A Textual Analysis of the American Journal of Chinese Medicine:
From Spirituality to Science

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Dedication

This dissertation is dedicated to my husband David Hennen. We were married in September 2007, and I started this dissertation in October 2007. He has been a constant source of support. While dissertations are rumored to be the downfall of marriages, I could not have done this work without his encouragement and love. He has read every page, has stayed up, and has supported me late at night and often early into the morning. His faith, love, and friendship have been a source of strength for me. He is truly someone who “lays down his life for his friends.”
Abstract

This dissertation has taken as its principal object of study, the *American Journal of Chinese Medicine*. It has examined the textual features of that journal over a thirty-five year period as an indication of changes in the broader field of traditional Chinese medicine—how it is perceived and practiced by those in the field. The dissertation supplemented this textual analysis with interviews of practitioners of traditional Chinese medicine to see if these practitioners’ reports of their own experiences in the field support the conclusion from the textual analysis. Specifically, this dissertation has been guided by three research questions. These research questions first look at what textual changes the *AJCM* has undergone over the last thirty-five years, and what do those changes explain about the culture of TCM as a whole. The rhetorical and linguistic features of the *AJCM* that were examined include: the use of headings, IMRD structure, biomedical noun-strings, a biomedical or traditional Chinese medical register, subject, audience, and article genre. Also, this study looks to answer the question, in what ways does the biomedicalization of TCM articles reflect change in traditional Chinese medicine? Finally, I sought to understand to what extent the *ACJM* has become more biomedicalized, and during this process, what has been lost or silenced. The results of this dissertation demonstrate and explain that over the last thirty-five years traditional Chinese medicine in America has become centered on biomedicine and the scientific method, which is a significant change from the early 1970s.
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Chapter One

Introduction to a Textual Study of Traditional Chinese Medicine
Introduction

This is a study of the American Journal of Chinese Medicine (AJCM). More specifically the study looks at changes in the journal over the journal’s thirty-five year lifespan. The purpose of this study is to show how this representative journal has changed over time to become more stylistically scientific, or more specifically, “biomedicalized.” Biomedicalization is the westernization of non-western medicine; western medicine uses the biomedical model in its own pursuits, but also has increasingly been applied to other forms of medicine or healing. Examples of this application of the Western scientific method can already be clearly seen in the disciplines of chiropractic medicine by Mirtz and Greene, in osteopathic medicine by Harris, and in midwifery by Lay. To analyze the changes of the AJCM from this perspective requires identifying what it means for an article to be “scientific”; this study thus examines the boundaries of science in the context of the conventions of a professional journal.

In this study I analyzed textual changes in the AJCM. These textual changes found in the journal were then supplemented by interviews. I interviewed TCM practitioners and researchers in order to connect changes in the AJCM more directly to the practices of the people in the traditional Chinese medicine (TCM) community. I interviewed ten people who were either TCM practitioners or researchers. In order for readers to better understand the exigency working in the TCM community surrounding the biomedicalization of the field, I offer three quotations excerpted from these interviews; each encompasses one view of the change in TCM that is reflected in the
AJCM. The first quotation is from a thirty plus year practitioner of TCM who clearly sees the biomedicalization of TCM as negative, likening it to an infection. He states:

So my concerns as we undertake this integration process, biomedicalization of alternative medicine, frequently entails not just a change of the medical perspective, but also incorporation into the health care delivery system, which in my opinion is severely sick, broken in its own right. I think that those elements that create that illness in health care delivery are infecting alternative medicine now.

It seems a lot of practitioners are willing to give up or lay to one side their philosophical differences just to gain that economic advantage. But, I do think that laying aside the philosophical issues is a dangerous thing to do. We will pay for it later.

The second quotation comes from a teacher of TCM culture and writer who has published many books, putting together various treatments with the existing scientific literature about the treatments. This interviewee sees biomedical science as positive element acting on TCM. He is positive about the use of science to explain TCM, because it increases communication between the two fields, and ultimately, understanding. He says:

If you call your practice medicine, you need to give [patients] an answer for the scientific community, because there is scientific curiosity there. They are asking: why it works? How it works? For the Chinese medicine acupuncture community, when [such scientific research on TCM] produces scientific results, sic definitely it is a great thing to
utilize because that is a better language for communication with the
general public, with the scientific community, with the medical
community.

The third quotation is from an interviewee who is a Western medical doctor who
has been trained in acupuncture. She admits she doesn’t know the science behind TCM,
but she is “okay” not knowing. She falls into the category of practitioners who
recognize the biomedicalization of TCM, but do not see the new scientific information
as necessarily positive or a negative. What is important to her are not the philosophies
behind various forms of medicine, but that the practice “works.” This is the feeling of
many westerners who practice TCM; they may not buy into the ancient philosophies of
the “chi,” but they have seen TCM medicine work and therefore they feel called to
practice such medicine. In this way the practitioners can stay biomedically minded and
still do TCM. She explains:

I honestly don’t know how it all works. I have gotten so I truly
believe it unblocks some channels. I have no understanding about it, but
I know the points that work for certain things do not correlate with what
I have learned in medical school, what is connected to what, but I am
okay with that.

These three quotations represent three different perspectives in the ongoing
discussion in the TCM community about the field’s “collision” with western science. It
is this change in TCM that this dissertation is going to track textually through the AJCM
as well as in transcripts of interviews with those in the field.
Now that I have given the reader some insight into current attitudes among practitioners of TCM, I will go into more detail. I will introduce my study, provide an overview of the concept of biomedicine and biomedicalization, review relevant literature, as well as define in more detail terms like: traditional Chinese medicine, acupuncture, rhetorical studies, and rhetoric of science.

