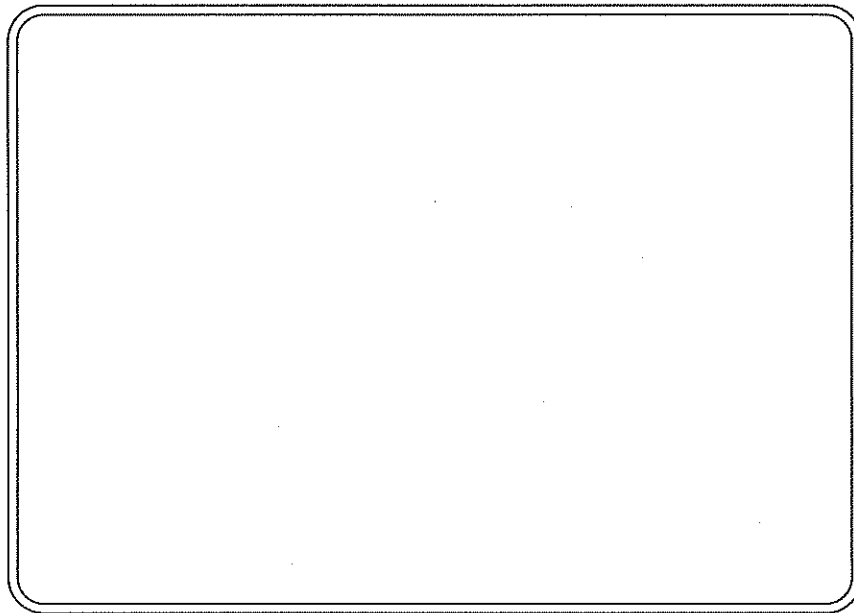


Premiere Issue 1993

Visions



Infinite Potentials

The Journal of Rogerian Nursing Science

Visions: The Journal of Rogerian Nursing Science

Premiere Issue 1993

Table of Contents

Call for Manuscripts	2
Comments from Dr. Rogers on the Birth of the Journal	3
Reflections from the President Sarah Hall Gueldner, RN;DSN;FAAN.	5
The Spirit of Vision Elizabeth A. M. Barrett, RN;PhD;FAAN	6
Birth and Rogers' Pandimensional Seeds John R. Phillips, RN;PhD.	7
Editorial Violet Malinski, RN;PhD. Sheila Cheema, RN;PhD.	9
Virtual Reality: A Health Patterning Modality for Nursing in Space Elizabeth A. M. Barrett, RN;PhD;FAAN	10
Reflections on the Science of Unitary Human Beings in Terms of Kuhn's Requirement for Explanatory Power Martha H. Bramlett, RN;PhD. Sarah H. Gueldner, RN;DSN;FAAN. Janet H. Boettcher, PhD.	22
Nursing in Space: Theoretical Foundations and Potential Practice Applications within Rogerian Science Pat Christensen, RN;PhD. Richard Sowell, RN;PhD;FAAN. Sarah Hall Gueldner, RN;DSN;FAAN.	36
Therapeutic Touch: The View from Rogerian Nursing Science Violet M. Malinski, RN;PhD.	45
Emerging Scholars Column Sarah Gueldner, RN;DSN;FAAN. Linda W. Johnston, RN;PhD.	55
Controversies Column Susan Kun Leddy, RN;PhD.	56
Imagination Column Katherine Matas Rapacz, RN;PhD.	58

Editors

Violet M. Malinski, RN;PhD.
Sheila Cheema, RN;PhD.

Editorial Board

Martha E. Rogers, RN;ScD;FAAN.
Elizabeth A. M. Barrett, RN;PhD;FAAN.
Sheila Cheema, RN;PhD.
Sarah H. Gueldner, RN;DSN;FAAN
Violet M. Malinski, RN;PhD.
Thérèse Connell Meehan, RN;PhD.
John R. Phillips, RN; PhD.

Review Panel

Martha Alligood, RN;PhD.
Martha Bramlett, RN;DSN
Jacqueline Chapman, RN; PhD.
W. Richard Cowling, III, RN; PhD.
Joanne Griffin, RN;PhD.
Suzanne Hindle, RN;PhD.
Mary Madrid, RN;PhD.
Katherine Rapacz, RN;PhD.
Marilyn Rawsley, RN;PhD.
Francelyn Reeder, RN;PhD.
Nancy Sharts-Hopko, RN;PhD;FAAN.
Patricia Trangenstein, RN;PhD.
Alice Adam Young, RN;PhD.

Subscription Information

Visions: The Journal of Rogerian Nursing Science is a peer-reviewed publication of the Society of Rogerian Scholars, Inc., an international organization. Subscription to the journal is included in the yearly membership dues. Single issues are \$15.

©1993 Society of Rogerian Scholars, Inc.
All rights reserved.

CALL FOR MANUSCRIPTS

The Society of Rogerian Scholars, Inc., an international organization, is pleased to announce the publication of a refereed journal, VISIONS: THE JOURNAL OF ROGERIAN NURSING SCIENCE.

To start, the journal will be published once a year. The deadline for each issue will be September 1st. Manuscripts will be accepted for review at any time during the year.

Guidelines:

1. Content must reflect some aspect of Rogers' Science of Unitary Human Beings (research, theoretical issues, etc.).
2. The manuscript must not be submitted elsewhere for consideration.
3. Manuscripts will not be returned.
4. Authors will follow the format of the Publication Manual of the American Psychological Association, (3rd. Ed.).
5. Once the manuscript has been accepted for publication, authors must submit a hard copy plus a copy prepared on a 3 1/2 disk in WordPerfect 5.1, prepared on an IBM or IBM compatible computer.
6. Upon final acceptance, an honorarium of \$50 will be sent to the author (or primary author if more than one).

Organization of manuscripts:

1. Identification page (name, address, phone number, affiliation, and running title).
2. Title page (No author identification).
3. Abstract followed by 3-4 key words for indexing.
4. Text of 15-20 pages plus references.

Each manuscript will be reviewed by three members of the Review Panel. Final decision rests with the editors. Submit 4 copies of the manuscript to either editor:

Sheila Cheema, RN;PhD.
110 Elk Avenue
New Rochelle, NY 10804

Violet Malinski, RN;PhD.
64 Young Avenue
Yonkers, NY 10710

Comments from Dr. Rogers on the Birth of the Journal

Dr. Rogers responded to the following questions posed by the editors.

1. *Share with us your thoughts about the founding of this journal.*

The journal is a very significant move forward, and I'm delighted! There will be considerable future development and enhancement of the journal and its contents, along with increasing frequency of issues. The debut of the journal represents a significant step in the evolution of the Society of Rogerian Scholars, especially as the society emerges and takes on increasing international aspects.

2. *How would you like both SRS and the journal to develop?*

I see both as complementary to each other. SRS is a membership organization striving to move forward into a new reality and a new understanding of human life in outer space as well as on this planet. The journal will provide a forum to assist in transmitting ideas, creating new ways of thinking, and making new knowledge readily available to more people. I've been getting letters from people interested in this world view from around the planet. To the extent people have information about this nursing science they are using it to enhance the well-being of the people with whom they work. The journal is an expression of SRS and will facilitate the process of sharing information already set in motion.

3. *On the cover are the words, "infinite potentials." What are some of the infinite potentials you would like to see realized in Rogerian nursing science?*

I just get so infinite in thinking about it! I would move into a new reality, a synthesis of new knowledge, a metaphysical perspective--not in any religious sense but meaning moving beyond the physical, into the infinite universe. Experiencing expanding horizons can help us gain a vastly greater understanding of people and their evolutionary potential. The nature of it is going to vary as we move into a future with more new ideas that will transform what we know now. It's precisely what the words say. This is an optimistic science with infinite, creative potentials. People can participate knowingly in the process of change. Change is inevitable. We don't create or destroy it but we can be active participants in change.

4. *What is the potential for SRS as an international organization? As you travel around the world on speaking engagements, what response do you receive from those who come to hear you? What is the level of understanding of the Science of Unitary Human Beings in the international community? I'm continu*

I'm continually amazed at the marked and extensive interest and utilization of this nursing science in all places. I've been to Japan, China, Italy, The Netherlands, Canada, and from Mexico to Colombia. I went to Egypt and Spain this summer. Of course, New York University attracted international students from all over the world who took these ideas back home when they finished their studies in nursing. People are using Rogerian science in communities and institutions. I wasn't even aware of all the places before. I have a request for information from Brazil. It's an open-ended science from which to derive many theories looking at the evolutionary process as humankind moves into outer space. People are using it to improve human health and well-being through nursing practice on a knowledgeable level. There's an extremely large potential out there. In Italy they established the first university program in the School of Public Health at the University of Padua, and they're most interested in Rogerian nursing science. Efforts are on-going in Wales for the establishment of an international region in SRS. A community in Northwest Germany is using Rogerian science in its hospital. There's an amazing amount of information available. The level of understanding is variable. It goes from those struggling to understand to those who are very knowledgeable. It goes back to educational levels. Nurses need a university education to understand the depth and then move on. We need both university-educated and trained nurses, but we have to take this into consideration. This is a futuristic science, people-committed. This is why nurses exist--to serve people.

5. How can SRS best aid in the dissemination of nursing knowledge?

We already have the newsletter, and the journal will help us to do this even better. Members are instrumental in setting up meetings and being available for speaking engagements. Regions hold local meetings so members and students, particularly in graduate programs, can share ideas and research. People are developing instruments for investigations. Instruments developed from other world views are not valid tools to measure phenomena manifested by unitary human beings. Available instruments are being translated into several different languages. As membership increases the span increases, as well.

6. What thoughts would you like to leave with the readers of this, the premiere issue of Visions?

There's an old story about a building in Washington, D.C. There's a sign on this building: "The past is prologue." A lady passenger asked the cab driver, "What does that mean?" The cab driver answered, "Lady, it means you ain't seen nothing yet!" We have to keep open, flexible minds. What we believe now is changing as we move into newer, bigger, and different ideas. We will continue to grow and expand with this nursing science. So, enjoy!

Reflections From The President...

Sarah Hall Gueldner, RN;DSN;FAAN.

The establishment of a journal is a major evolutionary marker for the Society of Rogerian Scholars. It will speed the growth of the Science of Unitary Human Beings by serving as a juried public forum, accessible to all, for Rogerian thinking. As we prepare for this exciting venture, I have allowed myself to slip back in time to a dozen years ago, when I was a doctoral student at the University of Alabama in Birmingham, miles away from the nucleus of Rogerian thinkers at New York University. Captivated by Rogers' writings, I chose to conduct my dissertation research within the Rogerian conceptual system. (I have since come to realize that I may have been the first person below the Mason-Dixon line to pursue that naive aspiration.) I soon came face to face with the struggle to access the Rogerian literature base. In fact, after several weeks of searching, my classmates and I had located only a handful of published research reports, which were invariably found in obscure (at least to us in Alabama) journals.

Disappointed and fast becoming desperate, my classmate Susan Benedict and I finally went to New York and read 18 dissertations, nine each, while cloistered for two days in the room in Shimkin Hall where the NYU nursing dissertations are kept under lock. (I might just add that no two days of my life have ever been more enlightening.) We had developed a form to assist us in extracting the critical information we needed--now recognized as an integrated review. Guided by the comments of Dr. Patricia Winstead-Fry and Lois Allen (at that time also a doctoral

student), we were gradually able to find more Rogerian based studies in the literature as well. Girded with Bertrand Russell's famous quote about acausality and the courage that only a doctoral student can muster, I bravely justified my dissertation proposal to the university's graduate dean, a microbiologist who understandably tended to be rather linear and causal in his thinking. In fact, he indicated that he had expected me to be wearing flowing robes, from having read my proposal; he was under the impression that I may have been led down the primrose path, he said.

In the course of time I finished my dissertation, and forthwith encountered the other side of the dilemma that Rogerian scholars of that era faced--how to disseminate my findings. I soon learned that the cutting edge perspective does not always fare well with traditional journal reviewers, many of whom may have been selected for their recognized ability to articulate the old world view. So we early Rogerians owe a great deal to the visionaries like Violet Malinski and Elizabeth Barrett, who through their books created an avenue for developmental dialogue among serious Rogerians. We who did not have the advantage of living in New York City could grow more easily as we read what have now become the classic works of the early writers. Likewise, we who went on to teach graduate students came to rely on these books as primers of relevant and theoretically consistent nursing literature for our theory courses.

Simultaneously, the Rogerian conferences were begun, providing a rich climate for increased understanding through public discussion and critique among the experts. Another landmark was the formation of the Society of Rogerian

Scholars, for the express purpose of providing an organizational structure to facilitate discussion and networking among Rogerian scientists around the world. The organization is recognized as a pivotal force in the advancement of nursing science through an emphasis on the Science of Unitary Human Beings. Likewise, the SRS newsletter has become a user-friendly staple of scholarly communication among present day Rogerians.

This premiere issue of our refereed journal represents yet another developmental landmark toward the development of the Rogerian conceptual system. Through this sophisticated avenue the eversearching and highly refined written discourse of both our most respected theorists and our courageous developing scientists will be presented for review and critique by the universal community of scholars. Through this process the finest thinking will emerge and the language of our science will become increasingly clear and precise. The journal will allow us to communicate with the widest possible audience of Rogerians, and to attract the attention world wide of nurses and others who dare to think beyond parts, the visible body, and clock time, even beyond the imaginary confines of our galaxy, to a grander reality. I am indeed proud to be president of the Society of Rogerian Scholars on the occasion of this special and historic event. If I may quote our esteemed leader, who started all of this in the first place, "Enjoy!"

THE SPIRIT OF VISION

"Vision Is The Art Of Seeing Things Invisible"

Jonathan Swift

As a founder of The Society of Rogerian Scholars (SRS), I feel an intense sense of professional excitement and personal joy as the scholars of Rogerian science launch this journal. Six years after the birth of the society's newsletter, Rogerian Nursing Science News under the direction of Violet M. Malinski, the inauguration of Visions: The Journal of Rogerian Nursing Science ushers in a new era. And so, as the world of nursing turns, continuous beginnings emerge. Our shared vision will be communicated through information, ideas, and enthusiasm expressed on the pages of this journal.

As an avenue of dissemination of knowledge related to the Science of Unitary Human Beings, Visions is a forum for scholarly debate. This is the time for ripples of this new world view to reach an even wider audience of people seeking to explore avant-garde ideas in science in general and in this nursing science in particular. These ideas transcend traditional disciplinary territories and yet firmly establish Rogerian science on the unpredictable horizon of what will be.

Nursing practice dynamically dances in anticipation of creative translation of this science by those artists spearheading the revolution in use of Rogerian knowledge for the betterment of all people's health. This is an invitation to authors to dance on these pages.

In a time of super acceleration, archaic philosophizing will not project us into new millennium, but taking action

through the power of the written word will. Our power depends on the way we knowingly participate. I urge you to read this journal and write for it and share this journal and its message with others who will read and write. The collective potentials we choose to actualize are limitless.

Each of us has a voice in creating where this journal goes from here. With renewed commitment to making a difference through stimulating, nourishing, and supporting growth of the Science of Unitary Human Beings via scholarly publication, we go forth once again to participate in creating nursing's future. In the words of Martha E. Rogers, "I'll see you there."

**Elizabeth Ann Manhart Barrett,
RN;PhD;FAAN.**

Birth and Rogers' Pandimensional Seeds

John R. Phillips, RN: PhD.

Birth. What a marvelous phenomenon--the birth of life, the birth of new ideas, the birth of a new vision of reality. Martha E. Rogers participated in all of these, especially through the creation of the Science of Unitary Human Beings.

Rogers' science manifests pandimensional seeds that are essential for creative and innovative change. These pandimensional seeds are infinite in their potentials, pregnant with wisdom and truth that yearn for birth. The flowing energy of these pandimensional seeds impregnates all energy fields with Rogers' knowledge of the universe. Johnny Appleseed with his methodical, linear sowing of seeds to give birth to many orchards has no comparison to Rogers' sowing of pandimensional seeds to give birth to diverse phenomena in a universe of infinite wholeness.

The birth of new life. Rogers' pandimensional seeds of truth and knowledge gave birth to new life for the profession of nursing. This occurred through her Science of Unitary Human Beings. Rogers' science kept the profession of nursing alive, so alive that attempts by other disciplines to plant seeds to control nursing could not germinate. Ultimately, her science provided the means to create and discover knowledge that gave insight into an understanding of the meaning and purpose of the profession of nursing.

The birth of new ideas. Rogers is a pioneer in the planting of pandimensional seeds of innovation in the profession of nursing. She originated and introduced creative ideas for change, provided a science for others to use, and helped

individuals to evolve the science of nursing. Thus, Rogers opened up a new way of thinking about the diverse dimensions of humankind.

The birth of a new vision of reality.

Rogers' intense pursuit to create and discover knowledge provided the seeds to give birth to a new vision of reality. This is manifest in her Science of Unitary Human Beings, which gives knowledge of the unitive nature of reality where persons and their environments are integral. Rogers' science provides a basis for the study of the patterned wholeness of reality. In a changing universe of energy. Rogers' science enables one to discover and even create principles and meaning of the unitive nature of a participatory universe.

Joys of birth. What a joy to be impregnated with Rogers' pandimensional seeds. The fullness of such pregnancy is difficult to express, but can be manifest through such tangible things as the birth of the Society of Rogerian Scholars, an international organization. The birth of the society is one manifestation of Rogers' the Science of Unitary Human Beings. This birth occurred in an "old-fashioned" way as Rogers nurtured pregnant scholars in her home to give birth to their idea of creating a structure to help people obtain knowledge of her science. Through the sharing and study of the truth and wisdom in the pattern of her science, the Society provides the integral vision necessary for the creation of a reality whereby nursing science can evolve and people can actualize their potentials.

Visions of new birth. The need to move from knowledge of parts to knowledge of the infinite wholeness of the universe called for the planting of pandimensional seeds to give birth to a

particular vision of Rogerian scholars. The creation of Visions: Journal of Rogerian Nursing Science is the reality of this vision. This vision will continue to evolve as authors put their creative thoughts and ideas, even their visions, in print to accelerate the changing reality of the Science of Unitary Human Beings, The birth of Visions will certainly participate in the patterning of the universe for the betterment of all living things. The journal will help to make manifest the truth and wisdom in the Science of Unitary Human Beings to provide pandimensional seeds for birthing processes to enrich understanding of Rogers' vision. Thus, the journal Visions will help nurses participate knowingly in the patterning of nursing science.

Proud of our birth. We can be proud of our birth as Rogerian scholars. It is indeed an honor to have the birthmark of Rogers' Science of Unitary Human Beings. It gives us the birthright to Rogers' pandimensional seeds. Then, it is our responsibility to continue to sow them well as we continue with our **visions** of new births to participate in the evolution of nursing science.

Editorial

Violet Malinski, RN; PhD.
Sheila Cheema, RN; PhD.
Editors

Birth, of course, is preceded by labor, and a great many people labored to bring this journal to birth. We would like to thank the following:

The SRS Board for having the vision from which this journal emerged.

The authors for their labor in providing us with the superb articles that grace this, the premiere issue of Visions, and for their faith in us that they would entrust their work to a new journal rather than to an established nursing journal.

The columnists for sharing their ideas and offering their insights and questions on Rogerian science.

The members of the Referee Panel who so willingly gave their time and expertise to a new journal.

Rosemarie Rizzo Parse, editor of Nursing Science Quarterly, who graciously shared her knowledge about publishing. Her collegial spirit is much appreciated.

Of course, our appreciation for Martha E. Rogers is boundaryless. Her lifetime of labor birthing and nurturing the growth of the Science of Unitary Human Beings makes all of this possible.

Now, a few comments about the journal itself. On the cover are the words "Infinite potentials." The frame above those words may appear "empty," but multiple potentials are flowing and will emerge from the readers of this journal. We invite you to send your actualizations of these infinite potentials, in the form of pictures, poems, short narratives, or symbolic representations of Rogerian nursing science which we will consider for the cover of the next and succeeding issues.

