTS</th>
<th>INTERNS</th>
<th>MEDICAL STUDENTS</th>
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<tr>
<td>Lucy #124</td>
<td>Oscar #343</td>
<td>Student 1. #89</td>
<td>Patrick, M.D. (ASSN)</td>
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<tr>
<td>Senior #1193</td>
<td>Donna #129</td>
<td>Student 2. #87</td>
<td>Att. Law, M.D. (Teaching)</td>
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<tr>
<td>Senior #1268</td>
<td>Gabriel #433</td>
<td>Student 3 #43</td>
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<tr>
<td>Senior #1556</td>
<td>Joe #987</td>
<td>Student 4 #34</td>
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7:30 am  Work Rounds  10E Conference Room  253-4931
9:30 am  Radiology Rounds  10E Ward  253-8931
10:00 am  Senior Rounds  10E Fax  253-9318
Tuesday  12:00 pm  Team Rounds  GPA Senior Call Room  E53-598
Friday  12:00 pm  MOC Conference

4S MIKE 725 RHEUM Oscar 15 yo SLE, worsening BUN/Cr, left foot pain, diarrhea
4S PAUL 272 PHA Gabriel 13 mo former 32 weeker triplet with bronchiolitis
4S FORREST 209 ASSN Gabriel 11 wk old with Salmonella bacteremia
4S NATALIA 121 RHEUM Donna 15 yo MCTD, LLL pneumonia
4S SEAN 234 HEME Jennifer 14 yo Hgb SS, VOC (necklabd pain)
4S JEAN 345 HEME Gabriel 7 yo Hgb SS, abdominal VOC, ACS, s/p ICU exchange
4S ANNA 456 ASSM Oscar 11 yo with suicidal ideations, hx of depression.
10E VIRGINIA 566 ASSN Gabriel 10 yo viral meningitis
10E SHARON 667 ASSN Donna 12 do UTI, persistent fever, leukocytosis
10E DEDE 677 HPHC Donna 3 yo cervical adenitis
10E NOAH 765 PHA Gabriel 11 month fever, tachypenea, ? acidosis
10E MARIA 678 ASSN Gabriel 5 mo RSV+ bronchiolitis, s/p ETT x 1, P5 transfer
10E GABRIEL 876 PHA Oscar 5 mo RSV+ bronchiolitis, s/p ETT x 3, P5 transfer
10E JOE 763 PHA Gabriel 2 month old vomiting/cough, hx of FFT
10E HUGO 767 ASSN Gabriel 3 mo Trauma X, shaken-baby syndrome
9E MARCY 924 HVMA Gabriel 4 wk mild bronchiolitis, murrmor, social
9E VIENNA 655 IMMUNO Oscar 8 yo ataxia telangietasia, pulmonary AVMs, hypoxia
11E LIN 881 ARMS Donna 9 do conjunctivitis, r/o sepsis
11E DEBEORA 200 ASSN ? Gabriel 6 mo bronchiolitis
11E LOTTE 255 ASSN Donna 7 do r/o sepsis
11E GRAHAM 670 ASSN Jennifer 3 yo RML pneumonia, first RAD exacerbation
11E KAMPALA 980 PHA Gabriel 8 y/o HSV vaginitis
PB SEENAA 907 HEME Jennifer 15 yo Hgb SS, abdominal VOC, NO study

------- 4S -------

MIKE 725 RHEUM 9/12 Oscar 15 yo SLE, BUN/Cr up, left foot pain, D
15 year old with 4 year h/o SLE complicated mainly by Class III-IV nephritis and secondary hypertension requiring multimodal antihypertensive therapy, presents now with increasing fatigue, leukopenia, left foot pain, diarrhea x1 week, rising BUN/Cr (100/3; baseline 50/1.9). Afebrile, BP's stable. Meds: Plaquenil, Prednisone, Cellecept (S.E.: diarreha, bony pain), Zaroxylin, Cozaar, Lasix, Clonidine, Norvasc, Hyrdalazine, Propranolol, Zantac, NaHC03. Rheum: Hold Cellept for now until issue is clarified. Continue remainder of anti-inflammatories. To start stress dose steroids 11/14. Hold steroid pulse for now. Renal: Consult felt etiology of rising BUN/Cr was prerenal secondary to diarrhea. No evidence of any active glomerular sediment on U/A. Re-started clonidine. If BP trends up restart Cozaar next. ID: Afebrile, no antibiotics presently. Urine cultures pending for ? dirty U/A on admission. Repeat U/A 11/14 trace WBC enz, negative nitrates. Hemo: ALC increaseing after stopping Cellecept. ANC, however, falling for unclear reasons. GI: Diarrhea ? secondary to Cellecept vs. lupus vasculitis vs. infection. KUB 11/13 revealed bowl wall edema. Multiple stool studies as per GI pending, guaic negative. Diarrhea resolved. Ortho: Will image left foot (2nd /3rd MTP joints) with MRI 115 (need to arrange). Dispo: Anticipate discharge home 11/15 or 11/16.
PAUL #272 PHA 10/15 Gabriel 13 mo 32 weeker triplet, bronchiolitis
13 month former 32 weeker triplet (no chronic lung disease, not intubated) with increased WOB, RR in setting of 2-3 days of URI symptoms, rhinorrhea, and sick contacts with URI's. Required Epinephrine nebs x2 in ED secondary to persistent moderate to severe respiratory distress (RR 70s, hypoxemia) despite Albuterol nebs. CXR hyperinflated c/w bronchiolitis, no infiltrates. POing well. Resp: 02 prn, Epinephrine nebs prn (works well on her), NP aspirate for RSV pending (if negative, consider steroids). FEN: POing well, no IV in place presently Dispo: Anticipate d/c home by 10/17 or 10/18