**The Focus of My Study**

In my dissertation I combined a discourse analysis (in the sense of systematic) approach with the use of qualitative techniques. I refer to this as “discourse analysis” throughout this section, as well as in the methods section of this dissertation. This dissertation is a corpus study of the *American Journal of Chinese Medicine*. My general approach is that of rhetorical criticism, in that I seek to analyze artifacts (in this study, interviews and the *AJCM*) in order to better understand how these texts function as representative items of the TCM culture. This study is an discourse analysis because the study analyzes linguistic features (lexical, morphological, and others) and graphic elements, including assessing their frequency and change over the lifetime of the journal. Additionally, I interviewed eight practitioners and two researchers of TCM. I used these interviews to corroborate that the information from the *AJCM* analysis is in fact representative of what is going on in the TCM community at large.

My aim is to both understand how the representative journal, the *AJCM*, has changed over the last thirty-five years, but also to assess its transformation into a journal that honors the conventions of “Western science.” Of interest, are also what kind of rhetorical boundary exists between an article in *JAMA*, for example and the *AJCM*. The particular research questions that guide my investigation are:
1. What textual changes has the AJCM undergone over the last thirty-five years, and what do those changes say about the culture of TCM as a whole?

2. In what ways does the biomedicalization of TCM articles reflect change in traditional Chinese medicine?

3. To the extent that the AJCM has become more biomedicalized (more about biomedicalization shortly), what is lost or silenced?

I chose to look at TCM over other non-scientific forms of healing or medicine because of the substantial resources in the Twin Cities for such a project. There are two schools for Chinese medicine in the Twin Cities area and hundreds of practitioners. According to Professor Halfner, the presence of TCM in the Twin Cities is second only to California. Additionally, the University of Minnesota has a Center for Spirituality and Healing that offers courses on TCM and has a connection to the TCM community in Minnesota. Out of all the possible boundary areas of science and medicine (healing touch and homeopathy just to name a couple), TCM was a fertile subject for research, given my physical location.

The AJCM was initially chosen as the representative journal of TCM for study over other similar traditional Chinese medical and alternative/complementary medicine journals for the following reasons:

1.) The journal’s articles were cited more frequently than those from others in the alternative health science community (“Integrative & Complementary Medicine”); 2.) its relative stability over a significant period of time (members of the same family edited the journal for most of its existence); 3.) the editor’s practice of including a variety of topics and techniques; 4.) the longevity of the journal compared to other
forums in the same field; 5.) the American nationality of the editors (until 2004), a factor that improves the likelihood of it representing the state of Chinese medicine in America; 6.) the articles in the AJCM are written in English. For my purposes accessibility also played a role: the University of Minnesota library purchased electronic rights to all thirty-five volumes. Having electronic files available made coding the journal in this short of a time span much more possible.

By many measures, the AJCM is a significant journal. To return to my first point regarding the frequency of citations that AJCM articles received, one way that a professional journal’s importance to the field can be assessed is by the number of times its authors are cited and the prestige of the forums in which the citations appear. In other works, journals may be assessed by examining their “half-life.” A journal’s half-life “is the number of publication years from the current year which account for 50% of current citations received” (“Integrative & Complementary Medicine”). Journal half-life measures how important and long-lasting its articles are, as a whole. The AJCM has a half-life of 7.7 years; this means that the journal’s articles are staying in circulation and being cited for almost eight years after their original publication date. The AJCM also had a high number of articles published in the area of complementary medicine (healing practices that are not “Western” medicine) with ninety-nine in 2003. The other TCM journals published in a range between eighteen and eighty-six such articles in 2003 (“Integrative & Complementary Medicine”).

Another reason for my choice of the AJCM is its longevity and its impact. By “longevity,” I mean that because the journal has been published over thirty-five years, I was able to obtain a large sample of the articles to examine. For a historical study, such
as mine, the longevity of the AJCM meant I could track the changes taking place in the articles over thirty-five years. According to Journal Citation Reports, the frequency with which the average article in a journal has been cited makes up the impact factor. The impact factor of a journal is a measure of a journal’s relative influence, the greater the number of citations, the greater the influence. The AJCM had an impact factor in 2003 of 0.627. Other journals of a similar type had impact factors of 0.349, 0.600, and 0.308 (“Integrative & Complementary Medicine”). This citation information about the journal shows that it is a prominent part of this subset of the medical community.

The language in which the journal is written played a large role in deciding to use the AJCM for this project. The AJCM has been written in English since its first publication in 1973. The Journal of Traditional Chinese Medicine is the other major journal in the TCM community. It is not being used for this study because its official language is Chinese, published out of Beijing, under the supervision of The Chinese Association for TCM and Pharmacy, and it only started being translated into English in the 1980s.

The comprehensive approach of the AJCM also made it well suited to this study. I wanted to look at all major aspects of traditional Chinese medicine: the herbal remedies, acupuncture, spiritual background (schooling and practice of a specific religion related to Chinese medicine), as well as other lesser known practices such as moxibustion (the use of the plant mugwort burned on the skin) and cupping (the placement of glass cups—face down—on someone in order to draw the qi up the surface). The AJCM takes a broad approach to TCM. Its mission statement declares that TCM “is defined in its broadest sense possible, and the AJCM publishes original
articles and essays relating to traditional or ethnomedicine of all Asian cultures.” Other journals in the field, like Medical Acupuncture and Acupuncture and Electronic Therapies, only look at acupuncture. Still other journals study only one area of the body or a particular disorder, such as The Chinese Journal of Digestive Disorders. The AJCM, especially during its first few decades, published a variety of articles, from those chemical in nature to historical and philosophical subjects.