We have introduced three columns and invite your contributions and responses to what appears there. In the next issue we plan to introduce a Letters to the Editors column, so start sharpening your pencils. The first column, Emerging Scholars, will highlight the work of students who, as Sarah Gueldner wrote in her introduction to this column, "catch fire" with Rogerian nursing science. Whether you are an undergraduate or graduate student, think about sharing your ideas via this column. The second, Controversies, is not for the faint of heart. We are asking you to identify those areas in Rogerian nursing science that have troubled you and to share your thoughts with others.

We would like to thank Susan K. Leddy for her courage in being the first to appear in this column. The third, Imagination, is open to all pandimensional AH-HA'S that any of you have, so get ready to share them with us.

VIRTUAL REALITY: A HEALTH PATTERNING MODALITY FOR NURSING IN SPACE

Elizabeth Ann Manhart Barrett, RN; PhD; FAAN.

ABSTRACT

Virtual reality (VR) is a computergenerated reality that creates the illusion that the physical body is manifesting in a place where the physical body is not located. VR represents a new frontier in the human-environment mutual process for use on Earth and in space. In 1988 a NASA researcher proposed that within a decade VR technology will be mass produced. It has also been suggested that we will all eventually be able to go into space via this technology. Hence, the possibility exists for using VR in nursing in space in the near future.

VR is an important health patterning modality from the Rogerian worldview since it enhances our capacity to experience ourselves in mutual process with the radically different environment of space in a nonlinear fashion. Persons can experience being there virtually when they're not there physically. This is explained by Rogers' postulate of pandimensionality and principle of integrality. Since participants are not actually physically present in the virtual environment, physical distance or location of participants is irrelevant. From the purview of Rogerian thought, VR is not artificial as one is already everywhere since persons are energy fields and energy fields are infinite. VR simply provides a way to experience our presence outside of our bodies.

VR will give human beings the capacity to transcend distance through communication in a way previously not imagined. Rogers' science provides a nursing framework for nurses to envision the use of VR in nursing practice and a framework to design research projects to explore the impact of VR on human beings. VR is a key link between Earth and space that will facilitate the practice of health patterning at a distance.

Do you ever wonder why the heavens, and the idea of exploring it all, holds such fascination?.... You see we are all children of stars. The vastness of outer space is our long lost, ancient home. The billions of molecules that form us are made from the same elements that drift through the universe. We are, you and I, the stuff of stars, galaxies, comets! And that's why exploration and discovery are literally in our lifeblood! The stars (and our future) are calling us home. For our species to prosper and grow, we must

continue to look outward, aim outward, and move outward. It is our destiny (Ferrell, 1993).

One way of going into space is through the brave new technological world of virtual reality (VR). Virtual reality! What is it? Who needs it? For what purposes? What does virtual reality, or VR as it is called, have to do with the space program? What does VR have to do with nursing? Will VR have an impact on nursing in space in our lifetimes? In contemplating answers to these questions, be aware that the possibilities of virtual or "artificial" reality are as limitless as the possibilities of so-called "true" reality.

Key Words Virtual reality, health patterning, nursing in space

Received September, 1992

Accepted January, 1993

Virtual reality is a computer-generated reality that creates the illusion that the physical body is manifesting in a place where the physical body is not located. It is a new frontier in the human-environment mutual process for use on Earth and in space. VR brings new insights to the age-old question, "What is reality"?

VR is interaction with the environment through media technology that has progressed from radio, movies, TV, video, interactive video and now VR where we create a virtual (or artificial) environment rather than a so called "real" one that exists in so called "objective reality."

Open the door to virtual reality and you open the door to other worlds. With this brave new technology people can be anywhere they choose to be, given the corresponding software program. Imagine that you have the power to change your environment instantly. You could be transported, if that was your choice, to the surface of the moon or perhaps even fly to a distant star. Or imagine you are an astronaut exploring a vast canyon on the surface of Mars. Simply by waving your hand, you can fly over the Martian terrain and then, at will, fly into the depths of space. Meanwhile, the entire time you would never leave your home (National Aeronautics and Space Administration (NASA), 1988, 1990).

VR supports Rogers' postulate of pandimensionality which specifies that reality is a nonlinear domain without spatial or temporal attributes (Rogers 1992). VR from a Rogerian stance is not "artificial" as one is already everywhere since people are energy fields and energy fields are infinite. VR simply provides a way to experience our presence outside of our bodies. VR is one way for unitary human beings to experience that their

energy fields are infinite.

Specifically, VR is a health patterning modality for nursing in space. A health patterning modality is a specific method of assisting clients with their knowing participation in change (Barrett, 1991). VR as a tool of nursing practice will facilitate communication and collaboration between people on Earth and people in space. Rogers' (1992) principle of integrality describes the continuous mutual human field and environmental field process. VR, as a form of power, the capacity to knowingly participate in change, enhances the human ability to experience ourselves in mutual process with the radically different environment of space (Barrett, 1990).

The Vision of Virtual Reality

Does this environment-hopping of the electronic tourist sound like science fiction? On the contrary, it is not only possible but as the technology advances from its current infancy stage, it may become as common as going for a drive in your car (NASA, 1988). In 1988, NASA Ames researcher McGreevy proposed that within a decade this type of VR technology will be mass produced in a form similar to ordinary eye glasses and nearly everyone will have a VR setup. In the next century VR "could turn today's television and computer terminals into museum pieces" (NASA, 1988, p. 21).

Imagine a wrap around television with three-dimensional programs, including three-dimensional sound, and solid objects that you can pick up and manipulate, even feel with your fingers and hands.... Imagine that you are the creator as well as the consumer of your artificial experience, with the power to use a gesture or word to remold the

world you see and hear and feel. (Rheingold, 1991, p. 16)

A virtual world is created via a computer operated with natural gestures rather than computer programs. In this virtual world a computer is operated by walking around and by looking around and by using the hands to maneuver objects (Rheingold, 1991). VR has its roots in a radical question that occurred to a few people as long as 40 years ago. They asked, "Instead of training people to understand the secret languages of computing machines, why not design computing machines that can communicate with people without the need for secret languages" (Rheingold, 1991, p. 70)?

Tart believes that VR is going to make a major change in our view of consciousness by demonstrating what many people know intuitively. That is, our waking reality, like our dream reality is a virtual reality. We don't directly perceive the so called "true" reality. Rather we are always constructing, filtering, selecting, and rejecting what we consider to be the "real" world. VR works since we already have a system for generating virtual reality. Our thinking, Tart theorizes, influences our perception to validate our own beliefs and our emotions (Tart quoted in Bard, 1991).

"Reality is a negotiated process and VR helps people negotiate what for the moment is true" (Smith, 1991). The bottom line question asks, "Is reality a reality of solid objects or what exists in our minds?" (Brody, 1991). When I say it is dark outside and the person I'm talking with on the phone in Europe sees daylight, what is reality?" (Brody, 1991). When I say the sun rises in the East in the morning and sets in the West in the evening and my friend in Alaska talks

about the midnight sun and the astronauts see sunrise and sunset every 90 minutes, what is reality (L. Plush, personal communication, August 28, 1990)? This is an example of Rogers' postulate of pandimensionality as a nonlinear domain without spatial or temporal attributes (Rogers, 1992).

State-of-the-Art of VR Technology

Since its beginning development in the late 1960s, the technology of virtual reality has also come to be known as artificial reality or virtual environment, and is similar if not identical to cyberspace, telepresence, telerobotics and personal simulator (Ditlea, 1990a, 1990b; Fisher, 1990a; Fjermedal, 1990; Hall, 1990; Helsel & Roth, 1990; Krueger, 1990; NASA 1990; Walser, 1990). VR systems are a type of human/computer interface that enable users to become participants in abstract spaces where the physical computer and the body of the human viewer do not exist. This technology allows participants to directly experience a happening that is not really happening from a 3-D perspective but is really happening from a pandimensional perspective. It is a constructed reality that is possible but not actual (Helsel & Roth, 1990; Walser, 1990) as a 3-D experience but is actual as a pandimensional experience. Ideally, the naturalness of the involvement in a virtual environment makes it indistinguishable from what the 3-D literature describes as "true" reality (Ditlea, 1990a; NASA, 1990; Spring, 1990). A key feature of these systems is that viewer's movements are non-programmed; that is, they are free to continuously choose their own path through available information via specific software programs rather than remain restricted to

passively watching a 'guided tour'. (Fisher, 1990a, p. 25)

The tools of virtual reality are the DataSuit, DataGlove and EyePhones made by VPL Research, Inc. or similar apparatus (Fjermedal, 1990). To enter this virtual environment, a person puts on the special clothing wired to a computer. Gloves with fiber optic sensors transmit and receive data, and goggles include two small video screens (Hall, 1990).

The head-coupled display presents visual and auditory imagery that appears to completely surround the user in 3-D space. The gloves provide interactive manipulation of virtual objects in virtual environments that are either synthesized with 3-D computer generated imagery or they are remotely sensed by user-controlled, stereoscopic video camera configurations. (Fisher, 1990a, p. 26)

The DataSuit allows full-body participation since every body movement can be programmed into the computer. This computer clothing senses the body and tells the computer what you're doing. There's a simultaneous reaction of a person's movements and what's perceived on the computer screen. Everything you see and hear is a response to what you do. The interaction is perceived as the person being in a place where the body is not located. It is a lived experience of pandimensionality.

With a flick of the gloved wrist, the user can pick up an object or even fly (Hall, 1990). Explained by a 3-D framework, this window to another world might be called an out-of-body electronically-augmented experience (Hall, 1990). The computer tricks the senses into accepting as real what is seen on monitors, heard in

speakers, and felt through special clothing. Explained from a pandimensional framework, the computer assists in tuning into a wave frequency that without VR might have been inaccessible.

In Krueger's (1991) version of virtual reality the person does not use bodily equipment. Rather, the participant interacts with objects or people on a screen in two dimensions. For example, an outline of a woman may join that of a man. Their outlines touch each other. "Even though there is no actual human contact, the virtual tickle creates an actual sensation of being touched" (Hall, 1990, p. 14).

Virtual Reality At NASA

One of the things NASA has done well, according to Rheingold, is to legitimize certain ideas from the fringe. NASA was the first site that had the vision and the resources to combine a glove and a head-mounted display (HMD) (Rheingold, 1991).

A goal for NASA's Ames Research Center's Virtual Interface Environment Workstation or (VIEW) project was to connect at least two interface systems to a common virtual environment. The two users would participate in a shared virtual environment. Remotely located participants could virtually interact with some similarities of in-person meetings (Fisher, 1990b). Hall maintains that the type of two-person software programs that will soon exist will allow people to interact with other real people connected to the same virtual world (Hall, 1990).

VIEW has been a test-bed for building robotic repair systems operated through telepresence by a single human either inside or outside the vessel. VIEW also pioneered measurement of the human factors involved in operating these robotic

repair systems (Rheingold, 1991). Reportedly, VR is also vital for NASA's plans for extraterrestrial exploration (Ditlea, 1990a).

NASA added 3-D sound to the VIEW system. This created "an auditory point of view, a specific position in acoustic space that matches the operator's position in visual space and to locate and relocate auditory objects: It made it possible to track the progress of a sound through space" (Rheingold, 1991, p. 150). The 3-D acoustic feedback enhances tactile and visual cues in a VR system. This work in auditory visualization is analogous to hearing footsteps behind you when walking on a dark and dangerous street late at night - sounds that can be hair-raising (Rheingold, 1991). The EyePhone is a blending of sound and vision. One could speculatively raise the question, "Will humans eventually be able to see sounds and touch voices?" This is a fruitful avenue for Rogerian nursing research since it transcends the 3-D particulate sensory perspective. Such research would test the Rogerian tenet that there is more to seeing and hearing than sight and sound.

NASA, however, is no longer a VR mecca for research. Nor has it begun to apply VR technology to future space programs (G.S. Lee, personal communication, January 6, 1992). Most likely commercial companies will become the prime movers for VR applications in this country. Senators on the Subcommittee on Science, Technology and Space have spoken out in favor of VR technology as an American asset (Media Magic Catalogue, 1991).

We can look forward to many other uses of virtual reality being developed for space. It has been suggested that we will all very soon be able to go into space via

this technology. Fjermedal (1990) said that such an experience will not be like a close-up look at the Moon or Mars, it will be like being on the Moon or Mars.

Rogerian science takes the idea a quantum leap farther; we will be aware of being on the moon or Mars while we are simultaneously aware of being on Earth; people as energy fields are infinite (Rogers, 1992). The Japanese are planning to open a space hotel by the year 2020 with a charge of \$140,000 for a two-night stay (Nadis, 1990). With VR, one could experience the trip without leaving the planet.

Virtual Reality As A Health Patterning Modality For Nursing in Space

Martha E. Rogers (1992), the creative visionary of these nursing times, is nursing's foremost advocate for nursing in space. Rogerian science provides a new way of looking at the universe.

From a Rogerian point-of-view nurses in practice pattern the environment to promote comfort, well-being, health, and healing. This science of unitary human beings provides a framework for understanding the technology and implications of VR. Hence, Rogerian science can be used to design methods for using VR to promote comfort, well-being, health, and healing by creating specific environments both for people on Earth and in space and in particular between people on Earth and in space.

VR is an important modality from the Rogerian worldview since it enhances our capacity to experience ourselves in mutual process with the radically different environment of space in a nonlinear fashion. VR, a new frontier in the human-environment mutual process, presents a different way to perceive and experience the world and to express ourselves in that world. Since the person is an energy field

that is not bound by the physical body and indeed, is infinite, VR allows one to experience their energy field in a place where the physical body is not present. In a two person VR system, both persons can experience being there together while their physical bodies remain wherever they are physically located. This is explained by Rogers' postulate of pandimensionality defined as a "nonlinear domain without spatial or temporal attributes" (Rogers, Doyle, Racolin & Walsh, 1990, p. 387). Since participants are not physically present in the virtual environment, physical distance or location of these participants is irrelevant. As in Rogers' system, in VR we say good-bye to absolute certainty and repeal the laws of cause and effect (Ditlea, 1990a). It is a world where time and space take on different meanings that can be understood as experiencing pandimensional reality. VR experiences may open up new vistas in understanding human perceptions, human field motion, transcendence and the human-environmental mutual process.

As a new medium of expression, VR represents a form of power, i.e., a specific way whereby the capacity to participate knowingly in change is enhanced. In this form of power, one participates in dramatically changing the experience of our mutual process with the environment. Using VR as a health patterning modality, nurses will have unprecedented opportunity to assist clients with their interplay with the cosmos. Such a human-environment mutual process is further explained by Rogers' principle of integrality defined as "the continuous mutual human field and environmental field process" (Rogers, et al, 1990, P. 388). The meaning of these lived experiences will be a fruitful avenue of investi-

gation through qualitative and qualitative methods of nursing research.

No one knows what behavior will emerge as manifestations of the human-environment process during a long-term space voyage. However, most experts now acknowledge that the importance of "human factors" cannot be overlooked. For example, the Freedom Modules have been decreased from 44½' to 27' long (Johnson Space Center Tour Guide, personal communication, April 3, 1992). "If you put people in a tin can and send them into space for a long time" (Dahir, 1991, p. 53), how will they relate to each other, particularly if they have no personal space in which to get away from it all?

Contact between astronauts and their loved ones presents another kind of communication difficulty. "There are incredible benefits to morale from periodic contacts with loved ones back home" (Dahir, 1991, p. 53). In addition to radio and TV communication between astronauts and their families, VR holds great promise. Cosmonaut Lebedev (1988) wrote in his diary during his 211 days in space, "How much I need... the understanding of a person who knows me" (p. 102). And his message to his crew physicians was, "Don't forget that our mood should be your main concern" (p. 140). Nurses can play a key role with those in space by tuning into their hopes, dreams, fears, and goals. The scientific art of nursing practice transmitted via VR can convey knowledgeable caring, nurturance, and understanding to those in space and assist significant others to do likewise if they so choose. Thus, VR technology will assist nurses to pattern the environment for health and assist people to participate in creating their own reality.

In the future the delivery of nursing

services will take place primarily in autonomous nursing centers without walls and will be guided by nursing science frameworks. These centers will exist wherever there are people on Earth and in space. Health patterning modalities for nursing in space will include VR to facilitate new ways of using current modalities such as non-contact Therapeutic Touch, innovative imagery, meditation, motion, color, light, and sound with people in space. Other modalities will emerge based on whatever the human and environment pattern manifestations are in space. Nurses are familiar with healing at a distance, for example, using Therapeutic Touch, administered by a nurse in one location and a client in another. VR will facilitate healing at a distance by providing a communication link between the nurse and the client in a distant location.

Communication from space with significant others on Earth through two-way video or personal computers will be important mutual process modes of human contact. Beyond this, however, virtual environments have potential for providing a new form of video interaction for space travelers and their friends and families on Earth. This will be increasingly important as length of stay in space increases. Two or more people could meet in this computer-generated world. They could touch each other, exchange objects, and talk about what they were seeing, hearing, or feeling. They could travel to favorite places where they have shared meaningful experiences or embark on new adventures they have dreamed of experiencing. With their favorite music in the background they could play Kadima ball on the beach with each other or go horseback riding in the mountains or play tennis. Such VR experiences could be enhanced by tapes of sounds and voices

from home, aromas such as a significant other's cologne, wood burning in the fireplace, or experiencing an ocean breeze. Whether alone or with others, the possibilities are unlimited.

Virtual environments may prove quite valuable in enriching everyday non-virtual reality for people in space. They can be used in combating orbital human factors of homesickness, isolation, boredom, touch deprivation, confinement, anxiety, depression, somatic or intellectual dysfunction, and other potential difficulties of living in space (Perrin, 1985). The Rogerian practice methodology of pattern manifestation appraisal and deliberative mutual patterning (Barrett, 1988) will facilitate the process of accurately defining the health concerns and planning appropriate virtual environment patterning.

Another potential use of VR involves nurses on Earth conducting health patterning sessions with people in space who are experiencing environmental disharmony and/or interpersonal mutual process difficulties. The purpose would be to learn skills for resolving difficulties in living in space that would transfer out of VR and the health patterning process with the nurse. The virtual reality is a practice arena not subject to all of the extraneous happenings of ordinary life (Tart interviewed by Bard, 1991). VR may be an effective laboratory for allowing one to enhance that human ability to imagine "What would happen if..." (Tart interviewed by Bard, 1991).

Phillips (1993) in his recent article, gives many creative examples for using VR in nursing research and nursing education. Many of his ideas have applicability for nursing research, education, and practice in space.

VR is building a world that one could walk into, a world that is creatable.

It has potential for being an innovative exercise of the imagination, intellect, and spirit that is of an entirely new order. It requires, of course, entering into the computer a map of information needed for reinventing the world from scratch through the participant's choices. For example, if a space traveler wanted to take a virtual trip home, the computer would have stored imagery of that home from films of every part of the house including every room and all the contents. This would allow space visitors to return home, go to any room they choose, and to pick up any object they choose. The same type of information could be stored in the computer from favorite places such as the beach or a favorite city. VR for space travelers and Earth-bound friends and family will provide the next best thing to being together physically. It will allow for the "experience" of being in two places at once. However, VR from the Rogerian perspective is not artificial or an illusion as one is already everywhere since energy fields are infinite. It simply provides a way to experience these multiple manifestations.

In summary, VR will give human beings the capacity to transcend distance through communication in a way previously not possible. Rogers' science provides a framework to envision the use of VR in nursing practice as well as a framework to design nursing research projects that will explore the impact of VR on unitary human beings.

