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What a Difference a Name Makes—The Classification of Nursing Work

It's not always suitable to view work as production of information.
(Bjerknes and Bratteteig 1987a, 323)

Introduction: How Work Classifies and Classification Works

To this point, the book has looked largely at the classification of diseases, patients, and of race—entities that are often (highly problematically, as we have seen) claimed to be natural kinds. This chapter and the next are concerned with entities generally seen as social kinds—units of nursing work.[35] Work classification systems are central to the management of a wide range of enterprises: and, we argue, their development is a contested site of great political significance.

Large information systems such as the Internet or global databases carry with them a politics of voice and value that is often invisible, embedded in layers of infrastructure. The "politics of artifacts" of a nuclear bomb or a genetically reengineered organism are more available for public debate then those of information interchange protocols or how insurance data are encoded. Yet these latter decisions and standards may affect markets, differential benefits from particular technologies, and the visibility of constituencies, among other important public goods (Kindleberger 1983). They are important in organizing work, and they are often used explicitly as vehicles for professional and organizational transformation, via accounting and legitimization processes. They appear, as parts of accounting schemes, in technologies of organizational change such as business process reengineering and total quality management; in addition to record-keeping and accounts, they also classify people and their importance in organizations.

For several years we have been investigating this quiet politics of voice, work, and values in information infrastructure, seeking to clarify

how it is that values, policies, and modes of practice become embedded in large information systems. This chapter focuses on a classification system directed at nursing work and develops some theoretical notions about the relationship among classification, information systems, work, and organizations. Here we primarily take the point of view of design: what are the problems designers of the system face from their constituencies? The next chapter touches on the implementation of the system in various field sites and its direct impact on nursing work. Here, we examine the upstream dilemmas. These are similar to dilemmas faced by many designers of information systems in a range of application domains.

How does one make a successful, practically workable classification scheme of work practice? The problem of how to produce any classification scheme is an old one in the philosophy of knowledge, from Occam's razor to Quine's objects. Blurring categories means that existing differences are covered up, merged, or removed altogether; while distinctions construct new partitions or reinforcement of existing differences. This mutual process of constructing and shaping differences through classification systems is crucial in anyone's conceptualization of reality; it is the core of much taxonomic anthropology.

The case studies in Douglas and Hull (1992) point to the ways in which a category can be nonexistent (distributed out of existence) until and unless it is socially created. Thus Hacking (1992) talks about the creation of "child abuse" during this century. He argues that it is not that there was nothing in the nineteenth century that we would now call child abuse. Rather, that category per se did not exist then and so tended to go by a disaggregated host of other names.

Once the category was declared a legal and moral one at a particular historical juncture, it could be entered into the historical record (with much the same problematics as with AIDS). Another consequence follows from the canonization of a category: people then socialize themselves to the attributes of the category. Thus, people who abused children could now learn socially how to be a child abuser and what attributes in themselves they might identify as such. Reports in the media would teach them what was expected of the abuser personality. This is similar to Becker's analysis of how to become a marijuana user and what it takes to learn to read the signs of being stoned (1953–54). Naïve users must be taught to read their bodily signs to become intoxicated. Another similarity may be found in how UFO abductees

shape their experience to fit the general cultural consensus about flying saucers and medical experiments.

The result of the change in category, and its place in social order, is a shifting of balances of distinctions, a change in the architectural relationships. Every newly constructed difference, or every new merger, changes the workability of the classification in the ecology of the workplace. As with all tools and all knowledge, such classification schemes are entities with consequences, to be managed, negotiated, and experienced all at once.

"Difference"—distinctions among things—is the prime negotiated entity in the construction of a classification system. Differences enter the work stream in a subtle and complex fashion. The practices to be classified do not disappear with new classification schemes. The *work* of categorizing itself, however, may cause shifts that in turn present challenges to the designers of the scheme (faced with decisions about how fine-grained it should be), to users (filling out forms and encoding diagnoses), and consumers (assessing the viability of the scheme). In this process, work itself is neither created nor destroyed, yet may be radically reshaped to fit into the emerging matrix. The larger contexts within which these classification shifts occur commonly include professionalization, automation, and informatization, and the creation of international research and recordkeeping procedures.

There are three main areas of challenge in crafting a classification scheme that will fit the work stream and agendas created by these larger contexts:

1. *Comparability.* A major purpose of a classification system is to provide good comparability across sites to ensure that there is a regularity in semantics and objects from one to the other, thus enhancing communication. If "injection" means giving medication by needle in one country and by suppositories in another, for example, there is no use trying to count the number of injections given worldwide until some equivalence is reached by negotiation. The more intimate the communication setting, the less necessary are such negotiations for a variety of reasons, including that they may already exist historically or by convention; or they are more private and less subject to regulatory scrutiny.

2. *Visibility.* How does one differentiate areas of work that are invisible? While they are invisible, they are by definition unclassifiable except as the residual category: "other." If work "just gets done"

according to some, it has found no voice in the classification scheme. Invisibility is not only erasure, though, on this view; it can come from intimacy, as with a team that has worked together for so long they no longer need to voice instructions or classify activities.

3. *Control.* No classification system, any more than any representation, may specify completely the wildness and complexity of what is represented. Therefore any prescription contains some amount of control to be exercised by the user, be it as small as in the most Taylorist factory or prison or as large as the most privileged artists' retreat. Control, like visibility, has good and bad elements, depending on one's perspective. Freedom trades off against structurelessness. The ability to exercise a wide range of judgment is worthwhile only if one has the power and resources to do so safely and effectively. Too much freedom for a novice or a child may be confusing or may lead to breakdowns in comparability across settings, thus impairing communication. Judgment about how differentiated to make the classification must take due consideration of this factor. This balance can never be fully resolved (as novices and strangers are always entering the field of work); the managerial trick is to measure the degree of control required to get the job done well, for most people, most of the time.