The longevity of the journal also makes it the best choice. The AJCM is the oldest American journal on TCM, and also the oldest English language journal on TCM. The AJCM went into print shortly after the opening of China to Americans in the 1970s. This era is important because the AJCM developed along with the professionalization of TCM in America. Before the 1970s, TCM was being practiced in America by Asian immigrants, but it wasn’t brought to the public eye until relations improved between the United States and China. The Journal of Traditional Chinese Medicine has been published over a longer period (since 1954), but it is focused on TCM in China, not in the West. Also, the journal has only been available in English translation since 1981. A promising new journal, the Journal of Chinese Medicine, is published in English and is comprehensive, but it does not have the longevity that is needed for this project.

Finally, the continuity of the journal also made it an appropriate site of study. The AJCM was founded by Frederick Kao, an academic and doctor practicing in New York, who served as editor for over twenty years, a position which was subsequently taken over by his son and then his students. Currently, the editor is a professor at the University of Chicago in the medical school at the Tang Center of Herbal Medicine
Research. While the editorship recently changed academic homes and is edited by Chun-Su Yuan, who both has a PhD and is medical doctor, there have been few, changes to the journal. Since the editorship and publication have all been located in America, and the journal written in English, it is the AJCM that can tell us most about the changes in the TCM discipline, specifically in America.

**Biomedicalization Defined**

The term biomedicalization came out of research on aging, specifically Carroll L. Estes and Elizabeth A. Binney’s 1989 publication “The Biomedicalization of Aging: Dangers and Dilemmas,” in the journal *Gerontologist*. In this essay Estes and Binney explain that there has been a “shift” in the way aging is thought of. First they noted that aging is now seen as a biomedical problem and not a reality of being, and then they stated that, with this new view, anything related to aging should be biomedical in nature. Sociologists, including Adele Clarke, have more recently written about technology and biomedicine. Shortly thereafter, articles on the “biomedicalization” of various areas of concern to gerontology such as senile dementia by Karen Lyman were published.

The concept of biomedicalization soon moved outside the confines of gerontology, with texts looking at the biomedicalization of psychiatry by Cohen, alcoholism by Gorman, and menstruation by Mamo. The concentration of these articles is the demonstration that their respective fields are changing focus toward understanding these areas of study in terms of biology and science, not psychology or sociology. Under this new biomedicalized understanding, the idea of health is not in the
forefront, but illness and how that illness can be seen and understood as having a biomedical basis.

Previous studies examining biomedicalization and Chinese medicine are Linda L. Barnes’s chapter “Chinese Healing in the U.S.” Here Barnes briefly explained that TCM was firmly tied to religion in China and since the opening of China in the 1970s there has been a Western “medicalization” of the field. Her text “The Acupuncture Wars: The Professionalization of American Acupuncture” also delved into the biomedical link that has been made between Western biomedicine and Chinese medicine as it pertains to the professionalization of acupuncture. “While biomedicalization” is a twenty-year old term, only in the last five years has it proliferated into alternative medicine, with journal articles attempting to understand alternative therapies such as Chinese medicine though biomedicine.

**History and Philosophy of Science**

In applying rhetoric to science, rhetoric scholars drew on the voluminous work done on language in science studies. Important works by historians and philosophers of science include Ludwik Fleck’s work *Genesis and Development of a Scientific Fact* and Thomas Kuhn’s work *The Structure of Scientific Revolutions*. Valuable works by sociologists and anthropologists of science include: *Opening Pandora: a Sociological Analysis of Scientists' Discourse* by Gilbert and Mulkay, *Epistemic Cultures: How the Sciences Make Knowledge* by Knorr-Centina, *Laboratory Life: The Construction of Scientific Facts* by Latour and Woolgar, and *Beamtimes and Lifetimes: The World of High Energy Physicists* by Traweek—to name a few—created a climate in which
researchers in related fields became interested in investigating the social and textual
dynamics through which scientific “facts” came to be constituted.

**Rhetoric of Science**

The mission of the rhetoric of science is to show the ideological and
epistemological implications of the ways science is represented. Thus, it exposes
biomedicalization. Rhetoric of science is a field built around the idea that science
generally, and the scientific method particularly, is `suasive in nature. This field has
come into existence over the past thirty years. I will discuss the major contributors to
the field of the rhetoric of science.

As discussed above, the seminal work on which the field of rhetoric of science is
built is Kuhn’s *Structure of Scientific Revolution*. Kuhn forwards the idea that science
is “persuasive” in the same way that other forms of discourse, such as public speech, are
seen. For Kuhn, science is not an immutable truth, but a discourse that has value-laden
assumptions and a socially constructed community. By 1980 Herbert Simon’s chapter,
"Are Scientists Rhetors in Disguise?" in his text, *Rhetoric in Transition*, makes clear
that Kuhn’s work shows how rhetoric is essential to science. The title of Simons’
chapter alone makes clear the mounting question of the place of rhetoric in science. The
first scholars to purposely contribute to the new field rhetoric of science came from a
variety of disciplines, but chiefly English and communication. In this section, I will
discuss the major contributors to the rhetoric of science, whose work is valuable in
framing this dissertation. I will look at these well known figures, first chronologically
(split into three generations) and then, separately, I will look at the work on the rhetoric
of the scientific article. While this chronological organization helps the reader perceive
these scholars as their work was published, it also causes some overlap. Some authors are part of both the generational review as well as being authors of texts on the scientific article. I hope that this insight into how this section is constructed, will help the reader better understand the literature review.