Telenursing as a Health Patterning Modality for Nursing in Space

Telenursing is another computer technology that will be used in nursing in space to facilitate communication and collaboration between people on Earth and in space. Preflight health appraisal

baseline human and environmental pattern manifestation information will be analyzed and stored in a computerized system. The data base will be accessible via computer terminal to the nurse in space (Perrin, 1985). This type of communication is called telenursing. Computer conferencing between the nurse in space and nurse colleagues on Earth will be not only possible but absolutely essential (Perrin, 1985). This type of communication is called telenursing.

In emergency situations telenursing will allow health appraisal data to be sent back to Earth perhaps using onboard devices that would monitor the human energy field pattern manifestations. This would be similar to the way trauma units currently monitor patients remotely (Pine, 1990). Thus, highly specialized nursing knowledge from a variety of sources on Earth will become accessible. Signals conveying pattern appraisal data will be down-linked to Earth and then nursing information necessary for deliberative mutual patterning will be up-linked to the space station. Not only will this technology assist in solving nursing problems in space, the impact on terrestrial nursing care will be monumental. Nurses everywhere could potentially have access to extensive nursing knowledge at their fingertips.

Holloway, a physician with the Uniformed Services University in Bethesda, has discussed the need for a medical model of nursing practice in space (Pine, 1990). He noted that once problems are medically treated, patients will often need nursing care. He commented, "With a four-person crew on the way to Mars, 24-hour nursing care becomes a huge draw-down" (quoted in Pine, 1990, p. 24). Using a nursing model of nursing

practice in such cases, telenursing could be used to direct life-sustaining nursing care from a distance. Similarly, telenursing would allow for consultation with nursing experts on theoretical application of nursing science to nursing in space.

Holloway's example of nursing care illustrates the need for articulation of a nursing science framework in order to educate members of various health professions. Since Rogerian science provides a framework for understanding the human experiences in space as well as a knowledge base for solving problems of human existence in space, it is important to share Rogers' new world view of the integrality of humans and their environments in a pandimensional universe. Presenting papers at meetings of other disciplines and publishing in medical and other health care journals is one way to share Rogerian science views on space (Barrett, 1991).

The Ethics of Virtual Reality

VR like most other technology is neither good nor bad in and of itself. Depending on the way it is used, we can choose to label it positive or negative. While we do not know all of the possible directions that this technology may take, we do have an opportunity to explore ethical issues pertaining to its scientific applications on Earth and in space (Rheingold, 1991).

VR brings with it a set of ethical questions about the capabilities it makes possible. Moreover, ethical dilemmas will continue to emerge as this technology and its implications for use evolve. In general, there are questions about human uses of VR technologies that are visible on the horizon. VR can be considered a new kind of relationship between humans and computers. Some people will use it as a hybrid of escape, entertainment, and

addiction. Other people will use it to negotiate some of the complexities of the next century. It is crucial to make every effort to guide its wise use.

Since VR allows people to immerse themselves in a new world created inside computers and to block out ordinary reality, there could be serious dangers for some people. VR could encourage retreat from ordinary reality and trigger psychotic episodes in those who have serious difficulties with reality testing. Analogous to computer neurosis whereby individuals are compelled toward continuous interaction with a computer, there is a possibility of VR psychosis whereby the VR experience triggers hallucinatory and/or delusional symptoms. VR could also promote withdrawal into the VR world and retreat from other modes of encountering reality. Widespread access to VR for sexual experiences (Ferrell, 1993) will have ethical and legal implications. Ethical guidelines to prevent inappropriate and/or dangerous use of VR will be essential.

Ethical issues in nursing in space will include those previously discussed as well as others. For example, providing privacy for VR experiences with significant others on Earth may be problematic, particularly initially in the limited quarters of the Space Station Freedom. Likewise, in telenursing maintaining confidentiality of information that is down-linked or up-linked could be problematic. Issues of informed consent will also require consideration in order to protect human rights.

The Future

Currently, high-quality head mounted VR systems cost \$200,000. W Industries is producing the only commercially available VR system for \$50,000; it has poor image quality (Brody, 1991). However, Autodesk Inc. is designing a PC software VR package called Cyberspace. This will

slash costs to perhaps as low as \$10,000. It will be marketed to developers who will build various types of applications (NASA, 1990). Artificial glove input devices and imagery software will also be marketed for PCs (Ditlea, 1990a, p. 26).

How sophisticated these systems will be is another question. According to Rheingold (quoted in Hall, 1990), the technology is in the Kitty Hawk stage. However, he maintains that by the year 2000, when it is in the 747 stage, it will change the world (Hall, 1990). One would hope that within the next five years, nursing will enter the VR picture with nursing research studies designed to test use of VR in promoting human health.

If all of this seems far fetched, people who are beyond 60 years of age will remember an early childhood when TV seemed like an impossible dream. And then when sets were initially available, the screen was full of "snow". Yet, look at TV now. So allow yourself to dream with VR to a time that's not yet here.

Possible uses of VR are unlimited and unpredictable when VR eventually does become a part of our world. It seems reasonable to believe that it will happen in a major way and it will happen quickly. It has already spread around the world and across disciplines. Perhaps it will be another 100th monkey phenomena like we experienced with the FAX machine. It seemed as if one had occasionally heard about FAX and then a year or so later "everyone" was talking about it and a year or so later almost overnight it seemed as if almost "everyone" was communicating via a FAX machine. We can't stop VR, even if we want to; we may be able to guide it if we start now. People in the 21st Century may wonder

how they ever got along without it. If this seems unlikely, consider that in 1950, when he had a vision of VR, Douglas Engelbart seemed to be the only person in the world who thought computers could or should display information on screens, (Rheingold, 1991). More than likely, virtual reality is going to become part of our everyday lives and change how we live, work, and play -- sooner than we think. It is time to plan now through nursing research and nursing education for use of VR in nursing practice in space. It has been said that colonization of the moon will begin in 2010. A prototype of the first permanent "moon house" will be finished in 1996 (Ferrell, 1993). Eventually, nurse will be living and working in space.

In summary, "The life of the future lies in space, and that life may be so different from what we have now that we can scarcely imagine it" (McGowen, 1987, p. 59). The future will emerge from the choices made yesterday, now, and in the decades ahead.... Nonetheless, the future is open, and its shape is limited only by those of us who are participating knowingly in shaping it.

It truly is an incredible time to be alive as we are, through space exploration, participating in one of the greatest events in human history. Naugle (1981) noted that "Life has begun to expand its habitat beyond the Earth. The last time such expansion occurred was hundreds of millions of years ago, when life came out of the seas to occupy the land... The Space Age is an era of exploration, discovery, and scientific achievement without parallel in history" (pp. IV-V). Travel to Mars and the solar system are stepping stones to the galaxy at large -- human travel to the stars and beyond. Or per-

haps it will be homo spatialis travel, the next emergence of man beyond humans (Rogers, Doyle, Racolin, & Walsh, 1990).

Rogers (1988) maintains that "the future demands new visions, flexibility, curiosity, imagination, courage, risk taking, compassion, and an excellent sense of humor" (p. 102). "Whatever the future of nursing will be, it will be within the context of radical change, diversity, new knowledge, and new horizons" (Rogers, 1990, p. 355). "The challenge is for nursing to become a collaborating team participant in the exploration of living and working in space" (Perrin, 1985, p. 503).

In the future as we enter the 21st Century, VR will not be seen as a medium used within physical reality, but rather as a new realm of experiencing pandimensional reality. Let those of us in nursing seize the opportunity to participate in the knowledge development of VR and to share our thoughts, dreams, and voices with other virtual reality pioneers.

References

- Bard, S. (1991, Autumn). (Interview with Charles Tart). Virtual reality: An extension of reality. Noetic Sciences Review, 7-9.
- Barrett, E.A.M. (1988). Using Rogers' science of unitary human beings in nursing practice. Nursing Science Quarterly, 1, 50-51.
- Barrett, E.A.M. (1990). Health patterning in a private practice environment. In E.A.M. Barrett (Ed.), Visions of Rogers' science-based nursing (pp. 31-44). New York: National League for Nursing.
- Barrett, E.A.M. (1991). Space nursing. Cutis, 48, 299-303.
- Brody, F. (1991). Virtual Reality Conference (Videotape). Nicasico, CA: Media Magic.
- Dahir, M.S. (1991). The mind in space. Final Frontier, 4 (5), 53-56, 58-59.
- Ditlea, S. (1990a, August). Grand illusion coming soon, to your home... artificial reality. New York Magazine, pp. 27-34.
- Ditlea, S. (1990b). Space: Computerized tour guides. Omni, 13 (1), 26.
- Ferrell, K. (Ed). (1993, February). Letter from the Editor of Omni. Omni, PP. 4-5.
- Fjermedal, G. (1990). Telepresence. Final Frontier, 3 (4), 27-30, 51.
- Fisher, S.S. (1990a). Virtual environments. Multimedia Review, 1 (2), 24-30.
- Fisher, S. (1990b). Virtual interface environments. In B. Laurel (Ed.). The art of human-computer interface design, pp. 22-29. Menlo Park, CA: Addison Wesley.
- Hall, T. (1990, July 8). Virtual reality takes its place in the real world. The New York Times, 1, 14.
- Helsel, S.K., & Roth, J.P. (1990). From the editors. Multimedia Review, 1 (2), 3-4.
- Krueger, M.W. (1990). Reflections on the world of multimedia computing. Multimedia Review, 1 (2), 31-34.
- Krueger, M.W. (1991). Artificial reality II. New York: Addison-Wesley.
- Lebedev, V. (1988). Diary of a cosmonaut: 211 days in space (L. Dianger, trans). College Station, TX: Photo Resource Research Inc. Information Service (Original work published in 1983).
- McGowen, T. (1987). Album of spaceflight. New York: Checkerboard Press.
- Media Magic Catalogue (1991). Senate Hearings (Videotape). Nicasio, CA: Media Magic.
- Nadis, S. (1990). Dwelling of the high ones. Omni, 12 (12), 26.
- National Aeronautics and Space Administration (1988). NASA's virtual workstation: Using computers to alter reality. NASA Tech Briefs, 12 (7), 20-21.
- National Aeronautics and Space Administration (1990). Computerized reality comes of age. NASA Tech Briefs, 14 (8), 10-13.
- Naugle, J.E. (1981). Preface. A meeting with the universe: Science discoveries from the space program. Washington: National Aeronautics and Space Administration.
- Perrin, M.R. (1985). Space nursing: A professional challenge. Nursing Clinics of North America, 20, 497-503.
- Phillips, J.R. (1993). Virtual reality: A new vista for nurse researchers? Nursing Science Quarterly, 6, 5-7.
- Pine, D. (1990). Travel to Mars. Final Frontier, 3 (4), 24.
- Rheingold, H. (1991). Virtual reality. New York: Summit.
- Rogers, M.E. (1992). Nursing science and the space age. Nursing Science Quarterly, 5, 27-

34.
Rogers, M.E., Doyle, M.B., Racolin, A. & Walsh, P.C. (1990). A conversation with Martha Rogers on nursing in space. In E.A.M. Barrett (Ed.), Visions of Rogers' science-based nursing (pp. 375-386). New York: National League for Nursing.
Smith, B. (1991). Virtual Reality Conference (Videotape). Nicasio, CA: Media Magic.

Spring, M.B. (1990). Informating with virtual reality. Multimedia Review, 1, (2), 5-13.
Walser, R. (1990). Elements of a cyberspace playhouse. Multimedia Review, 1 (2), 42-46.

Elizabeth Ann Manhart Barrett, RN; PhD; FAAN.
Associate Professor
Hunter-Bellevue School of Nursing
Hunter College of the City University of New York
425 E. 25th Street
New York, New York 10010

Fifth Rogerian Conference, June 24-26, 1994

Patterns of Rogerian Knowledge

Creating, Disseminating, Speculating, Celebrating

New York University

New York, New York

The Program Planning Committee for the Fifth Rogerian Conference is hard at work. One proposed section will be a videotaped interview with Martha Rogers herself--an opportunity for people to ask her the burning questions that have been bothering them. So, take advantage of this opportunity. Write down your questions and send them to

Dr. Joanne Griffin
New York University
Division of Nursing
429 Shimkin Hall
Washington Square South
New York, New York 10003

Reflections on the Science of Unitary Human Beings in Terms of Kuhn's Requirement for Explanatory Power

Martha H. Bramlett, RN;PhD.

Sarah H. Gueldner, RN;DSN;FAAN.

Janet H Boettcher, PhD.

Abstract

Nursing is currently challenged with numerous competing theoretical frameworks. With these diverse conceptual systems grounded within disparate paradigms, nursing scientists must discern which of the developing paradigms hold the greatest validity and utility for nursing. This discussion addresses Rogers' Science of Unitary Human Beings in terms of Kuhn's requirement for explanatory power. Exemplars are presented and challenges for the future are discussed.

Evolving Paradigms

Nursing, as characterized by its developing paradigmatic state, is currently challenged with numerous competing theoretical frameworks, conceptual systems and even sciences. These contemporary theoretical bases for nursing vary greatly in their level of abstraction and in their philosophical foundations. While these competing conceptual systems have been categorized into various paradigms, theorists have rarely divided them along the same line (Chinn & Jacobs, 1987; Fawcett, 1984; Parse, 1987). Parse (1987) proposed that the evolving theoretical bases for nursing could be classified in either the Totality Paradigm or in the Simultaneity Paradigm.

The only real consensus is that a number of proposed paradigms exist and that they vary considerably in their philosophical bases. The challenge now facing nursing is to arrive at consensus regarding which of the developing paradigms hold the greatest validity and utility for nursing.

Such consensus would facilitate progression of the science of nursing by focusing the efforts of researchers and scholars on the central phenomenon of critical interest to the discipline. This focus would not only provide direction for research and inquiry, but would also clarify the identity of the profession for the greater scientific community. In addition to determining the general philosophy of the science, the paradigm circumscribes the very field of questions to be asked, espousing some and disregarding others. Similarly, the paradigm selects scientific methods to be favored while rebuffing others. In other words, it is the paradigm that provides the scientific framework and methodology for investigation (Chinn & Jacobs, 1987; Kuhn, 1970; Nagle & Mitchell, 1991). Thus, as the nursing profession selects possible theoretical bases, the profession is simultaneously deciding on a paradigm or paradigms for the discipline.

Kuhn's Perspective of Emerging Paradigms

Kuhn (1970) has observed trends in the evolution of a science and in the ways members of the discipline select a paradigm. For instance, Kuhn notes that it is

Key Words Nursing Theory, Kuhn,
Science of Unitary Human Beings,
Martha Rogers

Received September, 1992
Accepted January, 1993

not uncommon in developing disciplines for several theories to be proposed. In time, and after intense dialogue and rigorous testing, one paradigm gradually gains almost universal acceptance by the members of the professional community.

Since nursing is a relatively new discipline, its theoretical statements are just beginning to emerge. Over the past two decades several nursing paradigms have been proposed, and are presently being critically analyzed and tested by nursing's scientific community. Following Kuhn's logic, as the results of the testing are disseminated, one paradigm, perhaps greatly modified or expanded over time, will eventually obtain widespread acceptance by members of the profession, thus become nursing's paradigm. Other paradigms proposed will either be rejected or subsumed within the primary paradigm. It is therefore the charge of contemporary nursing to engage in the critical scientific review of each of the competing theoretical frameworks in the pursuit of its unique theoretical base. Addressing this challenge, the Science of Unitary Human Beings is herein examined for its potential as a paradigm for nursing. This conceptual system is especially analyzed for its ability to fulfill Kuhn's requirement for explanatory power.

According to Kuhn (1970), the acceptance of a paradigm by a professional community is related to its ability to explain the phenomena of central concern or to solve problems unique to the discipline better than competing paradigms. In other words, Kuhn insists that the finally accepted paradigm must solve those "puzzles" inherent in the discipline. However, as stated earlier, such consensus is a slow process plagued by confusion emerging from imprecise articulation with

regard to terms. For instance, in his discussion of paradigms Kuhn used the term with at least 21 different connotations (Eckberg & Hill, 1980).

Kuhn's many usages of the term "paradigm" can generally be divided into three categories with the more abstract categories subsuming the less abstract. The most abstract and general category identified is one of metaphysical paradigms which consist of unquestioned presuppositions (Eckberg & Hill, 1980). The next level, the disciplinary matrix, represents the subculture of the disciplinary community and can be identified by the commonality of beliefs, values, and symbolic generalizations. These beliefs are not necessarily common to the entire discipline (e.g. all of nursing) but rather to a special community (e.g. proponents of a specific theory) (Eckberg & Hill, 1980; Kuhn, 1970).

Exemplars of Kuhn's Paradigms

The least abstract and most restrictive of the three uses of paradigm is expressed by exemplars. It is the exemplar that is most closely related to puzzle solving and explanatory power. Exemplars are the extant problem-solutions encountered in a discipline that show how the scientific theory works. They are encountered throughout the educational process within a discipline and can be found in textbooks, exams and in the periodical literature. By examining them students gain an understanding of how the laws and theories of a scientific community are utilized and applied. It is at the exemplar level that the utility of a theory or conceptual framework is validated (Eckberg & Hill, 1980; Kuhn, 1970). Understandably, it is this exemplar level which greatly influences a community of scientists in their decision to

adopt or reject a paradigm.

According to Kuhn (1980), logical proofs cannot be utilized to analyze the opposing paradigms, because logical analysis is always conducted within the framework of a paradigm. Since the various paradigms provide different premises for analysis and inference, logical analysis alone will not lead to resolution of the conflict. Logical comparisons are further complicated if individuals are unwilling to attempt to view the opposing paradigm from within its respective and unique framework. Faced with this dilemma, the scientific community is forced to use alternative methods when choosing a paradigm. One solution, according to Kuhn, is to compare the efficacy of competing paradigms.

A main rationale for selecting a new paradigm is because of its ability to solve problems which the old paradigm is unable to accommodate. In other words, one must ask, does the new paradigm provide the puzzle-solutions (exemplars) necessary to demonstrate its utility? While new paradigms may provide little help with the problems of central concern in their early development, their early theoretical structures may produce exemplars which demonstrate the potential for utility. One is reminded that paradigms not only provide a conceptual map, but also determine the questions, methods and standards for scientific investigation. Specifically, it is the exemplars which demonstrate how the methodologies are applied, and it is through the exemplars that the puzzle solving ability of a paradigm is demonstrated. Further, it is from the expanding network of exemplars that explanatory power is gained, and that the essential puzzles are clarified and solved (Kuhn, 1970).

Science of Unitary Human Beings

In order to review the Science of Unitary Human Beings in terms of puzzle solving and explanatory power, one must first review the unique attributes of the paradigm. The Science of Unitary Human Beings departs sharply from the traditional mainstream of thought in nursing. Rogers, viewing unitary human beings as the phenomenon of central importance to nursing, presents her conceptual system as the Science of nursing from which a variety of theories will emerge. Defining unitary human beings as irreducible energy fields, she considers the individual and the environment as integral and irreducible, and uses the term "energy field" to describe each in mutual process.

Rogers presents four concepts as integral to her conceptual system: (1) energy fields, (2) openness, (3) pattern, and (4) pandimensionality. She proposes that energy fields are the basic units of all living and non-living substance. These fields are infinite and exist without boundaries (Rogers, 1986; 1992a). By the concept of openness, Rogers submits that the universe is one of open systems. Pattern is proposed as an abstraction referring to the distinguishing characteristics of energy fields and is the means by which energy fields are identified (Rogers, 1986; 1992). Pandimensionality is defined as "a non-linear domain without spatial or temporal attributes" (p.7) (Rogers, 1992a). She postulates pandimensionality to be a characteristic not only of human and environmental fields but of all reality. She promotes this conceptualization as a way of experiencing human beings and their world (Rogers, 1986). Combining these ideas she describes unitary human and environmental fields as being "irreducible, pandimen-

sional energy field(s) identified by pattern and manifesting characteristics different from those of the parts and which cannot be predicted from knowledge of the parts" (Rogers, 1992a).