FORREST #209 ASSN 10/15 Gabriel 7 mo Salmonella bacteremia
Almost 3 month old with Salmonella enteritis and bacteraemia. Almost 2 weeks of cough, rhinorrhea, and frequent watery nonbloody diarrhea, seen several times by PMD and ER, dx with bronchiolitis and gastroenteritis. At visit to PMD (Roth) approx 1 week prior, stool cx sent, eventually growing Salmonella. Patient call back to Roth, blood cx sent, and patient begun on amox for ???? On day of admission, blood cx positive for Salmonella, and patient called back to ER. Overall, cough and diarrhea appear to be improving, although patient developed new fever to 102 afternoon prior to admission. No vomiting, eating well. No hx of immune supression, full term with uncomplicated delivery. Looks well on floor. ID: cefotaxime, follow cx at Carney for sens, follow blood and urine cx here. Resp: monitor VS.

NATALIA #212 RHEUM 10/14 Donna 15 yo MCTD, LLL pneumonia
15 yo female with h/o MCTD, mononeuritis complex, h/o pericardial effusion, h/o severely compromised perfusion of her fingers, h/o left index finger amputation, recently discharged from KH on 10/11 with right finger cellulitis and osteomyelitis on PO levofloxacin and flagyl. Presented to the ER with SOB, tachypnea and left pleuritic chest pain much worse than her baseline. 2 days fever Tm 103.4, non productive cough. Today had increased WOB. In Clinic, noted to be tachypneic, however 02 sat on room air was 100%. ABG (RA) 7.47/31/88/22/97%. CBC with WBC 4.7. CXR showed a ? LLL infiltrate. Exam notable for rales and crackles in left lung field. Patient given Ceftriaxone in the ER. Patient was also c/o continued pain right index finger. Pain service consulted and recommended MS04 PCA in the ER. Rheum: Hold prednisone. Started stress dose steroids 10/14. ID: Started on IV Zosyn for pneumonia. ID consulted to determine antibiotics. Needs cultures if spikes (none sent in ED). Ortho: Hand surgery (Dr. Cutter) called to re-evaluate finger. Pain: Continued on her NIS Contin with MS04 PCA as needed. Card: Question of gallop on exam, cardiology felt was loud P2, no need for Echo.

SEAN #234 HEME 10/15 Jennifer 14 yo Hgb SS, VOC (neck/abd pain)

JEAN #345 ASSN 10/15 Gabriel 11 yo pysch, awaiting placement
11 yo with hx of DHDA and several months of depression in context of numerous social stressors, now with 1 week of escalating behaviors and self-harm and suicidal statements. Sent by teacher to ER for medical clearance. Well-appearing in ER, VS normal, serum/urine tox negative. Seen by psych and GOOD team, awaiting placement.

VIRGINIA #387 ASSN 10/15
10 yo male vomiting, headache x 3 days. Seen in ED 2 days earlier, lytes/KUB ok; then HA, ? fight hand cramping; head CT with mild ventricular enlargement 4 neurosurgery, no intervention. WBC 26.8, 83P/2B. Ibuprofen with improvement, d/c
Appendix 8 A – Nurse Management Plan

MANAGEMENT PLAN - PART 1

Date Written: Parent/Legal Guardian:  
Allergies: Telephone #:  
Communication Plan:  

Concise History

Primary Nursing Team

Physicians:  
Consultants:  
Community Agencies:  

NURSING / PHYSICIAN ORDERS

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</table>

Vital Sign Frequency  
Temp  
Pulse/Resp  
BP  
WT  

Call HO for:
Checks  
Intake  

Patient's Name  
Age  
Date Admitted  
House Officer/Service  
Diagnosis
Appendix 9 – SSU Discharge Summary