Major contributors to the early rhetoric of science are: Charles Bazerman, John Angus Campbell, Alan Gross, and Greg Myers. The scholarship of these five scholars, and others built on Kuhn’s contribution to examine the communal and ‘suasive nature of science and technology. Charles Bazerman’s book *Shaping Written Knowledge* includes a study of early modern science (*The Philosophical Transactions of the Royal Society* and Newton), 20th-century physics, and the social sciences (evaluation of the APA guidelines and *American Political Science Review*). Bazerman ventured that, “if one can show the workings of formulating practices in sciences on the kinds of statements science produces, one can begin to mine important depths of rhetoric” and it was with this attitude that he began to analyze scientific texts (6). As Bazerman worked toward describing a scientific genre, he came to the conclusion that genre “is not simply a linguistic category, defined by a structured arrangement of textual features. Genre is a sociopsychological category, which we use to recognize and construct typified actions within typified situations” (319). Bazerman examined the social forces that shape scientific genre and the relationship of genre to orthodoxy, issues at the core of this dissertation. For this dissertation, such rhetorical and psychosocial forces include the adoption by the TCM scholars of the conventions of the scientific article.

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1 These scholars formed AARST (American Association of Rhetoric of Science and Technology).
With his book, Bazerman made a niche in rhetoric which future authors could begin to grow and publish.

The application of traditional rhetorical theory and criticism to science can also be seen in Alan Gross’s *The Rhetoric of Science*, which was published two years after Bazerman’s text *Shaping Written Knowledge*. Gross’s text subjects canonical scientific texts, *e.g.*, the *Origin of Species* and the *Principia* to rhetorical analysis. Gross argues in these chapters and through these giants of science that rhetoric can explain science. He argues that science, in generating knowledge and validating knowledge claims, relies on rhetoric. Gross states that, “My rhetorical analyses show how the sciences construct their specialized rhetorics from a common heritage of persuasion . . . the sciences create bodies of knowledge so persuasive as to seem unrhetorical—to seem, simply, the way the world is” (206). It is this feigned absence of persuasion that is so valuable to the authority of science and is the model that biomedicine uses for publication. In this dissertation, I seek to demonstrate how the *AJCM* moves toward such “unrhetorical” (*i.e.*, normalized or naturalized) writing, in working toward becoming a professional journal.

John Angus Campbell’s many articles work to look at how Charles Darwin was a rhetorician; he examines in depth Darwin’s texts and is able to show that Darwin’s fame was not brought solely by his scientific merit, but also by the way he went about making those claims. There is a depth about his careful historical and textual analysis that comes into the discipline for the first time. Campbell showed in his essay “Darwin, Thales & The Milkmaid: Scientific Argument and Argument from Common Values and Common Sense” that Darwin was a “master rhetorician” who both in his scientific
publications and his communications to other scientists, to have become regarded as one of the founding fathers of modern science. Campbell’s work shows that scientific knowledge is furthered not only by “the facts discovered,” but by the way the results are presented. According to Campbell, Darwin’s success was due, in part, to his rhetorical skill, and we can see similar rhetorical success in the TCM community. Campbell’s essay “The Invisible Rhetorician: Charles Darwin’s ‘Third Party’ Strategy,” also shows the importance of Darwin’s friends in the scientific community, and it is these relationships that also help him to further his scientific pursuits. The importance of relationships (gained through interviews) will be seen in this study.

Instead of focusing on the rhetoric of one historically famous scientist, Greg Myers adds to the discipline of the rhetoric of science by looking at the present day rhetoric of biological scientists. In his book, *Writing Biology*, Myers follows the writing of present day research scientists from the grant proposals which they write to the journal articles that are the result of those grants. Finally, Myers does an analysis of how science is portrayed by the popular press. It is also important to note that in his book Myers underscores the importance of the social aspects of writing, in that these texts are constructed by the social organizations which surround them. Myers’ step-by-step examination of how a professional scientific article comes to be published, in a sense how science is made, shows that science is the result of writing and argument, not just scientific truth. Myers’ work is relevant to this dissertation because he shows how social elements and writing are important to the crafting of scientific documents, and that the resulting documents are a reflection of the political nature of those organizations.
The next generation of rhetoricians of science built on the early articles and books discussed above. These authors are Jean Deitz Moss and Carol Berkenkotter & Thomas Huckin. Jean Dietz Moss created a monograph, looking historically at the rhetoric and science during the 17th century “Copernican controversy.” Here is a significant historical treatment of the rhetoric of scientific discourse; while most of the first generation of rhetoricians of science looked at famous scientific works they did so for a chapter or an article, not sustaining an argument for a book length treatment.\(^2\) Moss’s work shows that quality historical work can be done in rhetoric of science; she is tuned into both the scientific revolution and the rhetorical revolution that occurred because of the scientific controversy. This research into TCM calls for an attention to the rhetorical, the historical, and how they converge. Also, a similar rhetorical and historical “mini revolution” in TCM allowed for biomedicine to become the dominant mode of thought in America, and even China.

Berkenkotter and Huckin look at genre theory more generally, but specifically at the “dynamic nature of genre in the scientific journal article.” In their book, *Genre Knowledge in Disciplinary Communication*, they focus on “genre in the context of academic discourse communities.” Here Berkenkotter and Huckin use a variety of methods (case study, ethnography, rhetorical analysis, discourse analysis) in order to make their point about the sociocultural and systemic nature of academic genres. Berkenkotter and Huckin state that “genres are the intellectual scaffolds on which community-based knowledge is constructed.” In this way Berkenkotter and Huckin

\(^2\) See also Paradis, Lipson, and Pera.
demonstrate the importance of genres to communal knowledge: knowing the genre is a part of being accepted in the community (24).