In addition to these basic concepts, Rogers proposed three principles which she calls the principles of homeodynamics. The principle of resonancy is described as "the continuous change from lower to higher frequency wave patterns in human and environmental fields" (Rogers, 1990, p. 8). The principle of helicy is defined as "the continuous, innovative, unpredictable increasing diversity of human and environmental field patterns." (Rogers, 1990, p. 8). Finally, the principle of integrality is described as "the continuous mutual human field and environmental field process" (Rogers, 1990, p. 8). According to Rogers (1970, 1987b, 1990), the principles of homeodynamics provide a "new science" way of perceiving human beings and their environment in which changes reflect the mutual process of the two.

A major characteristic of the Science of Unitary Human Beings is the rapid evolution of the science itself as scholars strive to more precisely define and address relevant research questions and methodologies. In such an environment, concepts and principles of the science undergo constant scrutiny to assure conceptual congruence. For example, theories of chaos have been closely examined for their possible correlations with the framework (Phillips, 1991a). Especially intriguing in chaos was the concept of unpredictability, a concept considered to be congruent with the principle of helicy which also proposes an unpredictable change. Yet Rogers (1992b) has recently expressed concern over the suitability of such comparisons. The science of chaos

is based on a three dimensional reality, which proposes that predictability is impossible because science can never accurately measure all variables (Gleick, 1987). This is conceptually different from the pandimensional world view of Rogers, which proposes that the unpredictability of change is a characteristic of the nature of change rather than a measurement difficulty (Rogers, 1992b).

In this rapidly evolving Rogerian conceptual system, each research study provides not only a test of the system but potentially provides the basis for alterations in the conceptual system. Therefore, it is not unusual in examining the literature to find landmark studies citing a Rogerian conceptual base but using terminology and concepts that have since been evaluated as incongruent with the Science of Unitary Human Beings.

Exemplars of Rogers' Science

If it is through the exemplars or puzzle-solutions process that explanatory power is gained, the questions arise, what are the exemplars of the Science of Unitary Human Beings? What does the puzzle look like? The term puzzle must be used cautiously when discussing the Science of Unitary Human Beings, since it brings to mind the image of puzzle pieces, a concept innately inconsistent with the Rogerian holistic framework. Unfortunately, our present language falls short in providing an alternative term with more unitary features and realm of meaning. In order to maintain trueness to the integrity of the Rogerian paradigm, one must be cognizant of this basic conceptual hazard.

A major difficulty in elucidating the puzzles presented by the Science of Unitary Human Beings rests with its abstract nature. According to Kuhn's paradigmatic analysis, the Science of Unitary Human

Beings is an abstract system existing predominantly at the metaphysical and disciplinary matrix levels. At a metaphysical level, paradigms address the fundamental beliefs underpinning a science. Sarter (1988), in her extensive analysis of the metaphysical basis of the Rogerian abstract system, described the ontological and teleological foundations. She further explicated the new world view upon which the Science of Unitary Human Beings is based. At the disciplinary matrix level, paradigms address the shared values and symbols of a community of scientists. This level is demonstrated in the language (or symbols) utilized by the community of Rogerian scholars. The sentient nature of human beings and the intrinsic merit of individual human potential, concurrent with the inherent pandimensional nature of the individual, are examples of such values. Numerous abstract conceptualizations such as unitary human beings, energy fields, open systems, and pandimensionality have been theoretically defined but lack extensive elucidation. As theories and conceptual models emerge, the puzzles are becoming more explicit. These puzzles are reflected in research studies which provide the exemplars by which the utility of the Science of Unitary Human Beings will be judged by the greater scientific community of nursing. This discussion will address exemplars demonstrating concepts of concern, therapeutic modalities and methodologic concerns.

Concepts of Concern

One role of a paradigm is the determination of concepts appropriate for study. At an abstract level Rogers proposes that the phenomenon of interest for nursing is the unitary human being. However, much work has been conducted at

the exemplar level to determine those specific human field manifestations of interest. While identification of manifestations of interest continues with new manifestations constantly being described, those already delineated help to demonstrate the concepts addressed in the Science of Unitary Human Beings that are difficult to investigate within the old world view. These manifestations include constructs with familiar names that have been redefined within the Rogerian Conceptual system such as creativity, mystical experience, paranormal experience, anxiety, pain, laughing, clairvoyance, reminiscence, and relaxation. Furthermore, new constructs have been developed within the framework. These include Human Field Motion (FERENCE, 1986), Power as Knowing Participation in Change (Barrett, 1984), temporal experience (Palletta, 1990) and human field image (Johnston, 1992; Phillips, 1990). A difficulty in investigating such manifestations is the need for measurement or description of these manifestations. Many studies conceptualized within the Rogerian conceptual system have relied on measurement scales developed within other disciplines (Allen, 1988; Allgood, 1986; Bramlett, 1990; Bray, 1989; Conner, 1986; Cowling, 1986; Daffron, 1988; Fedoruk, 1984; Guthrie, 1987; Kutlenios, 1985; McEvoy, 1990; Rawnsley, 1986; Smith, 1986). While such scales have undergone close scrutiny for conceptual congruity with the Science of Unitary Human Beings, they remain suspect because of their origins in a old world three dimensional particulate perspective. Malinski (1991) and Reeder (1991) explored aspects of laughing at oneself using phenomenological methodology in an effort to examine the phenomenon from a new world view. Such in-

quiries, which provide conceptualizations consistent with the Rogerian abstract system, hold valuable insights about the nature of the phenomena and also facilitate further investigation. As concepts develop within the Science of Unitary Human Beings, efforts to develop corresponding instruments within the framework progress. Two early examples of such instrument development are Ference's (1986) Human Field Motion scale and Barrett's (1984) Power as Knowing Participation in Change scale.

Human Field Motion and Power

Ference (1986) developed the concept of Human field motion which she proposed as a manifestation of the wave frequency of unitary human beings. She further proposed that time experience, creativity traits, and differentiation were manifestations of human synergistic development that would be correlates of human field motion. Developing an instrument to measure human field motion, Ference demonstrated a positive relationship between human synergistic development and human field motion. While the instrument has not been without difficulties, (Butcher & Parker, 1988; Gueldner, 1986) it did provide a model for the development of future concepts and instruments.

Gueldner (1986) studied the relationship between imposed motion and human field motion in elderly individuals living in nursing homes. She hypothesized that there would be a positive relationship between imposed motion (rocking) and human field motion. She further hypothesized that there would be a positive relationship between perceived human field motion and the reported level of restedness. No significant difference was reported between the human field motion

scores of individuals who rocked and those who did not rock. However, individuals with higher human field motion scores reported a greater feeling of restedness. In response to measurement difficulties with the original word form of the Human Field Motion Scale, Gueldner and Ference (1988) began development on a picture scale to measure human field motion, thus introducing visual metaphors as a measurement modality. This new scale will further expand measurement options in research dealing with human field motion.

Barrett (1986), examining the relationship between human field motion and power, defined power as "the capacity to participate knowingly in the nature of change" (p. 174). In addition to developing the concept of power within the Rogerian conceptual system, Barrett developed a scale to measure this field manifestation. Finding a significant relationship between human field motion and power, Barrett concluded that as human field motion evolves, the ability to participate knowingly in change increases. Thus she also began the process of tying these uniquely Rogerian concepts together.

Using measures of human field motion and power as indicators of field patterning, Rapacz (1991) investigated the frequency of field patterning in individuals experiencing chronic pain. She found that individuals with chronic pain had significantly (.001) lower scores on both Ference's Human Field Motion scale and Barrett's Power as Knowing Participation in Change Test than persons not in pain. She concluded that individuals with chronic pain have significantly lower frequency patterns than persons who do not have pain.

Temporal Experience

The concept of time and the human experience of time have also been the object of research within the Science of Unitary Human Beings. Conner (1986), investigated human field motion time experience in parents and non-parents (N=414). Time experience was measured using the Time Metaphor Test. She concluded that time experience contributed to the description of parents. Parents' faster perception of time may suggest the evolutionary nature of parenthood. Butcher and Parker (1988) also utilized the time metaphor test, postulating pleasant guided imagery would pattern the human energy field toward higher frequencies. They found that individuals participating in such imagery experienced a greater sense of timelessness.

Rawnsley (1986) studied the perception of the speed of time passing in terminally ill persons. She found that dying subjects perceived time as passing more rapidly, and that this relationship tended to hold true regardless of the age of the subject. She found that younger persons who were dying perceived the speed of time passing similarly to older persons. She concluded that dying is accompanied by increased field motion and field complexity regardless of chronological age.

Paletta (1990) developed the Temporal Experience Scale (TES) as a measure of the "continuous mutual process of the human field with the movement of events in the environmental field" (p. 240). While Ference, Barrett and Gueldner all utilized a semantic differential scale format, Paletta utilized metaphors in a likert type scale, thus providing a slightly different format for measurement as well a way to examine time within the non-linear pandimensional Rogerian framework. She

supported the TES as predictive of human time and further found the timelessness scale as most predictive of human time.

Creativity

Many research efforts have addressed concepts familiar within the old world view but redefined in a manner conceptually consistent with the Rogerian Science. One such concept, which has received extensive attention, is creativity (Alligood, 1986, 1987; Bramlett, 1989, 1990; Bray, 1989; Conner, 1986; Cowling, 1986; Ference, 1986; McEvoy, 1990; Smith, M.C., 1986). Creativity is viewed within the Science of Unitary Human Beings as a manifestation of human diversity and complexity reflected in the principle of helicy.

Alligood (1986) investigated the concepts of creativity, actualization and empathy. She hypothesized that there would be a positive correlation between creativity and empathy, and between actualization and empathy. Additionally, she hypothesized that the combined contribution of creativity and actualization to the variance in empathy would be greater than either one separately. She demonstrated significant support for all of her hypotheses. In a follow-up study with an older sample (age 61-92), Alligood again found a positive correlation between self-actualization and empathy. However, contrary to the results of her initial study, a negative correlation was found between creativity and empathy in this older sample (Alligood, 1987).

Cowling (1986) found a positive relationship between mystical experience, differentiation, and creativity in college students. He concluded that these results provided support for the principle of helicy.

Bray (1989) investigated the relationships among creativity, time experi-

ence and mystical experience proposing that timelessness, creativity, and mystical experience were all manifestations of greater diversity. Using a preference for complexity on the revised art scale as a measure of creativity and the Time Metaphor Test as a measure of time experience, Bray failed to find support for her hypothesis

Studying complexity as a correlate of the experience of dying, McEvoy (1990) hypothesized that persons would exhibit increased levels of creativity and increased incidence of paranormal events, both judged to be indicators of complexity, as they approached death. While the incidence of paranormal experiences increased over time, no differences in creativity were seen, thus yielding only partial support for the principle of helicy.

Bramlett (1989) investigated creativity in older adults using phenomenological methodology. She concluded that the human experience of creativity was a lifelong process and that environment is crucial in facilitating inspiration and motivation. She surmised that results supported the Rogerian conceptual system. In a study of the relationship between power, creativity and reminiscence in well elders, Bramlett (1990) utilized the Torrance Test of Creative Thinking as a measure of creative energies. Subjects participating in a program of reminiscence demonstrated a significant increase in power, but were observed to have a decrease in creativity. Puzzled by this finding, Bramlett (1990), like McEvoy (1990), questioned the conceptualization of creativity as an indicator of complexity and diversity. She further questioned the conceptual congruence of measures of creativity as indicators of complexity and diversity.

These studies collectively have yielded varying support for the Rogerian framework. The difficulties encountered in the conceptualization and measurement of creativity cannot be dismissed in analyzing these results. Until measurement and conceptualization issues of human diversity are resolved, interpretation of creativity as a field manifestation will continue to elude researchers.

Environmental Wave Patterns

Several notable studies have investigated the mutual process between human beings and environmental wave patterns present in the environment. These studies have dealt primarily with light and sound wave patterns. However, the Rogerian conceptual system is by no means limited to these two manifestations of wave pattern.

Ludomirski-Kalmanson, reasoning that light could be perceived by the human field without vision, conducted her study involving exposure to red and blue light in a sample of totally blind adults. She hypothesized that human field motion would be increased during exposure to blue light as opposed to red light, regardless of visual sensory perception. As predicted, she found no significant difference in the human field motion scores of sighted and blind subjects. Also as predicted, she found that subjects exposed to blue light exhibited significantly higher human field motion scores than subjects under red lights (Ludomirski-Kalmanson, 1984; Winstead-Fry, 1986). This study provided impressive support for the principle of integrality.

McDonald (1986) conducted a study with persons having chronic pain to determine the nature of the relationship between the environmental presence of certain visible lightwaves and the human

experience of pain. She hypothesized that persons exposed to higher frequency (blue) lightwaves would experience less pain than persons exposed to lower frequency (red) lightwaves. She also hypothesized that longer exposure to the blue lightwaves would more likely be accompanied by a reduction in the experience of pain than shorter exposure times. She found a trend toward greater pain relief with blue light exposure, and reported a statistically significant correlation between longer exposures to blue light and relief of pain.

Malinski (1986) explored the relationship between hyperactivity in children, perception of short wavelength light, and color preference. While no statistically significant results were reported, the hyperactive children in the study tended to be able to identify information illuminated with lower light filters than children in the control group.

M.C. Smith (1986) proposed that subjects in an environment of high-frequency sounds would demonstrate greater increases in vividness and creativity of imagery than would subjects in a low-frequency sound environment. Finding no support for her hypothesis, M.C. Smith cited the need for consideration of both theoretical and methodological issues. She further suggested that future research involving sound frequency should consider qualities of sound beyond frequency.

M.J. Smith (1986), testing the principle of integrality, investigated the relationship between a varied harmonic environment and restedness in individuals confined to bed. Smith hypothesized that the "perception of restfulness will be lower (subjects will be more rested) for confined subjects who experience varied harmonic auditory input than for those who experience quiet ambience" (M.J.

Smith, 1986, p. 23). Providing either composed music or ambient room noise, M.J. Smith found that subjects who listened to the composed music perceived themselves as significantly more rested, supporting the principle of integrality.

Unitary Field Pattern

Carboni (1992), developing an instrument to measure unitary field pattern, described the concept of the healing human-environmental field and developed an instrument called "Mutual Exploration of the Healing Human Field-Environmental Field Relationship." Carboni's work, conceptualized within the Science of Unitary Human Beings, is especially notable in that it introduces methodology emphasizing holistic ways of knowing as evidenced by the open format of the instrument and the various ways individuals are requested to express their patterns. Scale activities include writing poems and drawing diagrams.

Human Field Image

Johnston (1992), expanding on the concept of human field image introduced by Phillips (1991b), presented the further development of the concept of human field image and the preliminary development of a scale using metaphors to measure human field image. Thus, further elucidation of the Science of Unitary Human Beings progresses, providing an ever broadening base of exemplars.

Therapeutic Modalities

Numerous therapeutic modalities have been investigated within the Rogerian Conceptual System. These include but are not limited to imagery (Bryan, 1990; Butcher & Parker, 1988), and therapeutic touch (Fedoruk, R.B., 1984; Heidt, 1981, 1990; Keller & Bzdek, 1986; Krieger, 1973, 1975; Krieger, Peper & Ancoli, 1979; Meehan, 1985; Quinn, 1984, 1989).

Imagery

Guided imagery has been conceptualized as a useful modality in field patterning. Bryan (1990) found that individuals participating in guided imagery prior to and during magnetic resonance imaging demonstrated less anxiety and movement than those not utilizing guided imagery. Butcher & Parker (1988) found that those subjects participating in pleasant guided imagery had a greater sense of timelessness. A similar relationship between imagery and human field motion was not demonstrated. However; results of this and other studies support the potential of imagery as a modality in health patterning.

Therapeutic Touch

Therapeutic touch has received growing attention as a therapeutic modality. First conceptualized and investigated within nursing by Krieger (1973, 1975; Krieger, Peper & Ancoli, 1979), numerous researchers have expanded on the theoretical and research base of therapeutic touch (Fedoruk, R.B., 1984; Heidt, 1981; Keller & Bzdek, 1986; Meehan, M.C., 1985; Quinn, 1984, 1989). In Krieger's (1973, 1975) early research, subjects receiving therapeutic touch experienced significant increases in hemoglobin levels thus supporting the potential of therapeutic touch in patterning human fields.

The relationship between therapeutic touch and anxiety has also received much attention. Heidt (1981) and Quinn (1983) both found that subjects experiencing therapeutic touch demonstrated significant decreases in anxiety. While Heidt utilized therapeutic touch with physical contact, Quinn used therapeutic touch without physical touch, thus supporting the theoretical proposal that this modality is based on mutuality of energy fields rather than relying on physical

touch. However, Quinn (1989) failed to demonstrate decreased anxiety in a later study of subjects awaiting open heart surgery who received therapeutic touch. Citing the confounding considerations of methodological issues and medical regimens, Quinn demonstrated some of the subtle complexities of this modality.

The utility of therapeutic touch in individuals experiencing pain has also been inconsistently demonstrated. Meehan (1985) was unable to demonstrate statistical significance when using therapeutic touch in adults with postoperative pain. However, Keller (1986) did find significant decreases in pain in adults with tension headaches who received therapeutic touch.

Heidt (1990) conducted a grounded theory analysis of nurses' and patients' experiences of therapeutic touch. Categories of experience reported included opening intent, opening sensitivity and opening communication. This qualitative study provided elaboration of the experience of therapeutic touch thus further illuminating the subtleties of this therapeutic touch.

Collectively, these studies provide strong evidence of the potential for therapeutic touch as a therapeutic modality in field patterning.

Explorations in Methodology

In addition to determining the subjects of concern, paradigms, especially at the exemplar level, determine the methodologies appropriate for the science. Rogers (1991) stated that methodology is driven by the research question and is not an end in itself. However; a diverse repertoire of methodologies does expand possibilities for scientific inquiry. Many studies conceptualized within the Science of Unitary Human Beings have utilized traditional quantitative methodologies. While

this discussion will concentrate on exemplars demonstrating alternatives to this quantitative tradition, numerous studies have demonstrated the use of quantitative methodologies in this conceptual system.

Numerous researchers have utilized qualitative methodologies to examine human field manifestations. Bramlett (1989), as previously discussed, utilized phenomenology to investigate the experience of creativity in older adults. Malinski (1991), utilizing a qualitative analysis-synthesis methodology described by Parse, Coyne and Smith (1985), investigated the experience of laughing at oneself in older couples. Similarly, Reeder (1991) investigated the importance of knowing what to care about through laughing at oneself using Husserlian Phenomenology. Malinski and Reeder not only introduced an area for investigation rarely attended to in other paradigms but also modeled alternative methodologies.

Lothian (1989) utilized grounded theory methodology to gain a better understanding of the process of continuing to breastfeed. Conceptualizing breast feeding as a manifestation of human environmental field process, she studied breastfeeding in context and over time. From the data, Lothian developed a model that she proposed to explain breastfeeding duration. Thus, Lothian utilized grounded theory for the generation of a new theoretical model within the Science of Unitary Human Beings.

Solutions for Nursing's Puzzles?

Questions remain: does the Science of Unitary Human Beings provide solutions for nursing's puzzles? Does Rogers' conceptual system exhibit explanatory power? Of course, in order for a new paradigm to even be considered, there must first be some concern regarding the adequacy of the existing paradigm.

Holden (1991) expresses such frustration. Searching for answers within a paradigm based on Cartesian dualism, Holden describes the difficulty encountered in trying to simultaneously maintain a holistic view of humans while conducting investigation in a science that insists on dividing the whole into parts. It is just such frustration for which the Science of Unitary Human beings provides a viable alternative.

The Rogerian conceptual system provides a framework for viewing the unitary human being and allows the researcher to leave behind the frustration of Cartesian duality. Simultaneously new concepts and models are promoted. Of course, there has been little or no duplication of studies to reinforce significant findings. Additionally, documented difficulties with instrumentation for measuring the abstract variables have hindered the search for solutions. Many instruments used for these studies were borrowed from other conceptual frameworks and are judged to have varying degrees of conceptual inconsistency with the Science of Unitary Human Beings. Early exemplars are providing embryonic explanations for some of the puzzles of nursing. While such confirmations are limited, these verifications are likely to be expanded as research within the Rogerian conceptual system progresses.