From the point of view of design, the creation of a perfect classification scheme ideally preserves common-sense control, enhances comparability in the right places, and makes visible what is wrongly invisible, leaving justly invisible discretionary judgment. It has, simultaneously, intimacy (in its detailed knowledge of the nuances of practice), immutability-standardization, and is manageable. A manageable work classification system works in practice, is not too fine-grained or arcane in its distinctions, and it fits with the way work is organized. It is standard enough to appear the same in every setting and is stable over time as well.[36] Intimacy means that the system acknowledges common understandings that have evolved among members of the community.

Such a perfect scheme, however, does not exist. In the real world, these areas trade off against each other. Maximizing visibility and high levels of control threaten intimacy; comparability and visibility pull against the manageability of the system; comparability and control work against standardization. For a classification system to be standardized, it needs to be comparable across sites and leave a margin of control for its users; however, both requirements are difficult to fulfill simultaneously. A manageable classification system (for whomever)

does not only require that the system classifies the same things across sites and times but also that it uncovers invisible work; this affects the recording of data. The combination of these two thus requires compromise. Finally, to keep a level of intimacy in the classification system, control is a trade-off against the requirement to make everything visible. These trade-offs become areas of negotiation and sometimes of conflict.

Because one cannot optimize all three parameters at once to produce simultaneously perfect degrees of intimacy, manageability, and standardization, a real-life classification scheme encompasses a thorough, pragmatic understanding of these trade-offs in their historical context. It places them in the work stream. Here we now situate this process in our observations of the building of a classification system in progress, the Nursing Interventions Classification (NIC).

The Nursing Interventions Classification

NIC itself is a fascinating system. Those who study it see it as an elegant ethnographic tool. Some categories, like "bleeding reduction—nasal," are on the surface relatively obvious and codable into discrete units of work practice to be carried out on specific occasions. But what about the equally important categories of "hope installation" and "humor" (see figures 7.1 through 7.3)?

Here we look further into the category of humor in NIC. The very definition of the category suggests the operation of a paradigm shift from work as punctual activity to work as process: "Facilitating the patient to perceive, appreciate, and express what is funny, amusing, or ludicrous in order to establish relationships. . . ." It is unclear how this could ever be attached to a time line: it is something the nurse should always do while doing other things. Further, contained within the nursing classification are an anatomy of what it is to be humorous and a theory of what humor does. The recommended procedures break humor down into subelements. One should determine the types of humor appreciated by the patient; determine the patient's typical response to humor (laughter or smiles); select humorous materials that create moderate arousal for the individual (for example "picture a forbidding authority figure dressed only in underwear"); encourage silliness and playfulness, and so on. There are fifteen subactivities, any one of which might be scientifically relevant. A feature traditionally attached to the personality of the nurse (being a cheerful and

Airway Management 3140

DEFINITION: Facilitation of patency of air passages

ACTIVITIES:

Open the airway, using the chin lift or jaw thrust technique, as appropriate

Position patient to maximize ventilation potential

Identify patient requiring actual/potential airway insertion

Insert oral or nasopharyngeal airway, as appropriate

Perform chest physical therapy, as appropriate

Remove secretions by encouraging coughing or suctioning

Encourage slow, deep breathing; turning; and coughing

Instruct how to cough effectively

Assist with incentive spirometer, as appropriate

Auscultate breath sounds, noting areas of decreased or absent ventilation and presence of adventitious sounds

Perform endotracheal or nasotracheal suctioning, as appropriate

Administer bronchodilators, as appropriate

Teach patient how to use prescribed inhalers, as appropriate

Administer aerosol treatments, as appropriate

Administer ultrasonic nebulizer treatments, as appropriate

Administer humidified air or oxygen, as appropriate

Regulate fluid intake to optimize fluid balance

Position to alleviate dyspnea

Monitor respiratory and oxygenation status, as appropriate

BACKGROUND READINGS:

Ahrens, T.S. (1993). Respiratory disorders. In M.R. Kinney, D.R. Packa, & S.B. Dunbar (Eds.), AACN's Clinical Reference for Critical-Care Nursing (pp. 701-740). St. Louis: Mosby.

Suddarth, D. (1991). The Lippincott manual of nursing practice (5th ed.) (pp. 230-246). Philadelphia: J.B. Lippincott.

Thelan, L.A., & Urden, L.D. (1993). Critical care nursing: Diagnosis and management (2nd ed.). St. Louis: Mosby.

Titler, M.G., & Jones, G. (1992). Airway management. In G.M. Bulechek & J.C. McCloskey (Eds.), Nursing Interventions: Essential Nursing Treatments, (2nd ed.) (pp. 512-530). Philadelphia: W.B. Saunders.

Figure 7.1
Airway management, NIC. Helping the patient to breathe, including using breathing technologies and medications.
Source: *NIC,* second edition.

Spiritual Support 5420

DEFINITION: Assisting the patient to feel balance and connection with a greater power

ACTIVITIES:

Be open to patient's expressions of loneliness and powerlessness

Encourage chapel service attendance, if desired

Encourage the use of spiritual resources, if desired

Provide desired spiritual articles, according to patient preferences

Refer to spiritual advisor of patient's choice

Use values clarification techniques to help patient clarify beliefs and values, as appropriate

Be available to listen to patient's feelings

Express empathy with patient's feelings

Facilitate patient's use of meditation, prayer, and other religious traditions and rituals

Listen carefully to patient's communication, and develop a sense of timing for prayer or spiritual rituals

Assure patient that nurse will be available to support patient in times of suffering

Be open to patient's feelings about illness and death

Assist patient to properly express and relieve anger in appropriate ways

BACKGROUND READINGS:

Fehring, R.J., & Rantz, M. (1991). Spiritual distress. In M. Maas, K. Buckwalter, & M. Hardy (Eds.), Nursing Diagnoses and Interventions for the Elderly (pp. 598-609). Redwood City, CA: Addison-Wesley.

Guzetta, C.E., & Dossey, B.M. (1984). Cardiovascular nursing: Bodymind tapestry. St. Louis: Mosby.