In this study, it is clear that genre shifts as the communal knowledge shifts from traditionally focused to biomedically centered. As the genre changes the community that can effectively access the journal changes. This shift in readership can be seen in chapter five. The importance of genre to the scientific documents and study give this dissertation a basis of what to expect from typical scientific articles. This work looks to establish the genre of science and the place of “genre knowledge” in scientific documents. In their study of the publication Reader, Berkenkotter and Huckin show how a community’s text transforms when the community goes through social change. Here they demonstrate how academic communities change when their publications change. This study of the AJCM similarly demonstrates how in a discourse community, knowing the publication genre is the basis for being a professional in that community. In the early years of the AJCM there was identification with the traditional and the many ways it can be expressed, whereas in later years, the publication genre is clearly that of the biomedical article. Authority, in the later years of the AJCM, is based on genre knowledge of the biomedical article, not just biomedical facts. In order to be published in the AJCM in 2008 authors must understand scientific genre as well as the changing research field of TCM.

The third generation of rhetoricians of science include: Leah Ceccarelli, Celeste Condit, and Jeanne Fahnestock. Ceccarelli’s text Shaping Science with Rhetoric uses three case studies to support her claim that there is a unique genre of science texts that makes cross disciplinary work acceptable to people, as different
scientific fields as biologists and physicists. In the text, she looks at scientists from one field trying to do work in a very different discipline from their own. Cecarrelli shows, that through rhetorical maneuvers, these texts allow scientists to do work outside of their field in order to solve complex problems vexing the world. Well known scientists occasionally leave their own field of study, with the hope of solving an interdisciplinary problem. While they may risk their credibility in doing very different research, such risks may result in useful and popular publications. Ceccarelli’s key example of this interdisciplinary success is Theodosius Dobzhansky and his work *Genetics and the Origin of Species*; Dobzansky moves beyond his primary field of anthropology to pursue work in biochemistry. Ceccarelli’s work is germane to this study because, through these case studies, she uncovers an emerging genre in science. Furthermore, she works on what genre conventions result in a budding interdisciplinary field. While this dissertation does not look at the genre Ceccarelli identifies, this dissertation does look at an emergent scientific interdisciplinary genre, which makes *Shaping Science* a relevant piece of framework for this dissertation.

Celeste Condit’s text, *The Meanings of the Gene* separates itself from previous generations of rhetoric of science texts because of the enormous body of literature that had to be counted, coded, analyzed and then finally interpreted. Condit looks at results from coded magazines, congressional reports, TV news, and newspapers in order to understand what happens to the idea of the gene over a ninety-five year period. Condit’s corpus study, while different from this dissertation (she looks at a large variety of popular texts, while this study focuses on one journal), also relies on coding schemes
to look at a longitudinal corpus study. In this way, her study guides my own corpus study, which is the foundation of this dissertation.

Establishing that rhetorical figures exist in science was an important accomplishment by Jeanne Fahnestock. This development is significant because it shows the breadth of stylistic devices at work in science. While previous works on the rhetorical figures in science focused on metaphor exclusively, Fahnestock’s study shows how numerous rhetorical figures operate in the argumentative structure of scientific communication. She showed that rhetoric (in the form of figures of speech) is “native” to thought, including argument in science.

After having described what I am calling the “three generations” of rhetoricians of science scholarship, I will now turn to work done on the scientific article, specifically. There are three texts that are especially relevant to this study because their analyses of scientific articles set a “standard” for what characterizes a late twentieth-century scientific article. These three texts are focused very specifically on different aspects of the scientific article and include: Communicating Science, Scientific Discourse in Sociohistorical Context, and Disciplinary Discourses.

The text Communicating Science by Gross, Harmon, and Reidy examines the scientific article and in doing so the authors are able to describe the rhetorical and stylistic characteristics of the 300 year old scientific article. This book shows how the characteristics of a scientific article can be charted over time. Gross et al.’s study is a good example of how to successfully analyze the linguistic, rhetorical, and formatting changes occurring in a large number of scientific articles in journals from England.

While Condit was able to determine inter-rater reliability because she had multiple coders, I was unable to use a second coder.
France, and Germany between the seventeenth and twenty-first centuries in one study. *Communicating Science* looks at hundreds of scientific articles over 300 years in three languages. This study is comprehensive and makes clear the changes occurring in the conventions that characterized a typical scientific article in 1700, 1800, 1900, and 2000. Gross et al. obtained their sample by taking two rankings of scientific journals compiled by Robert Gascoigne and Eugene Garfield. They then randomly selected ten line passages from randomly selected journals using these two rankings (10-11). It was in this way that Gross et al. had a quantitative section of their study. Gross et al. did their more qualitative analysis by using a subset of articles of those selected for analysis of their ten line passages (235). It was in this way that Gross et al. used both quantitative and qualitative rhetorical methods to describe the scientific article over its lifetime, examining, specifically, the scientific article’s argument, presentation, organization and style in each century. *Communicating Science* establishes what a twenty-first century article looks like with respect to morphology, lexical structure, and visuals. Gross’s conclusion concerning the conventions characterizing the contemporary scientific article serve as a basis for setting the boundaries of what constitutes the conventions of the scientific article today and thus can be the basis for tracing the transformation of the *ACJM* to a scientific journal. Gross et al.’s approach influenced the construction of this dissertation in that they created a balance between the tabular and graphic displays of various features in the different historical periods, in concert with sample prose analysis from the texts analyzed.