The findings of initial research have begun to provide guidance for the selection and development of appropriate methodologies. Being mindful of Kuhn's challenge of explanatory power, the Science of Unitary Human Beings must provide a framework for organizing information as well as depicting the emergence of pattern manifestations. Future efforts must be guided in directions that will explain and envision patterns exhibited by

unitary human beings, which constitute the phenomena of primary concern to nursing.

Certainly inroads have been made in this direction, but past findings must be corroborated and expanded. New and innovative research methodologies, consistent with the Rogerian Conceptual System, need to be developed. Reeder's (1986, 1990) extensive philosophical analysis validating the use of Husserlian phenomenology as a methodology congruent with the Rogerian abstract system is an example of such needed efforts. If the Science of Unitary Human Beings is to gain the broad consensus of the community of nurse scientists, the Rogerian Science must provide solutions to many more of nursing's puzzles. The remarkable progress made within the last decade gives evidence that this exciting, avant garde paradigm may hold the potential to meet this challenge.

References

- Allen, V. L. (1988). The relationships of time experience, human field motion, and clairvoyance: An investigation in the Rogerian conceptual framework. (Doctoral Dissertation, New York University, 1988) Dissertation Abstracts International, 50 (01B), 121.
- Alligood, M.R. (1986). The relationship of creativity, actualization, and empathy in unitary human development. In V. M. Malinski (Ed.), Explorations on Martha Rogers' science of unitary human beings (pp. 145-154). Norwalk, CT: Appleton-Century-Crofts.
- Alligood, M.R. (1987). Testing of helicy and integrality among the elderly. Unpublished research abstract.
- Barrett, E.A. (1984). An empirical investigation of Martha E. Rogers' principle of helicy: the relationship of human field motion and power. (Doctoral dissertation, New York University, 1983) Dissertation Abstracts International, 45, 615A.
- Barrett, E.A. (1986) Investigation of the principle of helicy: The relationship of human field motion and power. In V.M. Malinski (Ed.), Explorations on Martha Rogers' science of unitary human beings (pp. 173-184). Norwalk, CT: Appleton-Century-Crofts.
- Bramlett, M.H. (1989). A phenomenological study of creativity in older adults: A pilot study. Paper presented at the Council of Nurse Researcher, Annual Meeting, Chicago, Illinois.
- Bramlett, M. H. (1990). The relationship between power, creativity and reminiscence in the elderly. (Doctoral Dissertation, Medical College of Georgia (1990) Dissertation Abstracts International
- Bray, J. D. (1989) The relationships of creativity, time experience and mystical experience. (Doctoral Dissertation, New York University, 1989) Dissertation Abstracts International, 50 (08B), 3394.
- Butcher, H.K. & Parker, N.I. (1988). Guided imagery within Rogers' science of unitary human beings: An experimental study. Nursing Science Quarterly, 1, 103-110.
- Carboni, J.T. (1992). Instrument development and the measurement of unitary constructs. Nursing Science Quarterly, 5, 134-142.
- Chinn, P. L., & Jacobs, M.K. (1987). Theory and nursing. St. Louis: C.V. Mosby.
- Conner, G. K. (1986). The manifestations of human field motion, creativity, and time experience patterns of female and male parents. (Doctoral Dissertation, University of Alabama at Birmingham, 1986) Dissertation Abstracts International, 47 (05B)
- Cowling, W.R. (1986). The relationship of mystical experience, differentiation, and creativity in college students. In V. M. Malinski (Ed.), Explorations on Martha Rogers' science of unitary human beings (pp. 131-141). Norwalk, CT: Appleton-Century-Crofts.
- Daffron, J. M. (1988). Patterns of human field motion and human health. (Doctoral Dissertation, Texas Woman's University) Dissertation Abstracts International, 49 (10B), 4229.
- Eckberg, E.L., & Hill, L. (1980). The paradigm concept and sociology: A critical review. In G. Gutting (Ed.), Paradigms and revolutions: appraisals and applications of Thomas Kuhn's philosophy of science (pp. 117-123). Indiana: The University of Notre Dame Press.
- Fawcett, J. (1984). Analysis and evaluation of conceptual models of nursing. Philadelphia: F.A. Davis.
- Fedoruk, R. B. (1984) Transfer of the relaxation

- response: Therapeutic touch B as a method for reduction of stress in premature neonates. (Doctoral Dissertation, University of Maryland College Park, 1984) Dissertation Abstracts International, 46 (978B).
- Ference, H.M. (1986). The relationship of time experience, creativity traits, differentiation, and human field motion. In V.M. Malinski (Ed.), Explorations on Martha Rogers' science of unitary human beings (pp. 95-107). Norwalk, CT: Appleton-Century-Crofts.
- Gleick, J. (1987). Chaos, making a new science. New York; Penguin Books.
- Gueldner, S.H. (1986). The relationship between imposed motion and human field motion in elderly individuals living in nursing homes. In V.M. Malinski (Ed.), Explorations on Martha Rogers' science of unitary human beings (pp. 161-171). Norwalk, CT: Appleton-Century-Crofts.
- Gueldner, S.H. & Ference, H.M. (1988). Development of a picture form of the human field motion scale. Poster presentation at the Third Rogerian Conference. New York, June, 1988.
- Guthrie, B.J. (1987). The relationships of tolerance of ambiguity, preference for processing information in the mixed mode to differentiation in female college students: An empirical investigation of the homeodynamic principle of helicy. (Doctoral dissertation, New York University, 1987). Dissertation Abstracts International, 49 (01B), 74.
- Heidt, P. (1981), Effect of therapeutic touch on anxiety level of hospitalized patients. Nursing Research, 30, 32-37.
- Heidt, P. (1990). Openness: a qualitative analysis of nurses' and patients' experiences of therapeutic touch. Image, 22 (3) 180-6.
- Holden, R. J. (1991). In defense of Cartesian dualism and the hermeneutic horizon. Journal of Advanced Nursing, 16, 1375-1381.
- Johnston, L. (1992). Beyond body image: Towards a human field perspective. (Poster presentation) Fourth Rogerian Conference: The Science and Art of Nursing Practice. New York University.
- Keller, E. & Bzdek, V.M. (1986). Effects of therapeutic touch on tension headache pain. Nursing Research, 35, 101-5.
- Krieger, D. (1973) The relationship of touch with the intent to help or to heal, to subjects in-vivo hemoglobin values. A study in personalized interaction. In Proceedings of the Ninth American Nurses Association Research Conference. New York: American Nurses' Association.
- Krieger, D. (1975). Therapeutic touch: The imprimatur of nursing. American Journal of Nursing, 5, 784-787.
- Krieger, E., Peper, E., & Ancoli, S. (1979). Therapeutic touch: Searching for evidence of physiologic change. American Journal of Nursing, 79, 660-62.
- Kuhn, T.S. (1970). The structure of scientific revolutions (2nd ed.). Chicago: University of Chicago Press.
- Kuhn, T.S. (1980). Theory-choice. In E.D. Klemke, R. Hollinger, and A.D. Kline (Eds.), Introductory readings in the philosophy of science (pp. 207-209). Buffalo, NY: Prometheus Books.
- Lothian, J.A. (1989). Continuing to breastfeed. (Doctoral Dissertation, New York University, 1989). Dissertation Abstracts International, 51 (02B), 665.
- Ludomirski-Kalmanson, B.G. (1984) The relationship between the environmental energy wave frequency pattern manifest in red light and blue light and human field motion in adult individuals with visual sensory perception and those with total blindness. Dissertation Abstracts International, 45 (07B), 2094, New York University.
- Malinski, V.M. (1986). The relationship between hyperactivity in children and perception of short wavelength light. In V.M. Malinski (Ed.), Explorations on Martha Rogers' science of unitary human beings (pp. 107-117). Norwalk, CT: Appleton-Century-Crofts.
- Malinski, V.M. (1990) The experience of laughing at oneself in older couples. Nursing Science Quarterly, 4, 69-75.
- McDonald, S.F. (1986). The relationship between visible lightwaves and the experience of pain. In V.M. Malinski (Ed.), Explorations on Martha Rogers' science of unitary human beings (pp. 119-127). Norwalk, CT: Appleton-Century-Crofts.
- McEvoy, M. D. (1990). The relationship among the experience of dying, the experience of paranormal events, and creativity in adults. In E.A.M. Barrett (Ed.), Visions of Rogers' science based nursing (pp. 209-228). New York: National League for Nursing, Pub. No. 15-2285.
- Meehan, C. (1985). The effect of therapeutic

- touch on the experience of acute pain in postoperative patients. Doctoral Dissertation, New York University (1985). Dissertation Abstracts International, 46 (03B), 795.
- Nagle, L.M. & Mitchell, G.J. (1991). Theoretic diversity: evolving paradigmatic issues in research and practice. Advances in Nursing Science, 14 (1), 17-25.
- Paletta, J. L. (1990). The Relationship of temporal experience to human time. In E.A.M. Barrett (Ed.), Visions of Rogers' science based nursing (pp. 239-253). New York: National League for Nursing, Pub. No. 15-2285.
- Parse, R. R. (1987) Nursing science: Major paradigms, theories and critiques. Philadelphia; W.B. Saunders Company.
- Phillips, J.R. (1990). Changing human potentials and future visions of nursing: A human field image perspective. In E.A.M. Barrett (ed.) Visions of Rogers' science-based nursing. New York: National League for Nursing Pub.no. 15-2285. 13-25.
- Phillips, J. R. (1991a) Chaos in nursing research. Nursing Science Quarterly, 4, 96-97.
- Phillips, J. R. (1991b) Human field research. Nursing Science Quarterly, 4, 142-3.
- Quinn, J.F. (1984). Therapeutic touch as energy exchange: Testing the theory. Advances in Nursing Science, 6, 42-49.
- Quinn, J.F. (1989). Therapeutic touch as energy exchange: Replication and extension. Nursing Science Quarterly, 2, 79-87.
- Rapacz, K. (1991). Human patterning and chronic pain. Dissertation Abstracts International.
- Reeder, F. (1986). Basic theoretical research in the conceptual system of unitary human beings. In V.M. Malinski (Ed.), Explorations on Martha Rogers' science of unitary human beings (pp. 45-64). Norwalk, CT: Appleton-Century-Crofts.
- Reeder, F. (1991). The importance of knowing what to care about: A phenomenological inquiry using laughing at oneself as a clue. In P. L. Chinn (Ed.), Anthology on caring (pp.259-279). New York: NLN Publications . Publication # 15-2392.
- Rogers, M.E. (1970). An introduction to the theoretical basis of nursing. Philadelphia: F.A. Davis.
- Rogers, M.E. (1986). Science of unitary human beings. In V.M. Malinski (Ed.), Explorations on Martha Rogers' science of unitary human beings (pp. 3-8). Norwalk, CT: Appleton-Century-Crofts.
- Rogers, M.E. (1987a). Nursing science: A science of unitary human beings: Glossary. Unpublished manuscript.
- Rogers, M.E. (1987b) Rogers science of unitary human beings. In R. R. Parse (Ed.), Nursing science: Major paradigms, theories and critiques (pp.139-146). Philadelphia; W.B. Saunders Company,
- Rogers, M.E. (1990) Nursing: Science of unitary, irreducible, human beings: Update 1990. In E.A.M.Barrett (Ed.) Visions of Rogers' science-based Nursing. (pp.5-11). New York: National League for Nursing Pub.no. 15-2285.
- Rogers, M.E. (1991) Discussion on methodology, Fall meeting of Region 7 of the Society of Rogerian Scholars, Pigeon Forge, Tenn. November, 1991.
- Rogers, M. E. (1992a) Glossary update. Rogerian Nursing Science News, 4(3), p.7.
- Rogers, M. E. (1992b) Chaos discussion at the 1992 summer meeting of region 7 of the Society Rogerian Scholars.
- Sarter, B. (1988). The stream of becoming: A study of Martha Rogers's theory. New York: NLN Publications. Publication # 15-2205.
- Smith, M.C. (1986). An investigation of the effects of different sound frequencies on vividness and creativity of imagery. (Doctoral Dissertation, New York University, 1986) Dissertation Abstracts International, 47 (09B), 3708.
- Smith, M.J. (1986). Human-environment process: A test of Rogers' principle of integrality. Advances in Nursing Science, 9(1), 21-28.
- Winstead-Fry, P. (Ed.) (1986). Case studies in nursing theory. New York: National League for Nursing, Pub No. 15-2152.

Martha H. Bramlett, RN;PhD.
Assistant Professor, Medical College of Georgia School of Nursing
1905 Barnett Shoals Road
Athens, Georgia 30605

Sarah H. Gueldner, RN:DSN; FAAN.
Professor, Medical University of South Carolina

Janet H Boettcher, PhD.
Associate Professor, Radford University

NURSING IN SPACE : THEORETICAL FOUNDATIONS AND POTENTIAL PRACTICE APPLICATIONS WITHIN ROGERIAN SCIENCE

PAT CHRISTENSEN, RN;PhD.
RICHARD SOWELL, RN;PhD;FAAN.
SARAH HALL GUELDNER,RN; DSN;FAAN.

Abstract

Theories arising from Rogers' new world view have great potential as a basis for nursing practice in space. The old world or traditional science view held that living in space can be problematic, even frightening, for humans. There is now a movement in science promoting human living in space stations. Additionally there is a highly funded search for extraterrestrial intelligence (SETI). However, most of the medical research has looked at solving such problems as loss of calcium, decreased red blood cells, and the negative effects of weightlessness. The optimistic view of Rogers promotes space living as accelerating change and transcendence of time and space.

Practice arising from research framed in the Rogerian conceptual system has widespread application for space nursing. Individuals who live in space will have to deal with issues related to connectedness (ie, with family, friends, and society) and evolving "normalcy" of biophysical function. Rogerian concepts which we believe to have potential significance for nursing in space include transcendence, environmental and human field integrality, patterning, power, and choice.

A growing number of published research reports provide data related to continuous human and environmental field process and patterning. Rogers (1990) has identified motion, time, and sleep as examples of process and patterning. Other research has shown the use of light, color, and movement as "integral to the patterning process..." (Malinski, 1986, p. 29). Paranormal events such as precognition and clairvoyance may hold potential as evolving communication techniques of space travel and living.

In this discussion the authors present examples of potential nursing practice in space which arise from relevant research findings reported to date. Examples of isolation, interpersonal relations, altered sexual functioning, increased body pressures and disharmonies within the mutual environmental/human field process are examined. Other theories in the simultaneity paradigm are briefly discussed as adjunct potential theoretical foundations for space nursing. This article is a synthesis of a theoretical paper given at the National Nursing in Space Conference in Huntsville, Alabama and a practice-oriented paper given at the Fourth Rogerian Conference at New York University.

Actually, I was sure of myself, sure about everything, far surer than he; sure of my present life and of the death that was coming. That, no doubt, was all I had; but at last that certainty was something I could get my

teeth into—just as it had got its teeth into me.

(Camus, 1942, p. 151)

Mersault, the central character of Camus' novel, The Stranger, has at last arrived at a satisfactory explanation, for him, of his own reality. This realization comes for him on the eve of his execution. This "certainty" of existence brought some feeling of being "less lonely" (p. 154).

Key words Space, theoretical foundations, practice applications

Received September, 1992
Accepted January, 1993

Just as the development of and belief in a personal philosophy are important guides for an individual's life, the development of a prevailing philosophical stance is critical to the identity and developmental directions of an emerging scientific discipline. This philosophical posture also serves as the foundation for practice. It is from the perception of reality, however, that the contextual parameters for theory-based practice are drawn.

Individuals and societies create reality from what they accept as "truth." This phenomenon is underscored in the Victorian novel, *Flatland* (Abbott, 1884). In *Flatland*, Abbott described a world consisting of a two-dimensional reality (length and width). With unusual literary cunning, Abbott depicts how a society based on a two dimensional reality has developed institutions, values and traditions that support and reinforce this reality as the "true" order of the world. While it may seem clear to humans who subscribe to a more than two dimensional "reality" (what Abbott calls Spaceland) that there are phenomena that cannot adequately be explained by such a limited worldview, The accepted three-dimensional (or pandimensional) perspective is fraught with the challenge to explain or integrate unexplainable phenomena into humankind's own reality.

The evolution of thought and action within the healing and caring arts provides a clear example of how society's scientific and pragmatic approaches are operationally defined according to what is accepted as reality. In the early stages of evolution, the mind and body were viewed as integral to the well being of the individual. This integrated view is a philosophical perspective which has endured in many Eastern cultures. Conversely, the philo-

sophical basis of classical Western science has its roots in sixth century B.C. Greek philosophy which posited a separation of mind and body (Capra, 1976). Thus, the mind-body unitary view of the Eastern cultures and the mind-body split of the Western cultures have each played a prominent role in shaping the healing and caring arts in those respective cultures.

According to Capra (1976), modern science was founded with the advent of the Renaissance and the decreasing domination of scientific thought by the church. However, the fundamental idea of dualism has remained as an accepted scientific principle in Western cultures.

Newton's mechanistic view of reality formed the foundation of classical physics (Capra, 1976). This view of man as machine today remains evident within both the practice and scientific approach of health-related disciplines such as medicine and nursing. This flawed worldview is much too simplistic, equating health to mechanical function and implying that the body, like any machine, will break from time to time and need repair. This mechanistic view of human beings fosters a disease-oriented approach to health care education and practices and fails to acknowledge the integrated nature and pandimensionality of the human experience.

It has only been in the past several decades that the separation of mind and body in Western medical science has begun to be seriously questioned. Such questioning has resulted from a changing view of reality held within the physical sciences. The advent of Einstein's theory of relativity, quantum mechanics (a theory developed from Planck's quantum principle) and Heisenberg's uncertainty prin-

principle (Hawking, 1988) are examples of changing perspectives within the "basic sciences" which have begun to influence thought within the health care sphere. According to Zukav (1979), "Philosophically, the implications of quantum mechanics are psychedelic. Not only do we influence our reality, but, in some degree, we actually create it" (p. 28). Dr. Martha Rogers was the first nurse theorist to explicate the implications of the new physics to nursing and health care. Rogers, early on, rejected the dichotomous view of mind separate from body in favor of integrality of person and environment, thus bringing a new "reality" to caring for all persons. This unitary view of human beings offers a solid and congruent conceptual system from which nursing can advance into the new dimensions that are unfolding with the space age.

Old and New Worldviews: A Contrast

Nursing science is beginning to reflect the mind/body unity that characterized our earliest roots. Several theorists, principally Rogers, have contrasted the older, traditional Western science-based views with emerging new worldviews (Rogers, 1986, 1987, 1990, 1992). It's the authors' position that the futuristic view of Rogers offers an exciting and relevant theoretical base for practice applications for nursing and health potential in space. Other nurse theorists such as Parse (1987) and Newman (1986) build on the Rogerian conceptual system and offer additional perspectives for nursing in space. Watson (1988), building on a different base, offers a similar perspective in some areas.

Parse (1987) has classified the two basic worldviews or paradigms in nursing today as the "Totality Paradigm," which focuses on the person as a bio-psychosocial summation of parts, and the "Si-

multaneity Paradigm," which posits person as an energy field integral with the environment. Watson (1988) refers to the "new lens" or the contrast between emerging alternative nursing human science and traditional science. Rogers (1992) refers to the two views as "differences between older and new views of people and their world" (p. 30). Rogers' newer worldview theorizes that the universe is open, negentropic, pandimensional and dynamic. The person/environmental process is seen as integral, mutual, innovative, increasing in diversity, and becoming. Within this view, causality gives way to a mutual process wherein person/environment evolutionary emergents are continually being created.