Thompson, J.M., McFarland, G.K., Hirsch, J.E., & Tucker, S.M. (1993). Clinical nursing (3rd ed.) (pp. 1637-1640). St. Louis: Mosby.

Figure 7.2
Spiritual support, NIC. Intervention for patients in spiritual distress.
Source: *NIC,* second edition.

supportive person) is now attached through the classification to the job description as an intervention that can be accounted for.

The Iowa group, who are mainly teachers of nursing administration and research, made essentially three arguments for the creation of a nursing classification. First, it was argued that without a standard language to describe nursing interventions, there would be no way of producing a scientific body of knowledge about nursing. NIC in theory would be articulated with two other classification systems: the nursing sensitive patient outcomes classification scheme (NOC) and the nursing diagnosis scheme (NANDA). NOC is a complex classification system in its own right. Since the medical profession has assumed

Humor 5320

DEFINITION: Facilitating the patient to perceive, appreciate, and express what is funny, amusing, or ludicrous in order to establish relationships, relieve tension, release anger, facilitate learning, or cope with painful feelings

ACTIVITIES:

Determine the types of humor appreciated by the patient

Determine the patient's typical response to humor (e.g., laughter or smiles)

Determine the time of day that patient is most receptive

Avoid content areas about which patient is sensitive

Discuss advantages of laughter with patient

Select humorous materials that create moderate arousal for the individual

Make available a selection of humorous games, cartoons, jokes, videos, tapes, books, and so on

Point out humorous incongruity in a situation

Encourage visualization with humor (e.g., picture a forbidding authority figure dressed only in underwear)

Encourage silliness and playfulness

Remove environmental barriers that prevent or diminish the spontaneous occurrence of humor

Monitor patient response and discontinue humor strategy, if ineffective

Avoid use with patient who is cognitively impaired

Demonstrate an appreciative attitude about humor

Respond positively to humor attempts made by patient

BACKGROUND READINGS:

Buxman, K. (1991). Make room for laughter. American Journal of Nursing, 91(12), 46-51.
Kolkmeier, L.G. (1988). Play and laughter: Moving toward harmony. In B.M. Dosseyk, L. Keegan, C.E. Guzetta, & L.G. Kolkmeier (Eds.), Holistic Nursing: A Handbook for Practice (pp. 289-304). Rockville, MD: Aspen.
Snyder, M. (1992). Humor. In M. Snyder (Ed.), Independent Nursing Interventions (2nd ed.) (pp. 294-302). Albany: Delmar Publishers.
Sullivan, J.L., & Deane, D.M. (1988). Humor and health. Journal of Gerontological Nursing, 14(1), 20-24.

Figure 7.3
Humor, NIC. Cheering up patients—an important part of caring work.
Source: *NIC*, second edition.

responsibility for the cure of diseases, the nurses have to measure more the speed of the cure and the quality of life during the hospital visit and after release (for example, whether patients understood how to deal with the consequences of their bypass surgery).

The three systems could work together in the following fashion. One could perform studies over a set of hospitals employing the three schemes to check if a given category of patient responded well to a given category of nursing intervention. Rather than this comparative work being done anecdotally, as in the past through the accumulation of experience, it could be done scientifically through the conduct of experiments. The Iowa Intervention Project made up a jingle: NANDA, NIC, and NOC to the tune of "Hickory, Dickory, Dock" to stress this interrelationship of the three schemes.

The second argument for classifying nursing interventions was that it was a key strategy for defending the professional autonomy of nursing. The Iowa intervention team is aware of the literature on professionalization—notably Schön (1983)—and of the force of having an accepted body of scientific knowledge as their domain. Andrew Abbott (1988), taking as his central case the professionalization of medicine, makes this one of the key attributes of a profession.

The third argument was that nursing, alongside other medical professions, was moving into the new world of computers and networked information technology. As the representational medium changed, it was important to be able to talk about nursing in a language that computers could understand, else nursing work would not be represented at all in the future. It would risk being even further marginalized than it is at present.

The empirical material for this analysis consists of all the minutes of NIC team meetings and publications of the NIC group since 1987; eighteen open-ended, in-depth interviews with principal investigators, coinvestigators, and research associates; and observations of team meetings.

Infrastructure and Organizations

There is no simple way to tell the story of the complex theoretical and practical work that goes into the development of an information infrastructure. Star and Ruhleder (1996) argue that an infrastructure has several key properties. Their relationship to NIC is detailed here:

- *Embeddedness* ("it is 'sunk' into other structures"). NIC is embedded into various information practices and tools that are used by hospitals and insurance companies for costing and coding reimbursements and by medical librarians for accessing medical literature. NIC is used in clinical decision-making software, hospital accounting systems, and nursing information systems.
- *Transparency* ("it is ready to hand and does not have to reinvented each time"). NIC is oriented to standard scientific and working practical knowledge and to being ready to hand for the practitioner. Instead of applying idiosyncratic or new labels to diseases, practitioners are asked to turn to classification systems to fill out forms, assign values, and compare results.[37]
- *Having reach or scope* (it is not a "one-off event or one-site practice"). NIC aims to cover U.S. nursing with a slow growth currently into the European and Asian nursing communities. Interest in adapting it has been shown by groups of social workers, occupational therapists, and pharmacists.
- *It is learned as part of membership* ("associated with communities of practice"). NIC is increasingly present in nursing education programs. Because of the ways in which it is propagated, it is closely tied with what it means to *be* a nurse.
- *It is linked with conventions of practice* ("both shapes and is shaped by the conventions of its communities of practice"). For NIC, the informatic conventions are young, but a key design issue is its fit with the conventions of nursing practice. One aspect of NIC user meetings is the developer's insistence that NIC integrate with work practice, and that NIC users share common conventions concerning the system's use. They are currently encouraging the development of clusters of interventions (invisible to the classification system) to represent local practice at specific institutions, for example, at nursing homes.
- *Multifunctionality* ("As with electricity, supports several functions"). NIC supports a wise range of functions, from data collection and basic epidemiological research to accounting by insurance firms and legitimization of work practices. These definitions are touchstones to order discussion here and to help guide the construction of a useful model for organizational analysis. Although there is a rich body of research on computerization, impact, values, and work-place politics, as yet theories of information infrastructure and its evolution, meaning, and values implications are not well developed.