While Gross et al.’s corpus of texts included several different journals from different countries, Dwight Atkinson in *Scientific Discourse in Sociohistorical Context*
Atkins restricts his corpus study to one journal, The Transactions of the Royal Society of London. His linguistic and rhetorical analysis of the journal shows how the journal and its articles (some of the first scientific articles) were written during this publication’s over three-hundred-year history. Atkinson does both a “rhetorical analysis” and a linguistic “multidimensional analysis”; in this way, his work differs from Gross et al.’s study. Atkinson’s multidimensional analysis is a form of analysis in applied linguistics (among other fields) that takes into account a number of different relationships. Furthermore, Atkinson frames his study by giving a history of the Royal Society and its publication, The Philosophical Transactions of the Royal Society London, which he analyzes. In addition to his historical work, his institutional work is of value and relevant to this dissertation because this dissertation aims to better understand the institution of TCM in the United States. Atkinson goes beyond analyzing the formal features of the journal in seeking an explanation for stylistic change in the study of the institutional context surrounding the publication of Transactions. There is a great deal of institutional knowledge that is gained by analyzing only one publication. This knowledge will I hope be gained in this dissertation about the TCM community and its changing “membership” and community. Atkinson’s study is relevant to this dissertation because he also examines only one journal and he uses the conclusions he comes to about the changes in the language of the journal to explain cultural changes occurring in British science.

Another broad study of this genre is applied linguist Ken Hyland’s work on hedging in the scientific article. More generally, his book Disciplinary Discourses,
looks at the rhetorical and, therefore, social aspects of academic texts. This text makes clear the importance of academic texts to the perpetuation of knowledge in all academic disciplines. Throughout his book, Hyland looks at the following genres: book review, scientific letter, abstract, and textbook.

In addition to his methods of genre analysis (that have in part inspired this dissertation), throughout the book, Hyland forwards the idea that “academic writing is social writing.” In saying this, he means that academic writing, like other forms of writing, occurs within a community. While the idea of writing being social is found in Bazerman’s *Shaping Written Knowledge*, Berkenkotter and Huckin’s *Genre Knowledge*, and Myers’s *Writing Biology*, Hyland strives to look not just at the linguistic and rhetorical, but he also examines the texts “for traces of social interactions with others engaged in a common pursuit” (1). In this way, Hyland focuses on the social interactions going on in an academic community, and in doing so his analysis is unique. Throughout his text, he forwards (and his argument depends on) the idea that texts “are socially produced in particular communities and depend on them for their sense” (3). In that way, the text a group publishes both promotes its views to others, and also gives the group its identity. This text focuses on the social and community issues of academic writing and their genres and is therefore a key text for this dissertation. While he credits most of the authors discussed in this literature review, he takes their work one step further with the social and interaction analysis.

While there is clearly a body of literature on the attributes of scientific journal articles over time, there are currently no analyses of academic articles on traditional Chinese medicine. This dissertation will look at an alternative medical journal and will
show how a representative TCM journal has changed over its thirty year lifespan to have the characteristics of a scientific article (specifically biomedical). This study will show how a non-science field has changed to try to become scientific through its publication. Clearly, the TCM journal is representative of changes going on in the TCM community. By tracking the changes in this journal, changes in the field as a whole will be uncovered. A basic history of Chinese medicine follows in order to familiarize the reader with the field.

**Traditional Chinese Medicine: A Brief History**

The Chinese medicine that came to the United States in the 1970s, as it was practiced in China at the time, was not the Chinese medicine of 3000 years ago. Earlier, the historic discipline was banned in China in favor of western medicine. In 1892, under Emperor Zheng Guanying, Chinese medicine was dismissed as “past its prime,” but he consolidated what he thought might be useful from ancient texts, and it was that consolidated knowledge that was widely practiced (Shapiro 358). This consolidated version of Chinese medicine would come to be known as TCM, the Chinese folk medicine practiced today and the subject of this study.

Even the Chinese medicine consolidated by Emperor Guanying was phased out in early 20th century China, and western medicine was put in its place. While the government supported western medicine over Chinese medicine, Chinese medicine continued to exist up until 1928. In 1928, the Ministry of Health moved to abandon and then ban Chinese medicine entirely, in favor of western medicine (Shapiro 361).

With the rise of communism, the lack of western medical doctors in China, and the expense of western medicine, Chinese medicine was reintroduced under Mao
Zedong (Halfner). With a growing population, communist leader Mao Zedong instituted medical reform in which hospitals were divided into three separate parts (commonly called the “three roads” policy): traditional Chinese medicine, western medicine, and a combination of the two (Unschuld 110). Chinese people were given the choice of what kind of treatment they wanted when entering the hospital (Whorton 247). In addition to hospitals, Mao sent TCM practitioners into the small villages as “barefoot physicians” (Unschuld 115). Many Chinese medical practices that were established in China before the twentieth century are largely lost to both those in China and in the United States because of social and political dynamics within the region. Therefore, all three “roads” were influenced by Western medicine. The consolidated Chinese folk medicine was labeled “traditional Chinese medicine” (TCM). Even TCM was influenced by western medicine when it went through its consolidation process at the end of the nineteenth century.

The movement of Chinese medicine West to the United States and Europe occurred because of a number of political and social changes. New political relationships between the US and China in the 1970s led to information from the Chinese medical community arriving in the US (Whorton 255). The first official information about TCM (after the rise of communism in China) came through a New York Times reporter who became ill while in China during Nixon’s visit to the country. The reporter came down with appendicitis, and during his surgical appendectomy, he was sedated using acupuncture (Waring). Through this reporter, word broke in the US about acupuncture and other traditional Chinese treatments. It was at this time that the Chinese Medical Association invited a few American doctors to take a “medical tour”
of the country (Whorton 256). In 1972, a symposium on Chinese medicine was held at Stanford University and drew over 1,400 American doctors from across the country (Whorton 271).