In the Science of Unitary Beings health is seen as an expression of the life process, coextensive with the environment. Nursing is a learned profession, both a science and an art (Rogers, 1986). The nurse and client participate together in the mobilization of health potentials. In the lived experience of health, "nurses participate as facilitators, educators, advocates, assessors, planners, coordinators, and as collaborators in therapeutic relationships with clients, helping them become attuned to their unique rhythms and patterning" (Malinski, 1986, p. 27).

Nursing in Space: Potential Practice Applications

Theories arising from the new worldview appear to have the most potential as a basis for nursing practice in space. The old world or traditional science view held that living in space can be problematic and alien for humans. Science fiction has reinforced the idea that space is alien and full of strange creatures, dangers and civilizations. Space was seen as desolate and devoid of life.

There is now, however, an evolution in thinking about space and the possible existence of life beyond this planet. The search for extraterrestrial intelligence (SETI) in space has been funded and is operational. While there is now a movement in science promoting humans living in a space station, most of the medical research to date has looked at such problems as loss of calcium, decreased red blood cells, the immunocompromise associated with space habitation and the negative effects of weightlessness (Jemmott & Locke, 1984). The optimistic view of selected leading edge theorists, especially Rogers, promotes space living as accelerating change and transcendence of time and space. Central to this viewpoint is the notion that living in space is to be embraced with enthusiasm.

Theories arising from Rogers' Science of Unitary Human Beings appear to be the most developed to-date concerning the concepts identified. In fact, Rogers is the first major theorist to develop a broad, abstract nursing science which can encompass nursing in space. A growing number of research reports, doctoral dissertations, and articles have been published which show Rogerian science-based nurses already have a theoretical foundation which readily accommodates space nursing. Some of the concepts which appear to have potential significance for nursing practice in space are transcendence, meaning, environmental and human field integrality, patterning, power, and choice.

In Visions of Rogers' Science-Based Nursing (Rogers, Doyle, Racolin, & Walsh, 1990), Rogers speaks of a whole new world of transcendent unity, "a universe where space encompasses the planet Earth" (p. 375). It is suggested from people who have travelled in space

that the experience has changed them in profound ways. An altered state of consciousness and a heightened awareness were reported by many (Malinski, 1990). Malinski (1990) stated that the "theory of the emergence of paranormal phenomena suggests that experiences labeled as 'paranormal' such as precognition and clairvoyance may indicate higher frequency field patterning" (p.364). It seems possible, even likely, that communication in space will evolve beyond the present senses.

There is emerging now in the literature empirical evidence that a number of unitary modalities are effective in enhancing health. A growing number of studies have dealt with continuous human and environmental field process and patterning. Rogers (1990) has identified motion, time, and sleep as examples. Other research has shown the use of light, color, and movement as "integral to the patterning process and thus to health" (Malinski, 1986, p. 29).

Among the Rogerian studies is Rawnsley's (1977) investigation of time perception, chronological age, and the dying process. Ference (1979) developed a tool to measure human field motion, and McDonald (1981) explored the application of lightwaves (red and blue) to the perception of pain. Ludomirski-Kalmanson (1984) looked at the relationship between the environmental energy wave frequency pattern in red and blue light and human field motion in persons with visual sensory perception and total blindness. Gueldner (1983) has studied the relationship between imposed motion and human field motion. Miller (1985) investigated the phenomena of sleep, wakefulness, and beyond waking experience. Malinski (1986) investigated the relationship between hyperactivity in children and per-

ception of short wavelength light. Thomas (1990) studied lighting and health, and Allen (1989) looked at the relationship between selected light waves (red or blue saturated lighting, which appeared white) and creativity. Butcher and Parker (1988) examined the subjective feelings of timelessness, motion, boundarylessness, transcendence, and increased imagination experienced during guided imagery. Most of these studies supported hypotheses derived from Rogers' principles of homeodynamics. These investigations confirmed the potential of motion, light, time, and other manifestations of environment as relevant modes of therapy as humans venture into space.

Quinn (1984) examined the relationship between therapeutic touch and anxiety. Jemmott and Locke (1984) acknowledged that "popular wisdom" accepts a relationship between psychological stress and physical disease. Early work by Hans Selye (1976) described a specific set of bodily defenses against noxious stimuli including psychological threats. Within the past twenty years an increasing amount of clinical research has focused on stress and its relationship to various disease or body-related outcome measures (Brown & Heninger, 1976; Holmes & Rahe, 1967; Rose, 1980; Sarason, Sarason, Patter & Antoni, 1985; Solomon, Keneny & Temoshok, 1991). Such research has advanced now into what is becoming a new focus of medicine identified as psychoneuro-immunology. While this area continues to be reductionistic in that it focuses on parts of the person, it represents advancement in thought which accepts the important mind-body integration. Locke and Calligan (1986) not only acknowledge but also support the importance of a positive

mental condition as a therapeutic intervention in any approach to health care. While nurses need to be careful not to get caught up in this seeming new medical paradigm, it does provide refreshing cross-discipline support to the evolving unitary thinking being advanced within nursing science.

The negentropic view of humans and the nonlinear view of time postulated by Rogerian scientists hold major implications for how humans view aging. A positive view of the aging process carries with it the imperative for maximum quality and meaningful life for all ages (Katch, 1983). Barrett (1983) has investigated power as knowing participation in change, a theory which has the potential to enable people to pattern personal power in all life situations, whether on earth or in space.

Additionally, there are several areas of potential research which can be framed in Rogerian Science. One such area of investigation could focus on the menstrual and fertility cycles of humans in space. In the earth-bound experiences of women, the moon is a factor in these cycles. What are the possible effects of being outside the lunar gravitational fields on hormonal cycles and human sexuality? Likewise, what are the implications for the experiences of childbirth? How will the nurse assist women in an environment of weightlessness or changed energy fields? Will pain perception in childbirth be altered in such an environment? To move even further away from earth-bound experiences, will women no longer be the "incubators" of fetuses? Possibly babies will be grown in other types of containers. If this phenomenon occurs, the nurses' role in the promotion of bonding and parenting will need to be explored.

The management of clients with

various pressure alterations is another potential research area. For example, intracranial pressure, blood pressure, intra-abdominal and thoracic pressure are all manifestations of the earth-bound environment. Data from previous space flights have shown that there are fluid shifts in the body in space. For example, there is higher intracranial pressure in space than on earth (Holder, Gage, Love, & Krupa, 1991). The nurse of the future, no doubt, will have to devise different modalities to take into account the more diverse environment of space.

The maintenance of metabolism and nutrition will require new nursing modalities as well. In the vastness of space and the enormous distances involved in space travel, it is conceivable that humans will undergo states of suspended animation similar to the experiences of bears and snakes on earth. The preparation of persons for those suspended states as well as the extensive monitoring of those persons will certainly present challenges for nursing science.

Motion sickness has been extensively reported by astronauts from previous flights. Groundwork explorations in movement and rhythm and health have been laid by nurse scientists such as Gueldner (1983). Gueldner's investigation of imposed motion can provide a springboard for the exploration of movement in space and its effect on human health. The principle of resonancy provides the conceptual basis for patterning of human field motion in space.

The whole area of interpersonal relations can be addressed within Rogerian science. Living in confined spaces has been reported to lead to conflicts among space travellers. Minor aggravations can accelerate to major confrontations under such conditions.

Additionally, if prolonged states of suspended animation are required for long distance travel in space, the retaining of social ties and substitutes for family ties will need to be addressed. Several Rogerian scholars have made contributions to this body of research, outlining possible implications for human field functioning (Alligood, 1982; Barrett, 1983; Cowling, 1982; Paletta, 1990; Rapacz, 1990).

Transcendence of space and time through meditation and relaxation may be a way of dealing with the isolation of space. Nurses have for some time participated with people in these health promotion modalities in earth-bound situations (Quinn, 1984). These modalities would appear to transfer readily to nursing practice in space.

Rogers (1992) noted that, "The purpose of nursing is to promote human betterment wherever people are, on planet earth or in outer space" (p. 33). The openness to new experiences and heightened awareness states discussed within the Rogerian system have the potential to bring new meaning to life and everyday situations. Without the boundaries of earth space-time, humans will be free to experience becoming and a beyond waking state.

Rogers' (1992) worldview also has implications for the health care delivery system in general. She notes that as diversity increases, nurses must demonstrate imagination and ingenuity in helping people design ways to fulfill their different rhythmic patterns. She believes that this process best takes place within community based services and reminds us that the term community-based will take on enhanced meaning as it becomes defined to include extraterrestrial centers.

Within the Simultaneity Paradigm,

Parse (1987) offers other practice applications with potential for space nursing. Parse's Man-Living-Health Theory (now Human Becoming) offers an existential dimension. This dimension is particularly evident in the view of health as the process of becoming as experienced by the person (Parse, 1987). Parse has in common with Rogers the rejection of the prevailing and traditional view of health as value-laden and the "physical, mental, and social state of well-being as defined by norms" (Parse, 1987, p. 150). Both theorists reject the "numbers game" of health as defined by a sum of blood pressure, cholesterol, heart rate, lymphocyte readings and so forth.

Watson's Science of Human Caring (1988) has a phenomenological-existential and a distinctly spiritual dimension. The humanistic views of Carl Rogers and transpersonal psychologists were influential in Watson's theory development. Newman's (1986) paradigm of "health as expanding consciousness" is unique in that it conceptualizes health and illness as expressions of the life process—one no more important than the other.

These selected theorists have in common a view of humans as evolutionary, dynamic, free to choose and integral with the environment. They offer a clearly optimistic view of humans as valuable and capable of greatness. They are optimistic without being utopian.

The theories of Parse and Watson have potential application in their phenomenological-existential context. Parse's research methodology is phenomenology or the lived experience. The illumination of meaning of the transcendent experience is always from the perspective of the person having the experience. The research that can be generated from the

lived experiences of persons in space can bring human knowledge to dimensions undreamed of today. The profound changes reported by astronauts in their thinking, perceptions and valuing of earth and life could serve as theory generating studies of transcendent experiences and a realization of health as a process of becoming.

Likewise, Newman's theme of increasing consciousness has exciting application for the human experience in space. Astronauts have consistently reported that their level of consciousness while in space has far surpassed the level of awareness permitted by their habitation on earth (Malinski, 1990). Likewise, the postulated interrelationships among Newman's primary correlates—space, time, and movement—take on new applicability in terms of space travel and space habitation. Newman, more than the other three theorists mentioned in this paper, refers to the existence of a universal consciousness, as described in the writings of Bentov (1978) and Teilhard de Chardin (1959). Newman suggests that a person's consciousness continues to develop beyond the physical life, becoming a part of a larger (universal) consciousness. Somehow in these days of regular space travel, extraordinary electronic communications, and a highly funded search for intelligent life in space, the idea of a universal consciousness does not seem as absurd as it once did!

Today important research is being conducted by nurse scientists, and the findings are being incorporated into practice. The new worldview theories being developed have the potential to give preliminary direction for nursing in space. These theories provide nurses with a new "lens" for practice, which will enable

them to transcend the present reality, unbound by conventional science which sees space travel as problematic. Nurses can align themselves with the newest movement in science where space living is viewed as an emergent environment for humans. We as nurses already have a philosophical and a theoretical foundation to take us into the future and into space. Nurses can become independent practitioners in space. Today no territory has been staked out in this vast new frontier. It behooves us to link our practice to the abstract system already developed by futuristic thinkers such as Rogers, Parse, Newman, and Watson. Nursing is ahead of many other professions in having the foundation for health care in space. We can take up the challenge that Dr. Rogers has given to us all, "It's a fabulous world. Dream big" (1987).

References

- Abbott, E. (1884). Flatland. New York: New American Library.
- Allen, E. K. (1989). Creativity as an index of unitary human development. Abstract of a thesis presented to the College of Nursing, University of Tennessee, Memphis.
- Alligood, M.R. (1986). The relationship of creativity, actualization, and empathy in unitary human development. In V. Malinski (Ed.), Explorations on Martha Rogers' science of unitary human beings (pp. 145-154). Norwalk: Appleton-Century-Crofts.
- Barrett, E. M. (1986). Investigation of the principle of helicy: The relationship of human field motion and power. In V. Malinski (Ed.), Explorations on Martha Rogers' science of unitary human beings, (pp. 173-184). Norwalk: Appleton-Century-Crofts.
- Barrett, E. M.. (1990). (Ed.) Visions of Rogers' science-based nursing. New York: National League for Nursing.
- Bentov, I. (1978). Stalking the wild pendulum. New York: E. P. Dutton.
- Brown, G. M. & Heninger, G. (1976). Stress-induced growth hormone release: Psychological and physiologic correlates. Psychosomatic Medicine, 38 (2), 145-147.
- Butcher, H. K., & Parker, N. I. (1988). Guided imagery within Rogers' science of unitary human beings: An experimental study. Nursing Science Quarterly, 1, 103-110.
- Camus, A. (1942). The stranger. New York: Random House.
- Capra, F. (1976). The tao of physics, New York: Bantam Books.
- Cowling, W. R. (1986). The relationship of mystical experience, differentiation, and creativity in college students. In V. Malinski, (Ed.) Explorations on Martha Rogers' science of unitary human beings (pp. 143-149). Norwalk: Appleton-Century-Crofts.
- Ference, H. M. (1986). The relationship of time experience, creativity traits, differentiation and human field motion: An empirical investigation of Rogers' correlates of synergistic human development. In V. Malinski (Ed.) Explorations on Martha Rogers' science of unitary human beings (pp. 95-105). Norwalk: Appleton-Century-Crofts.
- Gueldner, S. H. (1986). The relationship between imposed motion and human field motion on elderly individuals living in nursing homes. In V. Malinski (Ed.). Explorations on Martha Rogers' Science of Unitary Human Beings (pp. 161-171). Norwalk: Appleton-Century-Crofts.
- Hawking, S. W. (1988). A brief history of time from the big bang to black holes. New York: Bantam Books.
- Holder, P., Gage, C., Love, L. & Krupa, D. (1991,). Creating nursing's future in space. Proceedings: Sigma Theta Tau International Program Session, 31st. Biennial Convention, Tampa, Fla.
- Holmes, T. H., & Rahe, R. H. (1967). The social readjustment rating scale. Journal of Psychosomatic Research, 11 (2), 213-218.
- Jemmott, J. B. III, & Locke, S. E. (1984). Psychological factors, immunologic mediation, and human susceptibility to infectious diseases: How much do we know? Psychological Bulletin, 95 (1), 78-108.
- Katch, M. P. (1983). A negentropic view of the aged. Journal of Gerontological Nursing 9, 656-660.
- Krieger, D. (1976). Healing by laying on of hands as a facilitator of bioenergetic change: The response of in vivo human hemoglobin. International Journal of Psychoenergetic

- Systems, 1; 121-129.
- Locke, S., & Colligan, D. (1986). The healer within. New York: E. P. Dutton.
- Ludomirski-Kalmanson, B. G. (1984). Relationship between the environmental energy wave frequency pattern manifest in red light and blue light and human field motion in adult individuals with visual sensory perception and those with total blindness. Dissertation Abstracts International, 45/07B, 2094, New York University.
- Malinski, V. M. (1986). Explorations on Martha Rogers' science of unitary human beings. Norwalk: Appleton-Century-Crofts.
- Malinski, V. M. (1990). The Rogerian science of unitary human beings as a knowledge base for nursing in space. In E.A.M. Barrett (Ed.), Visions of Rogers' science-based nursing (pp. 363-374). New York: National League for Nursing.
- McDonald, S. F. (1981). The relationship between visible lightwaves and the experience of pain. In V. Malinski, (Ed.) Explorations on Martha Rogers' science of unitary human beings (pp. 119-127). Norwalk:Appleton-Century-Crofts.
- Miller, F. A. (1985). The relationship of sleep, wakefulness, and beyond waking experiences. Dissertation Abstracts International, 46, 116B.
- Moss, R. (1981). The I that is we. Milbrae, CA: Celestial Arts.
- Newman, M. (1986). Health As expanding consciousness. St. Louis: C. V. Mosby.
- Paletta, J. L. (1990). The relationship of temporal experience to human time. In Barrett, E.A.M. (Ed.) Visions of Rogers' science-based nursing (pp.239-253). New York: National League for Nursing.
- Parse, R. R. (1987). Nursing science: Major paradigms, theories, and critiques. Philadelphia: W. B. Saunders.
- Quinn, J. F. (1984). Therapeutic touch as energy exchange: Testing the theory. Advances in Nursing Science, 6(2), 42-49.
- Rapacz, K. (1990). The patterning of time experience and human field motion during the experience of pleasant guided imagery: A discussion. In E.A.M. Barrett (Ed.). Visions of Rogers' science-based nursing (pp. 287-294). New York: National League for Nursing.
- Rawnsley, M. M. (1986). The relationship between the perception of the speed of time and the process of dying. In V. Malinski (Ed.) Explorations on Martha Rogers' science of unitary human beings (pp. 79-89). Norwalk:Appleton-Century-Crofts.
- Rogers, M. E. (1986). In V.Malinski (Ed.). Explorations on Martha Rogers' science of unitary human beings (pp. 3-8). Norwalk: Appleton-Century-Crofts.
- Rogers, M. E. (1987). Presentation to doctoral students at the Medical College of Georgia, August 17.
- Rogers, M. E. (1990). A conversation with Martha Rogers on nursing in space. In E.A.M.Barrett (Ed.). Visions of Rogers' science-based nursing (pp.375-386). New York: National League for Nursing.
- Rogers, M. E. (1992) Nursing science and the space age. Nursing Science Quarterly, 5, 27-33.
- Rose, R. M. (1980). Endocrine responses to stressful psychological events. Psychiatric Clinics of North America, 3 (1), 1-15.
- Saranson, I. G., Saranson, B. R., Potter, E. H., & Antoni, M. H. (1985). Life events, social support, and illness. Psychosomatic Medicine, 47,156-163.
- Selye, H. (1976). The stress of life. New York: McGraw Hill.
- Solomon, G. F., Keneny, M. E., & Temoshok, L. (1991). Psychoneuroimmunologic aspects of human immunodeficiency virus infection, In R. Ader, D. L. Felton & N.Cohen (Eds.). Psychoneuroimmunology (2nd) (pp.1081-1113). New York: Academic Press.
- Teilhard de Chardin, (1969) Human energy, trans. R. Hague. New York: Harcourt, Brace, Jovanovich.
- Thomas, S. (1990). Lighting and health. Rogerian Nursing Science News, 11, (3).
- Watson, J. (1988). Nursing: Human science and human care: A theory for nursing. New York: National League for Nursing.
- Zukav, G. (1979). The dancing Wu Li masters: An overview of the new physics. New York: Bantam Books.

Pat Christensen, RN;PhD. Associate Professor
University of South Carolina
Spartanburg, S. C. 29303
(H) 8 Terrapin Trail, Taylors, SC 29687

Richard Sowell, RN;PhD; FAAN.
Coordinator of Clinical Services
AID Atlanta;Atlanta,GA

Sarah Hall Gueldner,RN; DSN; FAAN.
Professor & Director, Center for Nursing Research
Medical University of SC;Charleston,SC

Therapeutic Touch: The View from Rogerian Nursing Science

Violet M. Malinski, RN; PhD

Abstract

Therapeutic Touch has long been recognized as a health patterning modality consistent with Rogerian nursing science. However, theoretical explanations have not always been consistent with that science. Particularly problematic is the concept of energy transfer or energy exchange. In this article, the author provides overviews of the way Therapeutic Touch was originally introduced by Krieger and Kunz and how it is seen from the perspective of Rogers' Science of Unitary Human Beings. A theoretical rationale, developed from this nursing science, is then presented for consideration.