Over the years many innovative applications in information technology have failed due to insufficient consideration of the projected users. When developing new information infrastructures, however, the scope of usage is murky. Users may not know, prior to experience, what they want from the new system and how they will use it. The success of France's Minitel Rose is a prime example where, much to the designers' surprise, personal and pornographic messages and not official information sold the system (Taylor and Van Every 1993). As noted in chapter 3, the work of being a classical Greek scholar has changed with the advent of the Thesaurus Linguae Graecae. The ability to produce concordances on the fly makes previous laborious library work, which had to be carried out over two or three continents, the work of a few minutes. This means that new kinds of questions may, indeed must, be asked of the material the researcher is looking at (Ruhleder 1995). Secretaries now do much less copy typing and professionals do more—the result of a pincer movement between the development of new management philosophies and new information technology. New infrastructures do more than support work that is already being done. They change the very nature of what it is to do work, and what work will count as legitimate.

In this sense, NIC is an actively developing infrastructure. It is fed into a clinical decision support system, directs nurses on which activities to perform, and becomes part of hospital accounting systems. It lays claim to a professional territory for nursing; used as part of ongoing research and teaching programs, current nursing interventions (fluctuating at present) become stabilized. Since research is built around these categories, a feedback loop is set up that stabilizes the current set. (A similar set of events were seen in the development of the international classification of diseases (ICD) in chapter 4.) Political, cultural, ethical, social, religious, economic, and institutional factors each play a role in NIC's development. Thus, for example, the definition of stillbirth has been a site of conflict among states with different religious constituencies; and epidemiologists argue that it is still highly variably diagnosed depending on the beliefs of the attending physicians. Similar coding problems have been documented in the case of AIDS and its associated illnesses, especially during the early 1980s (see Verghese 1994 for a wonderfully compassionate physician's view of the situation).

With NIC, as with the ICD, apparently precise, measurable qualities often prove much fuzzier when looked at closely. And yet as classification systems they present knowledge in a form that is transportable

and usable in a wide range of different infrastructural technologies—databases, decision support systems, and so forth. They are complementary, in that NIC concentrates on work practice-information technology and the ICD on information technology-domain specific knowledge (although clearly all three factors are significant for each). NIC is associated with the traditionally "invisible work" which is often gender and status-linked (Star 1991a), while the ICD is linked with highly visible medical knowledge—yet each are being merged into seamlessly integrated infrastructures.

There is a close relationship among inscriptions, work practice, and standards, as Bruno Latour's work demonstrates. As seen in chapter 2, Latour in *Science in Action* (1987) developed the concept of *immutable mobiles* to explore the ways in which scientific knowledge travels from a local, messy field site into the laboratory and out into textbooks. The development of NIC displays the force of both of his analytic points: indeed the work of holding classifications stable and enrolling allies in their use has been central.

Equally important are notions of accounting and quantifying as forms of social order. Foucault's work on "governmentality" (Porter 1994) discusses the rise of statistics as a new mode of government; and following this, Ewald (1986) examined the rise of the welfare state as a form of government of the body and soul. A similar theme arises in the work of Rose (1990), whose argument that accounting systems reflect a moral order and help define the self has been widely adopted in critical social studies of accounting (see, for example, the journal *Accounting, Management and Information Technologies;* Boland and Day 1989; Boland and Hirscheim 1987). Central here is the recognition that statistics and other numbers, invariably based on classification systems—and recognized by WHO and the NIC designers as a key product of their own systems, are socially and politically charged.

The case of NIC is used here to discuss the three dimensions of work classification systems that form pragmatic challenges for designers and users: comparability, visibility, and control.

Comparability: The Need for Standard Descriptions in Research

The construction of a nursing interventions classification implies a drive to abstract away from the local, the particular—to make nursing the same entity wherever it may appear. Ideally, local terminology and the idiosyncrasies of each ward and each staff nurse should change

> ***Intimacy and Language***
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> A man and a woman sit in a kitchen. It is early in the morning. He is reading the newspaper intently; she is putting away last night's dishes and preparing breakfast. She pours a cup of coffee and puts it in front of him, carefully avoiding the angle of turning of the newspaper pages. After a moment, he takes a sip of the beverage. "Cold." From this single word, she infers the following: he is still angry over the squabble they had last night; he is feeling apprehensive about his upcoming work review; the dinner they ate together that precipitated the squabble sat heavily on his stomach, and he slept less well than usual. Correctly, she predicts that he will be a little snippy with his secretary in the office and forget to bring his second cup of coffee in the car with him on the way to work, a practice he has recently adopted. This omission will result in a late-morning headache. Psychologist Gail Hornstein analyzes this snippet of conversation as a means to understanding the relationship between intimacy and language. The more intimate the relationship, the more seemingly telegraphic may language become with no loss of meaning.[38]

immediately through an adoption of NIC in hospital administration. Those making the classification examine variability to either eliminate or translate it across settings. This is the strategy of moving toward universality: rendering things comparable, so that each actor may fit their allotted position in a standardized system and comparisons may be communicated across sites.