Before 1970, a few American doctors had found their way into China and documented the practices of acupuncture and herbal remedies. Among these early explorers was medical doctor and scholar William Morse, who wrote his book *Chinese Medicine* in 1934. Another American doctor in China during the nineteenth century was Edward Bliss whose notes and story were published (2001). Even though Western medicine was pervasive in China during the time, some traditional practices continued (Shapiro 354). These practices were recorded as these Americans came back to America.

The spread of Chinese medicine through America came quickly and was not without its problems. Early practice of Chinese medicine in America was plagued by western doctors with little training who attempted the practice and failed (Halfner). Due to the rise in practice of Chinese medicine and the problems that came with doctors who had very little training, individual states began licensure programs, specifically in acupuncture, and by 1999, there were 11,000 licensed acupuncturists in the United States (Whorton 264). Since this time, “a sizable literature has grown up, devoted to assessing the efficacy of acupuncture and Chinese herbs in a biomedical environment” (Shapiro 361). This history shows that classical Chinese medicine was westernized at the turn of the twentieth century. This study will show how the westernized traditional Chinese medicine is now going through the process of biomedicalization. The chapters
that follow in this dissertation will work to further study the textual changes of the
AJCM, which are representative of changes in Chinese medicine in America.

The Dissertation Chapters

I will now preview the dissertation chapters, speaking briefly about the content
of each chapter. The second chapter outlines the methods and methodologies of the
dissertation. It looks at both the coding schemes I used to analyze the AJCM as well as
the way in which I recorded, transcribed, and analyzed the ten interview transcripts.
The third chapter is an analysis of the morphological features of the AJCM. By
morphological features, I mean the introductions, headings, and IMRD format as in
“Introduction, Methods, Results, Analysis, and Discussion” format; hereafter, “IMRD.”
The fourth chapter focuses on the lexical features of the AJCM, including which TCM
terms were used, and how often over the life of the journal. This chapter also examines
the biomedical lexicon through tracking biomedical noun strings. The fifth chapter
looks at the genre of the articles throughout the AJCM as well as the subject of the
articles sampled. The sixth chapter examines the visuals that are part of the AJCM.
Specifically I analyzed the sampled articles for scientific visuals (graphs and charts) and
then noted where the texts deviate from standard scientific visuals. The seventh
chapter of the dissertation discusses the information found during the 10 interviews of
TCM researchers and practitioners. The eighth chapter of this dissertation is a
discussion of the conclusions that can be made using the data gained in chapters two
through seven.
Summary

In this dissertation I will build on the works of in the history, philosophy, and sociology of science. The textual analysis of the *American Journal of Chinese Medicine*, supported by those working in the TCM field will work to support my assertions that the field of TCM in America has become more biomedical and professional in nature. In the next chapter I will describe the methods of analysis used to show this shift in the *AJCM* and therefore TCM as a whole.
Chapter Two

Methods of Analyzing the TCM Community
Introduction

My research on the American Journal of Chinese Medicine (AJCM) provided tens of thousands of coded words, phrases, and figures as a result of my having read and analyzed 160 articles and conducted ten interviews with practitioners of traditional Chinese medicine (TCM). A fundamental challenge quickly developed: finding the best means of interpreting this overwhelming amount of information. In this chapter I will delineate the methods used, define the purpose of this study, detail the research questions and assumptions, describe the AJCM, and discuss each analytical method.

My tasks were first to understand and then confirm the biomedical transformation which is taking place in TCM. In order to gather evidence of such an historical paradigm shift, I used three different methods of textual/rhetorical analysis to examine the field of traditional Chinese medicine:

1. Discourse analysis of the American Journal of Chinese Medicine
2. Representative qualitative analysis of the American Journal of Chinese Medicine
3. Qualitative analysis of transcripts of interviews of TCM practitioners and researchers

The “discourse analysis” in this dissertation is the “counting and coding” of various rhetorical and linguistic features that occur throughout the AJCM. This analysis is different from the “representative qualitative analysis,” because discourse analysis gives a comprehensive numerical analysis of large samples of AJCM articles. “Representative qualitative analysis” shows samples of the actual AJCM text that, by contrast, offers detailed analysis of specific, selected, representative samples of sections of AJCM
articles. The qualitative analysis of the interview transcripts differs from the previous two methods because it examines the transcripts and does not examine the AJCM.

I used this approach of implementing multiple qualitative methods because of the perceived uncertainty that comes with studies in the humanities. The use of three methods helps confirm the finding through the triangulation of methods, which also helps minimize bias and ultimately makes a stronger instrument for analyzing TCM (Creswell 196). Additionally, the use of a second coder would have been the best way to further minimize bias; however, that was not possible in this study. Based on previous work by Gross et al. in Communicating Science and Atkinson in Scientific Discourse in Sociohistorical Context and the findings of my own study, I posit that the AJCM will eventually come to follow the reportorial conventions used in other medical and scientific journals, as the nature of TCM reportage becomes more aligned with the rhetorical precepts followed by Western professional journals.

Assumptions

The following are the major assumptions made in the preparation of this study:

1. **Language is a reflection of context; as the context changes, so will the writing that is produced in that context.** We see this in the Gross et al. and Atkinson studies, which document changes appearing in scientific articles over a long period of time. The history of science over the last three hundred years clearly shows how the biomedical model has developed to become dominant in Western society. Both Gross et al. and Atkinson demonstrate that changes
in the practice of science affected the way scientific results were reported in journals. As time went by and the scientific disciplines changed, the writing that came out of each of these disciplines also changed. Thus, the influence between practice and language is mutual, not unilateral. Lexical change signifies cultural change because words are the basis for communication. As society changes, so does the ways that culture talks about itself. Texts are more than words; they are representative cultural artifacts.