Therapeutic Touch was one of the earliest examples cited by Rogers of a noninvasive nursing modality congruent with the new world view presented in the Science of Unitary Human Beings. Therapeutic Touch practitioners usually reference this nursing science as one, if not the, theoretical basis for Therapeutic Touch. However, Rogers' earlier work, particularly her 1970 book, is often cited rather than her most current writings. For example, a frequently quoted statement from Rogers' (1970) An Introduction to the Theoretical Basis of Nursing is one she offered at that time as the second assumption of nursing science: "Man and environment are continuously exchanging matter and energy with one another" (p. 54). Rogers' 1970 definition of the principle of resonancy specified that change is "propagated by waves"; "Between man (sic) and environment there is a rhythmic flow of energy waves" (p. 101). Thus, Therapeutic Touch has been conceptualized and described in the literature as an exchange or transfer of energy between

practitioner and client.

The five assumptions described by Rogers in 1970 have not been repeated in her publications dated from 1980 to the present. Instead, Rogers (1980) identified the building blocks for this nursing science as energy fields, a universe of open systems, four dimensionality, and pattern and organization. In her latest writings, these four are more frequently referred to as postulates and appear as energy fields, a universe of open systems, pandimensionality and pattern or patterning (Rogers, 1990, 1992).

Rogers has gradually refined the principles of homeodynamics. In 1980 the definition of resonancy specified that human and environmental fields "are identified by wave pattern and organization manifesting continuous change from lower-frequency, longer wave patterns to higher-frequency, shorter wave patterns" (Rogers, 1980, p. 331). The idea of a "flowing between" was deleted. The wording of the principle of complementary (now integrality), however, retained this idea: "The interaction *between* (italics added) human and environmental fields is continuous, mutual, simultaneous" (Rogers, 1980, p. 331). This suggestion of a linear flow is gone from the latest definitions of the principles, clarified to

Key words Rogerian nursing science, energy field, Therapeutic Touch, health patterning

Received September, 1992
Accepted January, 1993

reflect a unitary mutual process (Rogers, 1990). Resonancy reflects the flow or process of change as one of "continuous change from lower to higher frequency wave patterns in human and environmental fields" and integrality, the context of change, is the "continuous mutual human and environmental field process" (Rogers, 1990, p. 8). There is no sense of linear flow or passing between in the principle of helicity, either. Helicity characterizes the nature of change as "continuous, innovative, unpredictable, increasing diversity of human and environmental field patterns" (Rogers, 1990, p. 8). Human and environment, although different by definition, are described as integral and inseparable, not as two distinct fields. Thus, there is no exchange or transfer of energy within the continuous mutual process of human and environmental field patterning.

Energy exchange also follows Krieger's (1979, 1987) idea that the healthy person has an abundance of energy that can be mobilized in healing, whereas the ill person's energy is depleted. The practitioner directs and modulates the flow of energy to the client. From her studies of Eastern philosophies and systems of medicine, Krieger identified this energy as "prana," Sanskrit for what could be translated as "the organization of energy that underlies the life process" (Krieger, 1987, p. 7) and a "natural means of energizing all life processes" (Krieger, 1987, p. 9). Krieger (1979) acknowledged that, as yet, there is no mechanism for measuring this transfer of energy.

Meehan (1988, reprinted 1990) suggested that, when the Science of Unitary Human Beings is used as the theoretical framework for Therapeutic Touch, the concept of energy transfer must be re-

placed by the human-environment mutual process. In this mutual process, human and environment are integral and irreducible. Therefore, there is no "to-from" exchange or interaction between practitioner and client. What occurs does so within the context of this mutual process. The advantage to conceptualizing Therapeutic Touch within Rogerian nursing science is to acknowledge it as a nursing health patterning modality not, as it is often described, as an alternative medical intervention or a technique of holistic medicine. In this article, overviews of the traditional and the Rogerian perspectives on Therapeutic Touch are presented. A theoretical conceptualization derived from the Science of Unitary Human Beings is offered next for consideration.

Traditional Perspective on Therapeutic Touch

What has come to be known as Therapeutic Touch (capital T's to distinguish it from other forms of therapeutic touch such as massage, stroking, and hand holding) was developed by Dolores Krieger and Dora Kunz in the early 1970's. A discussion of this development can be found in Krieger's (1979) The Therapeutic Touch: How to Use Your Hands to Help or to Heal. At New York University, Krieger introduced and taught the first graduate level course in nursing to incorporate Therapeutic Touch. Over the years, Krieger and Kunz have taught Therapeutic Touch to countless numbers of health professionals across the world, including this writer.

Kunz (Karagulla & Kunz, 1989; Kunz, 1991), well-known and highly respected for her clairvoyant and healing abilities (pandimensional awareness in Rogerian nursing science), sees and works with the aura and the chakras. The aura is a "luminous cloud of color" (Kunz, 1991, p. 11)

that many believe surrounds each person and reflects the emotions, past and present, of that person. Kunz (1991) describes the chakras as energy centers within the aura that synchronize the flow of energy to the physical body from the various fields surrounding it. The energy perspective she presents is based on the idea that the human being is a complex system of interpenetrating fields: the etheric or vital field, the astral or emotional, and the mental, each with its own particular energy patterns. Every living organism is in constant interaction with the environment.

...there is a continuous *energy exchange* (italics added) between the individual and the environment which every living system (whether human, animal, vegetable, or even chemical) regulates in terms of its own self-organization. This energy exchange is so constant and so indispensable for all living organisms that it can be regarded as a universal field effect. (Karagulla & Kunz, 1989, p. 12)

Krieger (1991) suggested the principle of resonancy as providing a possible explanation for what occurs during Therapeutic Touch. She also emphasized the participatory nature of the process, suggesting that "mutual bondings" (Krieger, 1991, p. 3) be explored from the perspective of Rogerian science. However, in the context of words and descriptions such as conscious, knowledgeable use of the chakras, guiding and modulating, and intentional directing (Krieger, 1991), it seems that she is using the earlier definition of resonancy and a theoretical framework that mixes elements from Kunz's and Rogers' views.

Looking at Rogers' second assump-

tion of nursing science as formulated in 1970, it is easy to see how many Therapeutic Touch practitioners could assume that Rogers, Krieger (once a student of Rogers', then a member of her faculty at New York University), and Kunz were talking about the same phenomenon. This is especially true for the early students who had the privilege of working with all three women, albeit in different settings, and who went on to conduct research and teach Therapeutic Touch to others.

One of the early research studies was conducted by Heidt (1981), a former student of Rogers, Krieger, and Kunz, in 1979. For the purpose of this article, the important factor was Heidt's incorporation of physical touch (contact Therapeutic Touch) into the procedure for Therapeutic Touch, which is usually done two to six inches away from the physical body. Toward the end of the procedure the practitioner placed her hands on the patient's solar plexus and directed energy for 90 seconds.

Following up on this research Quinn (1984), another early student of Krieger, Kunz, and Rogers and a pioneer in Therapeutic Touch research, demonstrated that non-contact Therapeutic Touch is as effective as contact Therapeutic Touch. Instead of placing her hands on the solar plexus, the practitioner held her hands four to six inches away from the solar plexus and directed energy for 120 seconds. Quinn interpreted the effect of non-contact Therapeutic Touch as support for the idea of energy exchange as a field phenomenon independent of physical touch or contact between practitioner and client. When Quinn (1989a) later replicated and extended her research she did not obtain consistent support for her hypotheses. In a discussion of future

directions for Therapeutic Touch research, Quinn (1989b) identified three key areas for study, one being the development of a model or theory that could be validated and refined through research. She reiterated Krieger's (1979) earlier statement that no published studies have actually measured energy exchange, concluding that the sending/receiving of energy and the impact of such energy transfer on the recipient's health need further exploration.

Quinn's view of Therapeutic Touch, incorporating ideas from Rogers' Science of Unitary Human Beings, has been influential. This is apparent in the identification of a theoretical basis that some Therapeutic Touch researchers are calling the Rogerian-Quinn framework (Olson, Sneed, Bonadonna, Ratliff, & Dias, 1992). In addition to her research and writing, Quinn has worked with the National League for Nursing to develop a three-part video on Therapeutic Touch and its clinical applications.

Heidt (1990, 1991) recently published the results of a qualitative study exploring Therapeutic Touch from the perspective of both nurses and their patients. She cited Rogers' 1970 work, specifically the assumption that person and environment exchange matter and energy. Heidt found that the experiences of the patient during Therapeutic Touch often paralleled those of the nurse. She interpreted this as support for a "transfer of energy...on both a physical and a psychological level...." (1990, p. 186).

The key variable that emerged in this research as descriptive of the experiences of both nurses and patients was openness, identified as

1. opening intent (affirming, quieting, intending)
2. opening sensitivity (attuning, planning)

3. opening communication (unblocking, engaging, enlivening) (Heidt, 1990).

This supports another key idea often cited from Rogers' work: person and environment are open systems.

Macrae (1987), another early student of Krieger, Kunz, and Rogers, identified the energy field as a key concept underlying Therapeutic Touch. However, she did not cite Rogers but followed the formulation of Kunz and Peper (1985), describing the person as a localization of a system of energy fields (vital, emotional, mental, and intuitional). Citing the works of Krieger and Kunz, Macrae described the transfer of energy between practitioner and client. Rather than drawing on one's own reserves of energy, the practitioner is drawing on the "universal field," an "inexhaustible source" (Macrae, 1987, p. 17).

During a treatment we try to make the vital energy more accessible to the patient by consciously serving as an energy conductor and transformer. When *transferring energy* (italics added), it is essential that we establish the intent to become a conduit for a universal force. (Macrae, 1987, p. 47).

Energy transfer or exchange has long been part of the language used to describe and explain Therapeutic Touch. Now it has been incorporated officially into its definition. The Nurse Healers-Professional Associates, Inc. (1992) published the first set of guidelines for teaching the beginners' level of Therapeutic Touch, Krieger/Kunz Method. Their definition of Therapeutic Touch contains the phrase, "...a consciously directed process of energy exchange...." (p. 1). They identify Rogers' Science of Unitary Human Beings as one of the frameworks supporting Therapeutic Touch, the others

being Kunz's Human Energy Field Model, Relativity Theory, and Quantum Mechanics.

The work done to date on Therapeutic Touch represents a seminal achievement in nursing. The effort to re-conceptualize this process within nursing science does not represent criticism of the work done so far. However, it is time to identify Therapeutic Touch as a nursing health patterning modality underwritten by a nursing framework. Description and explanation should be consistent with that framework. In this author's opinion, the most appropriate nursing framework is Rogers' nursing science, the Science of Unitary Human Beings. Energy exchange as a linear transfer from practitioner to client, the implied causality in the language of altering and impacting, and the separation of nurse and client into two interacting human fields is not consistent with Rogerian science.

Furthermore, the idea of energy exchange or transfer has apparently led to some of the concerns voiced by some groups, both within and outside nursing, that Therapeutic Touch is a "heathen" activity. The fear seems to be of opening oneself to some outside force (possession?). A recent issue of *Omni* (Antimatter, 1992) described a similar outcry against yoga classes in a Georgia community where fundamentalist Christians charged that yoga was a form of devil worship. During meditation the injunction to allow the mind to go blank was seen as an invitation to invasion by demonic spirits.

Therapeutic Touch has also been labelled a hoax. Quinn (personal communication, 1992) has exchanged letters on Therapeutic Touch with William Jarvis, Ph.D., President of the National Council Against Health Fraud, Inc., who singled

out the theory of energy exchange as cause to remove Therapeutic Touch from "the realm of responsible health care." Quinn (1992) suggested that, although one can neither demonstrate nor measure any energy transfer currently, energy transfer can still be used "as a working hypothesis" (p. 12). Further, in a discussion of the pros and cons surrounding possible certification in Therapeutic Touch, she questions how one could evaluate "the quality or quantity of such an energy exchange" (Quinn, 1992, p. 12). The problems surrounding the idea of energy exchange, i.e., conceptual, measurement, and as a potential evaluation mechanism for how one could differentiate between "effective" and "ineffective" treatments, supports the need to re-conceptualize Therapeutic Touch within nursing science.

Rogerian Perspective on Therapeutic Touch

Meehan (1988, reprinted 1990) is one Therapeutic Touch practitioner and researcher who initiated discussion in the literature of the differences when Therapeutic Touch is viewed from the Science of Unitary Human Beings compared to the way Krieger introduced it. She selected a funded study she had already developed and juxtaposed the original theoretical rationale with a revision consistent with the current formulation of the Science of Unitary Human Beings, explaining the changes she proposed. As noted earlier, one of the key changes involved energy exchange and transfer. "'Energy transfer' should be changed to 'mutual process,' and 'energy exchange' should be changed to 'energy process'" (Meehan, 1988, p. 6). She re-defined Therapeutic Touch "as a knowledgeable and purposive patterning of patient-environmental energy field process in which the nurse assumes a

meditative form of awareness and uses her (sic) hands as a focus for the patterning of the mutual patient-environmental energy field process" (p. 6).

In a subsequent article Meehan (1990) noted additional differences in theoretical rationale when Therapeutic Touch is viewed from the Science of Unitary Human Beings.

1. Therapeutic Touch is not seen as derived from laying-on of hands.

"Instead, the nurse is viewed as being integral with the patient's environmental energy field patterning, and therapeutic touch treatment is viewed as a purposive patterning of energy field mutual process...." (Meehan, 1990, p.74).

2. Change is not mediated by the flow of "prana."

Instead, it is viewed as change which occurs in the human-environmental energy field patterning as the nurse assumes a meditative state of awareness, recognizes his or her own unitary nature and integrality with the environmental field, and focuses his or her intent to help the patient. (Meehan, 1990, p. 74).

Other differences have emerged in discussions with Rogers (personal communication, 1988) about Therapeutic Touch. First, Rogerian science does not include the concept of nurse-client interaction. Rogers maintains there is no one-to-one relationship between people as this leaves out the environment, which is integral in the mutual process of human and environmental fields. The nurse is integral with the client's environmental field; the client is integral with the nurse's environmental field. Therefore, the phenomenon of concern is the person-environment mutual process, not the nurse-client interaction. "We ourselves are

integral with the totality of the client's environment...And it is this totality that is engaged" (Rogers, personal communication, 1988).

Second, Rogers prefers "participation" or "participatory" over words such as "motivation" and "intentionality." For her, the last two connote the sense of will, as in willing something to occur. One can participate knowingly in the flow of life but one cannot direct that flow or will a particular change to come about.

Third, change is continuous; one does not initiate or direct it. The nature of the change in Therapeutic Touch or any other unitary process cannot be predicted. Therapeutic Touch involves patterning that is most commensurate with the well-being of the individual, whatever that may be for the individual.

Fourth, the Therapeutic Touch practitioner is neither an instrument of nor a conduit for a higher healing power that passes through the person. Rogers sees this as a yielding or giving over in the sense of non-participation. According to Rogerian science, one can never not participate. Both nurse and client, not just the client, are experiencing continuous patterning within the mutual human-environmental field process.

Finally, Rogers sees Therapeutic Touch as a technique not, in and of itself, a body of knowledge. It is one among many health patterning modalities that nurses can incorporate in their practice. These health patterning modalities represent the use of knowledge from Rogerian science in nursing practice. For this reason, rather than developing a theory of Therapeutic Touch per se to be followed by theories of the other health patterning modalities such as meditation and imagery, this author proposes that the theoretical rationale for Therapeutic Touch as a

health patterning modality can be derived from extant nursing science.

Theoretical Derivation from the Science of Unitary Human Beings

The postulates of the Science of Unitary Human Beings are energy fields, openness, pattern, and pandimensionality (Rogers, 1990, 1992). In their irreducible unity they form reality as experienced in the Rogerian world view. Person and environment are irreducible, indivisible, pandimensional energy fields identified by pattern. The person does not "have" a field that can be identified as an aura. Rather, the aura and the chakras could be seen as manifestations of field patterning just as the physical body is a manifestation of the human field. The energy field is in continuous motion (Rogers, 1990) and is, therefore, continuously changing. The nature of this change is captured in the principles of homeodynamics (Rogers, 1990). Resonancy specifies the process of change, flowing in lower and higher frequencies. Helicy identifies the nature of change as innovative and unpredictable increasing diversity. Integrality describes the context for this change as the human/environment mutual process. Thus, applying the abstract system of Rogerian nursing science to Therapeutic Touch, it occurs in a universe that is totally open, unbounded and infinite; within the context of energy fields, human and environment, that are characterized by patterning; and in a pandimensional domain where time and space have no meaning and, therefore, place no constraints on the process. The principles of homeodynamics suggest that the mutual patterning process of human and environmental fields changes continuously, innovatively, and unpredictably flowing in higher and lower frequencies.

The first theory that supports Thera-

peutic Touch is the theory of the emergence of paranormal phenomena (Rogers, 1980). This theory suggests that experiences ordinarily labelled paranormal are manifestations of the changing diversity and innovation of field patterning. They are pandimensional forms of awareness. With the refinements in the Science of Unitary Human Beings since 1980, this theory might, perhaps, now more accurately be named the theory of pandimensional awareness. Therapeutic Touch is one example of such pandimensional awareness. Centering, common to Therapeutic Touch as well as other health patterning modalities such as imagery and meditation, reflects higher frequency awareness that transcends time and space (Malinski, 1991). Practitioner and client often have similar experiences during the process of Therapeutic Touch, for example, a visualization that shares common features and evolves spontaneously for both. This highlights the mutuality of the process; the experience cannot be "claimed" by either nurse or client. It is a reflection of the totality of that experience. Therapeutic Touch seems to be one way to focus awareness of integrality which, although ever-present, is not always fully experienced.

The second theory that underwrites Therapeutic Touch is Barrett's (1986, 1990) theory of power as knowing participation in change. Knowing participation has long been an assumption in Rogerian science. Although one cannot stop or start the change process itself, one can change the nature of her/his participation in that process. Health patterning is providing knowledgeable caring to assist clients in actualizing potentials for well-being through knowing participation in change (Malinski, 1992). Therapeutic Touch is one such health patterning mo-

dality. There may or may not be a change in the physical manifestations of the field, e.g., symptoms. The change may occur in the experience or the meaning of such physical manifestations for the person. In this sense, Rogers has described Therapeutic Touch as a "neutral process of change" where "the whole is going to be better" (Rogers, personal communication, 1988).

Barrett (1986, 1990) has conceptualized power as a higher and lower frequency phenomenon, not good-bad, less-more. Higher frequency power, higher frequency knowing participation, may be part of the acceleration in change theorized by Rogers. Diversity accelerates with higher frequency phenomena. This may be the basis for the assertion that, although one cannot predict a specific outcome with Therapeutic Touch, the experience is likely to be beneficial for the client.

Therapeutic Touch needs to be defined in a way that is consistent with Rogerian nursing science. The definition provided by the Nurse-Healers-Professional Associates, Inc., Cooperative (1992) is consistent with what commonly appears in the literature but not with the Science of Unitary Human Beings: "Therapeutic Touch, a contemporary interpretation of several ancient healing practices, is a consciously directed process of energy exchange during which the practitioner uses the hands as a focus to facilitate healing" (p. 1). It is consistent with Kunz's Human Energy Field Model, cited as the first supporting framework. Meehan's (1988) definition is consistent with Rogerian nursing science: "a knowledgeable and purposive patterning of patient-environmental energy field process in which the nurse assumes a meditative form of awareness and uses her hands as a focus for the patterning of the mutual

patient-environmental energy field process" (p. 6). A potential problem with this definition is the phrase "purposive patterning," which seems to suggest that the nurse is directing the flow of the patterning process. "Knowing participation in the patterning" might be more appropriate.

Another definition, which retains some of Meehan's wording, is offered here for consideration. Therapeutic Touch is a health patterning modality whereby nurse and client participate knowingly in the changing human-environmental field process. The nurse:

1. experiences her/his integrality with the environmental field by assuming a meditative, pandimensional form of awareness and
2. uses the hands as a focus for knowing participation in the patterning of the mutual energy field process.

The client may or may not experience pandimensional awareness but does participate knowingly in the process, whether this participation is characterized by lower or higher frequency power.