For the nursing interventions classification, the drive to erase the particular and communicate equivalents is apparent in several strategies the group adopts to further their cause. The developers consider NIC a basis for curriculum development: they reason that only with a complete classification system can one guarantee thorough, standardized, and cross-site comparability in professional training. NIC is being integrated into model course development efforts at Iowa and elsewhere. The basic interventions are part of undergraduate nursing curricula, while the more advanced interventions will be taught to master's students. But NIC is ultimately as well a standardized language for comparability. As one respondent said "The classification is an aspect that makes it a tool, more useable, but it is the standardized language that is really critical." According to the NIC researchers, "a standardized language for nursing treatments is a classification about nursing practice that names what nurses do relative to certain human

needs to produce certain outcomes" (McCloskey and Bulechek 1994a, 57). In the eyes of the NIC creators, the classification system provides such a standardized language for nursing treatments that can be used across units, health care settings, and health care disciplines. A classification alone would be useful for costing, recordkeeping, and teaching, but the linguistic aspect is necessary for research and comparability. This intention was clearly expressed in several interviews:

> Certainly we are aiming at standardizing nursing languages. So that when we talk among other nurses and other health professionals we all know what we talk about. Because what one nurse might be talking about is very different (from another nurse). What is the difference between therapeutic play and play therapy? And then we need to communicate with parents, consumers, patients, physicians and other health professionals and knowing that they are talking the same language. It is really important that we talk in a language that is not foreign to other groups. Maybe we like to be unique, but sometimes we need to bend so that we talk the same language as families, consumers, and medical professionals.
>
> A hospital administrator asked me a couple of years ago whether nurses could just tell him what they do. You can't say "the nursing process" because everyone does nursing assessment, intervention. That is a model that everyone can apply. Physical therapists can say what they do: muscles and bones. Respiratory therapists can define their tasks. But nurses do all that. Nursing is so broad. The only thing that they know is that they can't work without us. NIC is extremely helpful because it provides a language with a firm scientific base to communicate what we do. (Interview with JoAnne McCloskey 4/6/94).

Thus NIC is seen as providing the means for rendering all nursing work comparable. To study the effectiveness of nursing care, the nursing profession proposed the uniform and routine collection of essential nursing information or a nursing minimum data set (NMDS) (Werley and Lang 1988; Werley, Lang, and Westlake 1986). "The purpose of the NMDS is to foster comparability of nursing care across patient populations, with the ultimate goal the improvement of health care" (McCloskey and Bulechek 1994a, 56). This data set consists of sixteen data elements, including four nursing care elements: nursing diagnoses, nursing interventions, nursing outcomes, and nursing intensity. NIC is promoted by its creators as providing the nursing intervention variable for the NMDS. A standardized language is also necessary to communicate with extant information systems. As a universal, scientific language, NIC is targeting inclusion in the unified medical language system (UMLS)—a spearhead of the drive for a standardized for all health care information systems.

Ironically, NIC's biggest critics come from the same information systems world. Criticism has been directed against NIC's standardized language ambitions. Susan Grobe, a nurse and information scientist at the University of Texas, Houston, criticizes the attempts at creating a universal standardized system as scientifically outmoded and inflexible. Instead Grobe proposes her own nursing intervention system, the Nursing Intervention Lexicon and Taxonomy (NILT) which consists of eight broad categories of nursing interventions. According to Grobe, in NILT "the burden of standardized language is resident in the automated systems and not dictated to practicing professionals for their memorization and adoption" (Grobe 1992, 94). Where NIC expects nurses to learn and use a standardized terminology, Grobe believes that nurses should keep their natural language and computers should be used to standardize language. She argues that having computers decide how terms will be standardized is inevitable and cites researchers who are working on this approach in health care documentation.

NIC researchers defend themselves against Grobe's criticism by specifying how a standardized language increases comparability. They note that although the advent of computers was an impetus for standardized languages, different organizations and agencies developed their own system, "with the result that we cannot collect comparable data from multiple agencies, or even within agencies from one unit to the next." They further quote Sherrer, Côté, and Mandil. "Intelligent documentation systems cannot totally discard classifications. Moreover, the availability of at least one classification is a necessary condition for a good documentation system. Classifications are not a necessary evil but a very effective way of representing knowledge about the domain of discourse" (McCloskey and Bulechek 1994a, 59; see also Bulechek and McCloskey 1993). Thus since a natural language system is at this moment lacking in nursing, the NIC researchers claim that their classification system fills the void and at the same time achieves the goal of comparability.

In their newsletter, the NIC investigators summarize their vision about a standardized language to achieve comparability across sites and professions. "Norma Lang has often been quoted as saying, 'If we cannot name it, we cannot control it, finance it, teach it, research it, or put it into public policy. . . .' We would like to be quoted as saying, 'Now that we have named it, we can control it, finance it, teach it, research it, and put it into public policy'" (NIC newsletter 1994, 2).

Striving for comparability in a standardized language across settings conflicts with the need for visibility within local settings. The nursing intervention architects want their system to be adopted by health care institutions. As a language, its entire vocabulary needs to be available to nursing professionals. Certain institutions, however, will most likely only need part of the NIC taxonomy; for example, nurses in a geriatric hospital would not require "Newborn Care" as an intervention. The results of validation studies with different nursing specialties suggest that between 20 and 80 percent of the terminology would be routinely used by several nursing specialties. This raises the issue of how to limit each institution's modifications. Too much flexibility would obviously undermine the birth of a standard language, but too much control makes a system user unfriendly especially in such a safety critical and busy line of work. As a rule of thumb, the NIC group decided that an institution should adopt the whole classification system at the level of the copywritten interventions, definitions, and labels, but that activity-level descriptions could be modestly changed. Control and enforcement of this rule, however, ultimately rests with the publisher.

This central tension between standards on the one hand and local, tailorable systems on the other is a familiar one in information systems (Trigg and Bødker 1994). It remains a tradeoff—a tension not resolved by resorting to a lowest common denominator, a universal algorithm, or an appeal to universal positivist knowledge (Star 1992).