Kiltham Hospital

DISCHARGE SUMMARY

PATIENT NAME: 
ATTENDING PHYSICIAN: Dr. PAUL DREIER
MEDREC#: DISCHARGED: 04/22/01

ADMITTED: 04/20/01

HOUSE OFFICER: DONNA

ADMITTING DIAGNOSIS: PERITONSILLAR CELLULITIS
PRINCIPAL DIAGNOSIS: PERITONSILLAR CELLULITIS
SECONDARY DIAGNOSES: NONE

DISCHARGE CONDITION: IMPROVED
DISCHARGE CONDITION: IMPROVED
DISCHARGE CONDITION: NONE

PRINCIPAL PROCEDURE: ASPIRATE ATTEMPTED

COMPlications:
NONE

SUMMARY OF HOSPITAL COURSE:

This patient is a 13-year old female who was previously well, with a one-day history of sore throat and difficulty swallowing, followed by an inability to handle secretions. Her exam was remarkable for a temperature of 38.2, oxygen saturation of 100%, bilateral tonsillar enlargement and exudate (right greater than left) and swelling of the uvula. She also had right submandibular and anterior cervical tender adenopathy without overlying erythema. Her labs were remarkable for a white blood cell count of 17.7 with 84% neutrophils. A rapid strep was positive. Otorhinolaryngology was consulted and attempted to aspirate the tonsillar area without success. She was admitted and begun on IV clindamycin and given IV fluids as well. On hospital day 2 she had decrease in pain and was able to eat and drink well. At the time of discharge she was nearly pain free, taking excellent oral intake, afebrile.

DISCHARGE DISPOSITION: ROUTINE DISCHARGE

DIET: AS TOLERATED

LISTED ALLERGIES: NONE LISTED

MEDICATIONS
CLINDAMYCIN
450 MG PO Q 8 HOURS X 8 DAYS

SPECIAL INSTRUCTIONS:
If your start to have worsening pain, fevers, or are unable to take fluids in please call your doctor.

TESTS PENDING AT DISCHARGE:
NONE

CONSULTATION:
NONE

REFERRING/PRIMARY CARE PHYSICIAN

DISCHARGING HOUSE OFFICER: (BY ELECTRONIC SIGNATURE 04/22/01)
Authenticated by the electronic signature of Paul Dreier, M.D. on 04/26/01
**Appendix 10 – ER Admission Sheet**

Fax to: ___________________________ Service: ___________________________

Admitting Diagnosis: ___________________________ Age: _____ Wt: _____ Ht: _____


Allergies: ___________________________ Allergy bracelet: N Y ID bracelet: N Y

Precautions: N Y Interpreter: N Y

Exposures to: Varicella □ Measles □ Tb □ Immunizations: UTD □

Other: □ ___________________________ Comments: ___________________________

Crib: N Y Infant: Can't get out: N Y Bed: Monitor: N Y

0₂: N Y Mist tent: N Y Baseline Loc: ___________________________

Triage: T _______ P _______ RR _______ BP _______ 0₂ Sat: _______

Presenting Problem: ___________________________

PMH (Sz History, Psych Hx, etc.): ___________________________ IV: N Y

Size/site: ___________________________ Bolus: N Y Amt: ___________ Maintenance Fluid: ___________

Rate: _______ Dx tests results: ___________________________

Drug Levels: ___________________________

Procedures: ___________________________

CS: ___________________________ CSF: _______

Chem: ___________________________ Clot: _______

Hct: ___________________________ WBC: _______

Htg: ___________________________ PT/PTT: _______

Meds given: ___________________________

RBC: _______ U/A: _______ Other: _______

Most recent time: _______ T _______ P _______ RR _______ BP _______ 0₂ Sat _______

Expected arrival time: ___________________________ Call if problems ext: ______

RN: ___________________________ Date: ___________________________ Time: ___________________________

Person Notified of Fax: ___________________________

283
## Appendix 11 – ER Expect Sheet

**EXPECT**  
**EMERGENCY DEPARTMENT FORM**  
**AMBULANCE CALL RECORD**

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**Patient's Name:**  
**Age:**

**Medical Record #:**  
**Authorization #:**

**Referring person:**  
**Telephone/Beeper #:**

**Hx/PE:**

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**Radiology:**

- [ ]

**Treatment given:**

- [ ]

**Treatment plan:**

- [ ]

**CATEGORY:**

- [ ] **ROUTINE**
- [ ] **TRAUMA ALERT**
- [ ] **TRAUMA STAT**

- [ ] Call back requested:  
- [ ] Only if admitted:  
- [ ] Only if problem:

**Time:** a.m. / p.m.  
**Call taken by:**