Both nurse and client are identified in this definition to preserve the mutuality of the process. From the perspective of the client, the nurse is integral with the environmental field. From the perspective of the nurse, the client is integral with the environmental field. Both participate in the field patterning process. There are numerous anecdotal reports of enhanced well-being for practitioner as well as client, which parallels such findings as Heidt's (1990, 1991) of similarities in the experience reported by both practitioner and client. In this sense, it is difficult to designate one as "healer" and one as "healee." Indeed, given the nature of unitary field processes, each can be both, with the "healee" mobilizing her/his own

innate healing abilities and the "healer" experiencing enhanced well-being. This reflects the totality of the process.

This view of Therapeutic Touch, the proposed definition and theoretical rationale derived from Rogerian nursing science, has yet to be tested. Clearly, there are differences in the way Therapeutic Touch is viewed from the perspectives of Krieger and Kunz, practitioners and teachers of the process, and Rogers, a nurse scientist who has experienced Therapeutic Touch. The ideas presented here resonate with this practitioner's experience of Therapeutic Touch and are offered in the hope that they will elicit critique and further discussion.

References

- Antimatter. (1992). Yoga wars. *Omni*, 14(8), 80.
- Barrett, E. A. M. (1986). Investigation of the principle of helicy: The relationship of human field motion and power. In V. M. Malinski (Ed.), *Explorations on Martha Rogers' science of unitary human beings* (pp. 173-184). Norwalk, CT: Appleton-Century-Crofts.
- Barrett, E. A. M. (1990). Health patterning with clients in a private practice environment. In E. A. M. Barrett (Ed.), *Visions of Rogers' science-based nursing* (pp. 105-115). New York: National League for Nursing.
- Heidt, P. (1981). Effect of therapeutic touch on the anxiety level of hospitalized patients. *Nursing Research*, 30, 32-37.
- Heidt, P. R. (1990). Openness: A qualitative analysis of nurses' and patients' experiences of therapeutic touch. *Image: Journal of Nursing Scholarship*, 22, 180-186.
- Heidt, P. R. (1991). Therapeutic touch—The caring environment. *Journal of Holistic Nursing*, 9(3), 19-25.
- Karagulla, S., & Kunz, D. van Gelder. (1989). *The chakras and the human energy fields*. Wheaton, IL: Quest Books.
- Krieger, D. (1979). *The therapeutic touch: How to use your hands to help or to heal*. Englewood Cliffs, NJ: Prentice-Hall, Inc.
- Krieger, D. (1987). *Living the therapeutic touch: Healing as a lifestyle*. New York: Dodd Mead & Company.
- Krieger, D. (1991). Therapeutic touch: Toward an understanding of unitary human be-ness. *Cooperative Connection: Newsletter of the Nurse Healers-Professional Associates, Inc.*, 12(1), 1, 3-4.
- Kunz, D., & Peper, E. (1985). Fields and their clinical implications. In D. Kunz (Ed.), *Spiritual aspects of the healing arts* (pp. 213-261). Wheaton, IL: The Theosophical Publishing House.
- Kunz, D. van Gelder. (1991). *The personal aura*. Wheaton, IL: Quest Books.
- Macrae, J. (1987). *Therapeutic touch: A practical guide*. New York: Alfred A. Knopf.
- Malinski, V. M. (1991). Spirituality as integrality: A Rogerian perspective on the path of healing. *Journal of Holistic Nursing*, 9(1), 54-64.
- Malinski, V. M. (1992, June). *Health patterning for individuals and families*. Paper presented at the Fourth Rogerian Conference, New York, NY.
- Meehan, T. C. (1988). Theory development. *Rogerian Nursing Science News*, 1(2), 4-8. Reprinted 1990 in E. A. M. Barrett (Ed.), *Visions of Rogerian science-based nursing* (pp. 197-207). New York: National League for Nursing.
- Meehan, T. C. (1990). The science of unitary human beings and theory-based practice: Therapeutic touch. In E. A. M. Barrett (Ed.), *Visions of Rogers' science-based nursing* (pp. 67-81). New York: National League for Nursing.
- Nurse Healers-Professional Associates, Inc., Cooperative. (1992). *Therapeutic touch teaching guidelines: Beginner's level Krieger/Kunz method*. (Available from Nurse Healers-Professional Associates, Inc., Cooperative, 175 Fifth Avenue, #2755, New York, N. Y. 10010)
- Olson, M., Sneed, N., Bonadonna, R., Ratliff, J., & Dias, J. (1992). Therapeutic touch and post-Hurricane Hugo stress. *Journal of Holistic Nursing*, 10, 120-136.
- Quinn, J. F. (1984). Therapeutic touch as energy exchange: Testing the theory. *Advances in Nursing Science*, 6(2), 42-49.
- Quinn, J. F. (1989a). Therapeutic touch as energy exchange: Replication and extension. *Nursing Science Quarterly*, 2, 79-87.
- Quinn, J. F. (1989b). Future directions for therapeutic touch research. *Journal of Holistic Nursing*, 7(1), 19-25.

- Quinn, J. F. (1992). An open letter to the board of trustees and the membership. Cooperative Connection: Newsletter of the Nurse-Healers-Professional Associates, Inc., 13(4), 12-13.
- Rogers, M. E. (1970). An introduction to the theoretical basis of nursing. Philadelphia: F. A. Davis.
- Rogers, M. E. (1980). Nursing: A science of unitary man. In J. P. Riehl & C. Roy (Eds.), Conceptual models for nursing practice (2nd. ed.) (pp. 329-337). New York: Appleton-Century-Crofts.
- Rogers, M. E. (1990). Nursing: Science of unitary, irreducible human beings: Update 1990. In E. A. M. Barrett (Ed.), Visions of Rogers' science-based nursing (pp. 5-11). New York: National League for Nursing.
- Rogers, M. E. (1992). Nursing science and the space age. Nursing Science Quarterly, 5, 27-34.

Violet M. Malinski, RN; PhD
Associate Professor and Graduate Specialization
Coordinator, Psychiatric-Mental Health Nursing
Hunter-Bellevue School of Nursing
Hunter College/City University of New York
425 E. 25th Street
New York, New York 10010

The editors invite your contributions for the next issue of Visions: The Journal of Rogerian Nursing Science. Send manuscripts for peer review, submit content for one of the regular columns, send your Letters to the Editors. Students are encouraged to submit material for the journal. Remember "Infinite Potentials"; submit your ideas for the next cover. Share your creativity in expressing the Science of Unitary Human Beings.

Emerging Scholars Column

Introductory Comments for the "Emerging "Scholars" Column

Sarah Gueldner, RN;DSN;FAAN.

Rogerian science is still young, and its full development rests in the hands of our emerging nurse scholars. The piercing questions of coming generations will force the language specificity necessary for clarifying discourse. Likewise, it is their "AH HAH's" that will provide a fuller understanding of the elusive and complex human/environmental process.

Graduate students from around the world who "catch fire" with the science are, therefore, our most valuable asset, for it is they who will take the Science of Unitary Human Beings into the future. It is through their knowing participation in change that the premises of the science will become inseparably merged with practice which focuses on the human health experience in the next century, whether it be for inhabitants of land or space.

Accordingly, this column of our new journal is offered as a center court where emerging scholars can voice their questions in challenge of the system, articulate early drafts of their innovative ideas, and be guided by the larger community of scholars to defend and refine their thinking. Therefore, in my opinion, this is the most important section of our journal because it is where our brightest thinkers can grow into our leaders. In every issue, this is the section I will turn to first.

The Development of the Human Field Image Metaphor Scale

Linda W. Johnston, RN;PhD.

The purpose of this paper is to briefly describe the conceptual definition and operationalization of Human Field Image, a holistic perception of human field which is congruent with the Rogerian Science of Unitary Human Beings. Human Field Image is conceptually defined as an individual awareness of the infinite wholeness of the human field (Rogers, personal communication, 1991), and it is one of many manifestations of human field pattern. The Human Field Image Metaphor Scale (HFIMS) is proposed as one possible means of assessing and measuring the observable manifestations of Human Field Image.

Phillips (1990) suggested that HFI is best understood as one manifestation of the mutual process of human and environmental energy fields. He characterized HFI as an "evolving diverse manifestation of the human field pattern that synthesizes all past and projected future images into a four-dimensional picture of human beings" (p.13-14). He further proposed HFI as one matrice of the patterning process from which human potentials emerge and through which one is able to perceive integrality with the environmental fields (Phillips, 1990). It follows, then, that HFI is one manifestation of the human and environmental patterning process which may be expressed as a perception of one's potential and an awareness of one's integrality.

While human field pattern is highly abstract and unobservable, field manifestations of pattern are less abstract and may be observed and measured. No one measurement device can fully capture or describe human field pattern. However the pattern of the human field may be appraised through examination of its manifestations in the form of human perceptions. The use of the metaphor is one possible means of appraising human field; thus it has been chosen as the item form for the HFIMS.

The HFIMS has been developed in close consultation with Dr. Rogers and other Rogerian scholars. It consists of thirty metaphors which appraise individual perceptions of potential and integrality. The instrument has been pilot tested (n = 50) and is currently in the data analysis phase of this author's dissertation (n = 350). The instrument was refined to its final form as of May, 1993. The results of this study were presented in June, 1993, at the Sigma Theta Tau International Research Congress in Madrid.

References

Phillips, J.(1990). Changing human potentials and future visions of nursing. In E.M.Barrett(Ed.). Visions of Roger's science-based nursing. New York: National League for Nursing.

A copy of the HFIMS may be obtained by writing :

Linda W. Johnston
USC-Aiken
171 University Parkway
Aiken, SC 29801
(803) 648-6851 x 3277

Controversies Column Commentary and Critique

Susan Kun Leddy, RN; PhD

In a recent article, Reeder 1993) refers to Rogers' use of metaphors as linguistic devices that "provide a vision of possibilities that spark the imagination and the will to be and to act; they do not provide unequivocal descriptions of immanent reality"(p.16). I suggest that Rogers' lack of definition and/or description of the intended meaning of concepts is more frustrating than exciting and make her work difficult (if not impossible) to use by scholars and practitioners alike. Rogers' highly abstract, coined principles remain largely immanent (restricted entirely to the mind) in Rogers' perspective, The nursing literature largely reiterates rather than clarifying or extending language.

After years of feeling stymied in understanding Rogerian science, I recently started an extensive review of original diverse literatures. In the process I began to question my interpretation of Rogers' principles and developed an original "imaginative, creative synthesis of facts and ideas" (Reeder, 1993 p.17), philosophically compatible with her organismic world view, but substantively different from Rogers' work. In this commentary, I will question Rogers' principle of integrality and very briefly outline relevant features of a developing reconceptualization which has been labeled the Human Energy Systems Model (HES). I have aimed for integration of emerging wholistic science with human science, concrete definitions

and relationships among concepts, and the derivation of testable theories for an ultimate goal of usefulness in practice,

The principle of integrality is "continuous mutual human field and environmental field process" (Rogers, 1990). What is a human or environmental field? Each is irreducible, indivisible, pandimensional, dynamic, infinite, and identified by pattern, an abstraction, perceived through its manifestations as a single wave. What does it mean that pattern is perceived as a single wave? Does this imply that perception occurs as a gestalt, tied to the principle of resonancy with perception of continuous wave frequencies? If this interpretation is correct, so what? Since there is a human field and an environmental field, the fields are apparently separable (through pattern) which implies interaction between the fields. Are the fields separable or integral? How can energy field concurrently be the fundamental unit but only a unifying concept? What then is the person?

I propose that the universal whole is energy, defined as a potential to power process. The human being is a unitary energy system, with system defined as a series of interrelated processes. The human being is self-organized, manifests consciousness, and is embedded in the universe. The human being participates in a web of continuously changing interactions with the environment, the "local" universe. The human being is not more than the sum of its parts, since there are no parts, and nothing is "added."

The environment is dynamic, ordered, and communal. As the human being/environment participate openly in energy interactions, the human being attributes significance and direction to the dynamic flow of experience. As the human being constructs and interprets reality through

consciousness, energy is channelled, replenished, or redirected. Nursing is a deliberate environmental influence to promote the well-being of individuals through repatterning of energy.

Three middle-range descriptive theories of well-being, health, and nursing have been derived from the HES model. An instrument, the Well-Being Index, has been developed for quantitative measurement of well-being, defined as a dynamic state characterized by perceived purpose and power to influence change. I am currently doing psychometric testing of the instrument, continuing to refine and extend the model and the theories, and trying to write an article describing the HES model and the theories in some depth. Collegial feedback/reaction would be greatly appreciated.

References

- Reeder, F. (1993). The science of unitary human beings and interpretive human science. Nursing Science Quarterly, 6, 13-24.
- Rogers, M. E. (1990). Nursing: Science of unitary, irreducible, human beings: Update 1990. In E. A. M. Barrett, (Ed.), Visions of Rogers science-based nursing. (pp. 5-11). New York: National

Susan Kun Leddy, RN; PhD
Professor
School of Nursing
Widener University
Chester, Pennsylvania

Imagination Column

"from pragmatic to imaginative to visionary"

By Katherine Matas Rapacz,
RN;PhD.

On Creative Imagining

It is an honor to contribute to the first issue of Visions. The Imagination Column offers an opportunity to "talk out loud," to share ideas and observations that, even for us, may be uncharted territory. I began this writing thinking that I would discuss my experience with the use of haiku (an ancient form of Japanese poetry) for promoting health and healing. The phenomenon of "pattern-seeing" through writing poetry, however, is an eminent act of creativity. Poetry and its use as a unitary modality is but one example of the creative process. So it seems more important for us to first consider what creativity means for and to our own scholarly community.

The significance of creativity has long been recognized within the Science of Unitary Human Beings. It is conceptualized as a higher frequency wave pattern and has been studied in relationship to human field motion and differentiation (FERENCE, 1979), mystical experience and differentiation (COWLING, 1986), actualization and empathy (ALLIGOOD, 1986), human field motion and time experience (CONNOR, 1986), and the experience of dying and paranormal events (MCEVOY, 1987).

It is exciting to realize that our science has developed to the point of requiring a literature review of Rogerian works on this concept! I will not undertake that effort here, but instead will synthesize a

definition from the above research and offer some thoughts on its relevancy and relationship to our scholarly efforts.

Creativity: a pandimensional, human-environmental field patterning process characterized by diversity, complexity and innovativeness.

From the new worldview, creativity can be seen as an organic, unpredictable process. The context of creativity is pandimensional reality and openness. While the manifestations of creativity are unpredictable, it seems they must be related to the worldview in which one is rooted. Cartesian creativity and Rogerian creativity are two different things! It is creativity based in the new worldview which will best serve the continuing development of the science and the art of nursing.

How can we foster the creativity that is needed? We may need to purposefully cultivate, develop and reward manifestations of field patterning which foster emerging creativity among nursing scholars. Here is a beginning list of such manifestations:

- openness
- flexibility
- freedom
- spontaneity
- reflectiveness
- synergy
- connectedness
- accessibility
- playfulness
- authenticity

We know that by cultivating characteristics such as these within ourselves, our environment will be in mutual process simultaneously. We can also look for these characteristics in our environment, or seek out such environments, to foster

our own emerging creativity. It will be through a deliberative mutual patterning process that creativity will evolve!

Creativity is receiving renewed attention in today's world of diminishing resources. An editorial in the Harvard Business Review advocated creativity vis-a-vis "integrative thinking" and "holistic thinking" (Kanter, 1990). Futurist Robert Theobald has designed workshops which specifically "set up a space where creativity emerges" to empower participants for change (Page & Theobald, 1989). Edward de Bono (1991, 1992) describes techniques that have been successful in fostering creativity. The general creativity literature is helpful to our efforts but should be evaluated to determine the worldview upon which it is based.

"Rogerian" creativity may manifest itself as ideas, theories, research, practice modalities, teaching methods, curriculum changes, management techniques, etc., etc. May (1975, p. 43) states that the hallmark of creativity is an "intensity of encounter" where the individual is "wholly involved" by an idea or inner vision.

Supporting and facilitating our "creative opportunities" will promote the development of the art and the science of nursing. Happy Creative Imagining!!

P.S. See dedication haiku below.

References

- Connor, G. K. (1986). The manifestations of human field motion, creativity, and time experience patterns of female and male parents. Unpublished dissertation. University of Alabama at Birmingham.
- Cowling, W. (1986). The relationship of mystical experience, differentiation, and creativity in college students. In V. Malinski (Ed.), Explorations on M. Rogers' science of unitary human beings (pp. 131-141). Norwalk, CT: Appleton-Century-Crofts.
- de Bono, E. (1992). Serious creativity. New York: Harper Business.
- de Bono, E. (1991). Handbook for the positive revolution. New York: Viking.

- Ference, H. (1986). The relationship of time experience, creativity traits, differentiation, and human field motion. In V. Malinski (Ed.), Explorations on M. Rogers' science of unitary human beings (pp. 95-105). Norwalk, CT: Appleton-Century-Crofts.
- Kanter, R. (1990). Thinking across boundaries. Harvard Business Review, Nov.-Dec., 9-10.
- May, R. (1975). The courage to create. New York: Norton & Co.
- McEvoy, M. D. (1987). The relationships among the experience of dying, the experience of paranormal events, and creativity in adults. Unpublished dissertation. New York University.
- Page, B., & Theobald, R. (1989). Creativity in turbulent times. The Futurist, Sept.-Oct., 25-28.
- Rogers, M. E. (1986). Selected definitions. In V. M. Malinski (Ed.), Explorations on Martha Rogers' Science of unitary human beings, (pp.193-194). Norwalk, CT: Appleton-Century-Crofts.

By Katherine Matas Rapacz, RN; PhD.
Assistant Professor
College of Nursing
Arizona State University
Tempe, AZ 85287-2602

.....Visions

Poised
the heron glimpses vistas
of infinite potentials
Can you?

K.Rapacz

a haiku dedicated to Visions: The Journal of Rogerian Nursing Science on the occasion of its first issue.

Society of Rogerian Scholars
1-800-474-9793
MEMBERSHIP APPLICATION FORM

Name: _____
Address: _____

Phone (Home) _____ (Work) _____

Affiliation: _____

- | | | |
|---|-------|--------------------------|
| Patron | \$250 | <input type="checkbox"/> |
| Supporting Member | \$150 | <input type="checkbox"/> |
| Institutional Member | \$150 | <input type="checkbox"/> |
| Regular Member | \$ 45 | <input type="checkbox"/> |
| Student (with copy of student ID) and Retiree | \$ 25 | <input type="checkbox"/> |

Make checks (U.S. funds only) payable to: Society of Rogerian Scholars

Membership year runs from July 1 through June 30. For New Members Only who pay in April, May, or June, Dues are credited towards the following year.

Dr. Mary Madrid, Treasurer, Society of Rogerian Scholars, 17 Patriots Trail, Totowa NJ 07512

Society of Rogerian Scholars
1-800-474-9793
MEMBERSHIP APPLICATION FORM

Name: _____
Address: _____

Phone (Home) _____ (Work) _____

Affiliation: _____

- | | | |
|---|-------|--------------------------|
| Patron | \$250 | <input type="checkbox"/> |
| Supporting Member | \$150 | <input type="checkbox"/> |
| Institutional Member | \$150 | <input type="checkbox"/> |
| Regular Member | \$ 45 | <input type="checkbox"/> |
| Student (with copy of student ID) and Retiree | \$ 25 | <input type="checkbox"/> |

Make checks (U.S. funds only) payable to: Society of Rogerian Scholars

Membership year runs from July 1 through June 30. For New Members Only who pay in April, May, or June, Dues are credited towards the following year.

Dr. Mary Madrid, Treasurer, Society of Rogerian Scholars, 17 Patriots Trail, Totowa, NJ 07512

**Society of Rogerian Scholars
437 Twin Bay Drive
Pensacola, FL 32534**

**BULK RATE
U.S. POSTAGE
PAID
PERMIT NO. 84
TUCKAHOE, NY**