Visibility: Legitimacy versus Surveillance

Comparability rests on the management and mobility of differences and equivalencies across sites. The issue becomes what is local and particular or what do all nurses have in common that can be rendered equivalent across settings and nursing specialties? Then, what does this commonality render invisible? The nursing classification designers employ a definition of nursing interventions as a guideline. "A nursing intervention is any direct-care treatment that a nurse performs on behalf of a client. These treatments include nurse-initiated treatments resulting from nursing diagnoses, physician-initiated treatments resulting from medical diagnoses, and performance of the daily essential functions for the client who cannot do these" (Bulechek and McCloskey 1989, 23). Here, the emphasis is on direct care: that which nurses do to increase the well-being of a patient at the bedside. Direct

Invisible Categories

—an anecdote related by literary critic Alice Deck

In the 1930s, an African-American woman travels to South Africa. In the Capetown airport, she looks around for a toilet. She finds four, labeled: "White Women," "Colored Women," "White Men," and "Coloured Men." (Colored in this context means Asian.) She is uncertain what to do; there are no toilets for "Black Women" or "Black Men," since black Africans under the apartheid regime are not expected to travel, and she is among the first African Americans to visit South Africa. She is forced to make a decision that will cause her embarrassment or even police harassment.[39]

care is separated from care that only indirectly benefits the patient. Indirect care includes, for instance, coordinating treatment schedules, discharge planning, and patient supervision. One step further removed from the bedside is administrative care, activities for creating a work environment supporting either direct or indirect care. This includes tasks such as coordinating administrative units and supervising nurses. Initially, the NIC group concentrated on direct-care interventions. The researchers deliberately supported an image in the classification of nursing as a clinical discipline. This was a political decision, as several NIC team members noted in interviews, one said: "Nurses think that laying hands on patients is nursing. We would not have had the attention of the nursing community if we had not begun there."

Questions arose in the course of the project, however, about the distinction between direct and indirect care. For instance, if nurses must check resuscitation carts with every shift, and this is not included in NIC, then these activities will not be reimbursed when NIC is implemented. Time spent on this task will be invisible and thus fiscally wasteful. Over the course of the project, there has been increasing recognition of the importance of indirect interventions, and these were included in the second edition of the NIC classification system. The researchers have even adapted their initial definition of a nursing intervention to include indirect interventions. Nurses themselves are somewhat ambivalent about how to account for indirect care time. Statistical analyses based upon different validation studies reveal that

Emergency Cart Checking 7660

DEFINITION: Systematic review of the contents of an emergency cart at established time intervals

ACTIVITIES:

Compare equipment on cart with list of designated equipment

Locate all designated equipment and supplies on cart

Ensure that equipment is operational

Clean equipment, as needed

Verify current expiration date on all supplies and medications

Replace missing or outdated supplies and equipment

Document cart check, per agency policy

Replace equipment, supplies, and medications as technology and guidelines are updated

Instruct new nursing staff on proper emergency cart checking procedures

BACKGROUND READINGS:

Copeland, W.M. (1990). Be prepared. Hospitals should develop methods to ensure emergency equipment is workable and available. Health Progress, 71(6), 80-81.

Shanaberger, C.J. (1988). Equipment failure is often human failure. Journal of Emergency Medical Services, 13(1), 124-125.

Figure 7.4
Emergency cart checking, NIC. An example of indirect care.
Source: *NIC.* second edition.

several of the indirect-care interventions are indeed considered in a different category by nurses responding to the surveys (see figure 7.4).

Administrative tasks as care are even more controversial. In interviews, one of the NIC collaborators whose main tasks are administrative expected that NIC would eventually also contain those kinds of interventions. "Nursing is very different in that when you make changes it involves many people, so the need for managers and supervision and coordination of planned change is so much more a part of nursing, there are so many more people that are a part of changing nursing. I think anything that reflects nursing, needs to reflect those kind of things." A majority of the design team and consulting group, however, was not sure whether administrative care was typical for nurses and thus whether it belonged in a nursing classification. "The administrators are not actually nursing. When they are not there, the nursing continues without them." Or in the words of Gloria Bulechek, "management science is a different discipline, all managers have to manage people and it is not unique to nursing." For the latter group,

the need to make administrative care visible is not as urgent as the need to differentiate nursing as a hands-on clinical discipline. Although the nursing researchers are aware that the boundaries among direct, indirect, and administrative care are not firm, administrative care was not part of the first two editions of NIC. This dilemma about the encoding of administrative work points to a practical limit on the visibility-discretion tradeoffs. To fully abstract from the local, everything must be spelled out; to avoid resistance from nurses and nursing administrators, some specifications for work must be left implicit. What is left implicit becomes doubly invisible: it is the residue left over when other sorts of invisible work have been made visible (Strauss et al. 1985, Star 1991c; Star and Strauss 1999). Where claims are made for the completeness of an accounting system, that which is not accounted for may be twice overlooked. This is noted here as both a formal and a practical challenge for classification designers and users.

The tension between visibility and discretion became apparent when several group members noted that the classification is strong—perhaps too strong—within the nursing specialties of the system's developers such as the complex physiological domain. It is still underdeveloped in other nursing areas, however, such as community health and social-psychological nursing. Social-psychological care giving is one of the areas where the control-visibility dilemma is very difficult to grasp. As noted, NIC lists "humor" as one nursing intervention. How can one capture humor as a deliberate nursing intervention? Does sarcasm, irony, or laughter count as a nursing intervention? How to reimburse humor; how to measure this kind of care? No one would dispute its importance, but it is by its nature a situated and subjective action. Since NIC does not contain protocols and procedures for each intervention, a grey area of common sense remains for the individual staff nurse to define whether some of the nursing activities can be called nursing interventions or are worth charting. This same grey area also remains for more clinical interventions such as "cerebral edema management" or "acid-base monitoring."[40] But because the classification is modeled after a clinical model of nursing, the team felt it easier to define and include those more clinical interventions.

The borderland between professional control and the urge to make nursing visible is fraught with difficult choices and balances not only in the interventions themselves but also in the decisions underlying NIC. Team members recalled discussions where interventions were so

singular and demarcated as to warrant inclusion, but they ended up not being included. For example, "leech therapy" was not accepted as an intervention in the first edition of the classification system, although there was enough research literature to support this intervention as typical nursing in many parts of the world. This strategic choice was a response to a prior history of nursing classifications not being taken seriously. It was feared that the mention of leech therapy, with its folk and medieval associations, would provide a red flag for critics (compare this situation with virus classifications discussed in chapter 2). It was introduced into the second edition, when the Iowa intervention team believed that they had sufficiently demonstrated their credentials. Also the advanced statistical analysis of the validation studies was located in what the design team members typified as "common sense." One could have a reliability coefficient of .73, but if it did not respond to a visible or controllable enough nursing reality, it became an outlier, a nonresult, or resulted in a residual category. As with all statistical analyses, a link with theory and practice must precede testing or the results are meaningless.

In other cases, the criteria for inclusion and control are themselves contested. One research member confided in an interview that her intervention was rejected because it was not supported with research evidence. Her plan was to first publish a paper about the intervention in a research journal and then resubmit the intervention for consideration with her own reference as research evidence.

In these examples, the goal of making as much visible as possible clashes with what should remain taken for granted. The nursing researchers temper their quest to make nursing visible with the image of what nursing is or should be about. Again, there is no final answer or algorithm but a complex balance of experience and rules. Common practice, contingency, and legitimacy temper visibility.

Control, Discretion, and Reliability

There is a continuing tension within NIC between abstracting away from the local and rendering 'invisible work' visible. Nurses' work is often quintessentially invisible for a combination of good and bad reasons. Nurses have to ask mundane questions, rearrange bedcovers, move a patient's hand so that it is closer to a button, and sympathize about the suffering involved in illness (Olesen and Whittaker 1968).

By the Book

The movie *A Few Good Men* hinges on an anecdote about several soldiers who perform a "code red" on another soldier, during which he dies. A code red is an illegal informal punishment-harassment in the manner of a rough fraternity joke. The death of the soldier causes an investigation; the commanding officer is suspected of deliberately ordering the code. The harassing soldiers defend themselves by saying that they could not have been ordered to perform a code red because that was forbidden by the manual of conduct. The denouement of the film has the prosecuting attorney closely questioning one defendant, roughly as follows:
"Does he do everything by the book?"
"Yes."
"Does the book contain all knowledge about how to conduct oneself in military life?"
"Yes."
"Did he have breakfast this morning?"
"Yes."
"Does the manual specify how to get to the mess hall, or where it is located?"
"No."
"QED—the manual does not contain all knowledge."

Bringing this caring work out into the open and differentiating its components has encountered problems from the nurses themselves. In naming and differentiating someone's work, there is a fine line between being too obvious and being too vague once one has decided to take on naming as a central task. If the task that is brought under the glare of enlightenment science is too obvious and mundane, then some nurses who are testing the system find it insulting. To tell veteran nurses to shake down a thermometer after taking a temperature puts them in a childlike position. Some experienced nurses, encountering interventions they felt were too obvious, have called them NSS—"no shit, Sherlock" interventions—it does not take a Sherlock Holmes to realize that nurses have to do this! Creating difference by cutting up the continuum of duties that make up "looking after the patient's welfare" is thus sociologically as well as phenomenologically and philosophically difficult. One must be explicit enough for the novices, yet not insulting to the veterans. Reading the NIC minutes, one is frequently reminded of ethnomethodological texts: just how much com-

mon sense can be taken for granted is a perpetually open question, and to whom it is common sense is not always so obvious (for example, Sacks 1975).

But ethnomethodology alone will not solve the political and organizational controversies and dilemmas of discretion. We see a link here with all previous attempts to rationally reconstruct the workplace, especially those modeling work for information systems. As Schmidt and Bannon (1992) point out, the management of real-time contingencies ("articulation work") never goes away, but if ignored, will be costly in many ways.

One of the battlefields where comparability and control appear as opposing factors is in linking NIC to costing. NIC researchers assert that the classification of nursing interventions will allow a determination of the costs of services provided by nurses and planning for resources needed in nursing practice settings. Currently, nursing treatments "are lumped in with the room price." In interviews with team members, they noted that although nurses fill in for physical therapists during weekends, the nursing department is not always reimbursed for this service. Sometimes the money flows back to the hospital at large, to the physical therapy department, or these treatments are simply not reimbursed. According to the NIC researchers, NIC will allow hospital administrators to determine nursing costs and resource allocation and stop such apparent "freeloading." Until it is made explicit exactly what nurses do on a daily basis, administrators have trouble rationally allocating tasks. Similarly, NIC is used in the development of nursing health care systems and communication with the classification systems of other health care providers. This coordination provides a safety net and planning vehicle for untracked costs.

The horizon is not fully clear, however. Wagner (1993), Egger and Wagner (1993), Gray, Elkan, and Robinson (1991), Strong and Robinson (1990), and Bjerknes and Bratteteig (1987a and 1987b) have studied the implementation of similar measures in Europe.[41] While these measures have the effect of making nursing work visible and differentiated, nurses may also become a target for social control and surveillance. Visibility here works against control in the sense of discretionary judgment and common sense. Wagner (1993) states that while computerization of care plans in French and Austrian hospitals is partly designed to give nurses greater scope of responsibility and legitimize their care giving in some detail, it also has another side:

> The idea of computerized care-plans, as put forward in nursing research, is to strengthen the focus on nurses' own preplanned nursing "projects." Like "the autonomous profession," nurses are seen as setting apart time for specialized activities, irrespective of ad-hoc-demands . . . the reality of computerized care plans—even when nurses themselves have a voice in their development—may lag far behind this idea, given the authority structures in hospitals. With management focusing on care plans as instruments that may help them with their legal and accreditation issues, and nurses having to continue documenting their work on the KARDEX and other forms as well, care plans cannot unfold their potential. (Wagner 1993, 12)

Once designed, a classification system is therefore not a black box before it becomes part of nursing practice. The designers' balancing act needs to continue on every ward of every hospital.

Professionalization, Classification Systems, and Nursing Autonomy

Since the focus of the NIC is on making nursing visible, along with balancing out control and comparability, it is interesting to compare the strategies chosen by the NIC researchers to fully professionalize nursing to the range of strategies discussed by Abbott (1988, Hughes 1970) in *The System of Professions*. Abbott puts the struggle for jurisdiction in a central place, and his model of "the cultural machinery of jurisdiction" (Abbott 1988, 59) characterizes professional work in terms of diagnosis, treatment, inference, and academic work. The very words are drawn from the medical profession; staking out a jurisdictional claim within that profession is particularly difficult—what is specific in a "nursing diagnosis" that differentiates it from "medical diagnosis?" He does not describe any other case where a central tool has been the creation of a classification system. Yet within the medical system as a whole, having access to one's own classification has long been a control strategy. Kirk and Kutchins (1992), for example, discuss jurisdictional disputes between the ICD and the DSM, and they show convincingly that the DSM became a tool for a particular theory of psychiatry, empowering more physiologically based models at the expense of psychological models.

To gain equity with the medical profession (where they have often been seen as subordinate), nursing research is an important aspect of legitimization. In turn, classification of work is a cornerstone of this research. Nursing classification creates the possibility of equivalence on the research end. Because nursing had long been defined as the

undifferentiated other (everything that doctors do not do in the treatment of patients), it was impossible to create precise arguments for professionalization based on research results.

But as nursing differentiates and becomes more autonomous, it too creates its own undifferentiated other. In what sense? As Abbott emphasized, professionalization depends upon the scope of the professions' jurisdiction. For NIC this implies that if nurses define a number of activities as specifically to do with nursing, they also claim only these activities. Although the researchers mean to include all the activities that nurses do, it is impossible to be totally inclusive, as we have demonstrated. Regional variations and those activities that cut across professional domains cannot be articulated in an interventions classification system. Some activities may be left in residual categories, or left for other health care groups such as licensed vocational nurses and technicians. Implicit in the physician's classification systems was the assumption that nurses would perform any unaccounted work that would support the fit between the doctors' prescription and the patient's health.[42] Now that nurses are creating their own classification system, they too might rely in a changed fashion on the invisible and unaccounted work of others.

The NIC group hopes that their classification system will sensitize the entire health care sphere to the contribution that nurses make to the well being of patients. But the road to such an outcome is a difficult (and potentially even dangerous) one for nurses as a group, as Wagner has shown for the European example. For instance, it is possible that NIC might be used against nursing professionalization in some computerization and surveillance scenarios. Imagine a hospital administrator who has implemented NIC and evaluates what the nurses are doing. To curtail costs and adequately allocate resources, the administrator might reallocate nursing activities in ways that are putatively more cost efficient. When asked about this issue, one of the principal investigators Joanne McCloskey emphasized that it is more important that nurses deal with those questions instead of leaving them tacit. "It may create some problems, but it forces nursing into the mainstream and forces nurses to be responsible, accountable, health care providers. Then, of course, you have to deal with the questions that physicians have had to deal with for a long time. And we ought to be able to deal with that and find a good new solution" (see also McCloskey and Bulechek 1994b).

A classification system is an important tool in the struggle for professional recognition. When the tensions among visibility, comparability, and control are skillfully managed in the construction of the classification system itself, the same processes need to be balanced at the level of users and policymakers. NIC's goal is to promote the work of nurses by communicating newly visible (in the sense of inscribed and legitimated) work practices and by leaving enough space for controllable action. But even if the designers succeed in creating equilibrium at the information system level, there are potential utilization problems in the political arena. Professionalization through visibility alone may have latent consequences: constant surveillance in the name of the panopticon of cost containment (Foucault 1979). In this era of information infrastructure shifts, the significance of this scenario is enormous.

Conclusion

A classification of work becomes, then, a political actor in the attempts to establish power on broad institutional and historical levels. When such a classification system intends to promote a professional group, the challenges are geared toward their ability to enhance professionalization. In the best case, classification systems hold a memory of work that has been done (laboratory, organizational, epidemiological, sociological) and so permit the recommendation of a reasonable due process for future work (Gerson and Star 1986).

It is difficult to retrace these processes after the classification is black boxed. We have been fortunate to observe an effort to classify work in its early days, coordinated by a group of American nursing researchers, which is beginning to spread to other locations as well. Their work exemplifies a profoundly skilled balancing act revolving around managing the trade-offs outlined above. The NIC project team has a global strategy of balanced classification through a series of sophisticated moves of differentiation and dedifferentiation. This strategy assumes that the work of producing equivalence (making other things equal) will reduce the overall amount of effort: retraining when a nurse needs to move into a new situation, introducing the nurse to the medical information system in a new hospital, and so on. It is linked with the strategy of the creation of a single information infrastructure to facilitate hospital operation.

A favorite metaphor of NIC members to describe their task is to make the invisible work visible. As the layers of complexity involved in its architecture reveal, however, a light shining in the dark illuminates certain areas of nursing work but may cast shadows elsewhere: the whole picture is a very complex one. NIC is at once an attempt at a universal standardized tool with a common language; at the same time, its development and application is proceeding via managing and articulating the local and particular. It is in that sense a boundary object between communities of practice, with a delicate cooperative structure (Star and Griesemer 1989). At the same time, it is balanced in a given workflow and historical period that makes it a potential target for control. The fact that NIC researchers are carefully involving a huge web of nurses and nursing researchers and building slowly over time, with revisions, is key to this process. The conservation of work inscribed in the static list of concepts and activities that form a classification system will be inserted into a field of ongoing practices, negotiations, and professional autonomy disputes. These practices and the political field in which they occur form the architecture of intimacy, manageability, and standardization. The local and macro contexts of the classification system and its attendant practices determine in the final instance the extent of the displacement of nursing work. In classification systems, differentiation and dedifferentiation emerge as a continuous and negotiated accomplishment over time. The same lesson holds for the organization of nursing work through NIC as for the coordination of medical organizations of all kinds through the ICD as discussed in chapter 4: it is not a question of mapping a preexisting territory but of making the map and the territory converge.