2. The AJCM is a representative text of the professional TCM community.
After examining several AJCM issues about TCM and consulting with my informants (well-established TCM practitioners), it is clear that the AJCM accurately represents the TCM community. It is representative in that (according to my interviews) the change in the target readership over the last 35 years is not a reflection of the management of the journal; instead, it is an example of underlying shifts within the discipline, generally.

3. Current research that defines and describes the scientific article is agreed upon by the academic community. While the key points in defining the scientific article come from the work of Gross et al. and two Atkinson studies (Scientific Discourse in Sociohistorical Context and “The Evaluation of Medical Research Writing”), others in the field of the rhetoric of science have also shaped rhetoricians’ views on the structure of the scientific article. These researchers include: Charles Bazerman, John Angus Campbell, Greg Myers, Jean Dietz Moss, Lawrence Prelli, Carolyn Miller, and Jeanne Fahnestock. Their views on the scientific article have been confirmed by other scholars in
the rhetoric of science community. Additionally, the work of Gross et al. has received positive feedback from the scientific community in the form of reviews in major science journals (Ceccarelli, “Scientific,” 757).

Research Questions

This study on the AJCM, like those of Gross and Atkinson, relies on clearly-defined research questions, which guide and support the work required of a study of this nature. The following questions shaped and directed the research aims of this dissertation:

1. **How does the analysis performed on the AJCM and interview transcripts show a discursive move away from the classical TCM toward the creation of a “biomedical form” of TCM?** This “cultural” change will be assessed through the interviews conducted with ten TCM practitioners and researchers. In addition to testimony from those interviewed, the changes in word choice (lexicon) by the writers of AJCM articles over the thirty-five year period will demonstrate the cultural change. Finally, the change in subject matter and content will also reflect a shift in the culture of the discipline.

2. **How do the morphological features of the AJCM change and become more like those of twenty-first century scientific articles?** These “morphological features” include headings, the format of introductions, and the content areas of each article. These features will come to resemble those that have been established as indicative of a traditional scientific article. The
characteristics of a standard twenty-first century article have been explored by Gross et al. (187) and Atkinson (Scientific, 141).

3. How will the register used in the AJCM change over its thirty-five year lifetime? How and when do the terms in the AJCM articles shift from one based in TCM terms to one dominated by biomedical terms take place?

In this context “register” refers to M.A.K. Halliday’s three-part analysis of context. Halliday states that there are three aspects that are encapsulated by the term “register” (12). These are:

a. **Field**: what is happening, the nature of the social interaction taking place, what the participants are engaged in;

b. **Tenor**: who is taking part, the social roles and relationships of the participants, the status and roles of the participants;

c. **Mode**: the symbolic organization of the text, rhetorical modes (persuasive, expository, didactic, etc), the channel of communication.

Using Halliday’s conception of register, I suggest that, over the period of this study, there are many register features (e.g., lexicon) that change as writers adapt to the features of English scientific prose. In this study I use the register concept, to determine which culture is most dominant: either TCM or biomedicine. Any change in register, will indicate a change in the culture of the group producing the writing—in this case the AJCM.
4. How does the genre of articles in the *AJCM* change from non-scientific, non-experimental articles to primarily scientific experimental and scientific review articles? By “non-scientific,” I mean articles that focus on history or philosophy and which discuss non-scientific topics. These articles include the religious influences in TCM and the history of health care in China. In contrast, “scientific” reports are papers whose authors have used the scientific method to confirm or disprove the researcher/writer’s hypotheses. In the broader sense, such papers test theories about reality. Scientific review articles are ones that discuss or compare other experimental research produced by the scientific community.

5. How do the visuals used in the *AJCM* change over time? In what ways do these visuals resemble visuals in twenty-first century scientific articles?

The visuals that are typical of twenty-first century scientific articles are: tables, graphs, and diagrams of molecular structures (see Gross et al., 200). Visuals that are not typical of the modern, western scientific article, but are found in early *AJCM* articles include photographs and hand drawings.

6. How will the *AJCM* be characterized by 2008? In what ways will the *AJCM’s* rhetoric be biomedical? In the context of this study, the author(s) of an article or journal are said to have adopted the features and characteristics of a biomedical article when 1.) the article reflects the norms and procedures of biomedicine, and 2.) the content of the articles and the journal as a whole has a medical focus.
Purpose

The purpose of this study is to discover and understand what I call the “biomedicalization” of the field of traditional Chinese medicine through textual analysis and interviews. In this study, analytic qualitative data were gathered using software designed to count words, phrases, and other textual features. A representative approach to the qualitative analysis of the AJCM was also pursued by looking for themes or structures that recurred in selected articles from the AJCM. The themes examined in the qualitative analysis are those identified by changes in register that appear numerically significant in the discourse analysis. Interviews with TCM practitioners and researchers added a human voice to this study. The goal of using of different types of qualitative analysis to examine both the AJCM articles and the practitioner/researcher interviews is to be able to triangulate the data. This triangulation helps to support areas in the study where claims overlap.

AJCM — Background and Context

History of the AJCM

The American Journal of Chinese Medicine was begun in 1973 by Fredrick Kao, a medical doctor in the Department of Physiology at the Downstate Medical Center, State University of New York, Brooklyn. Kao founded the journal “in response to widespread interest in both professional and lay circles concerning the nature of Chinese medical theory and practice, and its implication for and potential interaction with Western medicine and society” (J. J. Kao viii). The group responsible for the
publication of the *AJCM* is the Institute for Advanced Research in Asian Science and Medicine.

The *AJCM* is both the oldest U.S.-published TCM journal and the oldest English-language TCM journal. The *AJCM* began shortly after the resumption of Sino-American relations in the 1970s. This date is important because the *AJCM* developed in tandem with the professionalization of TCM in America. Before the 1970s, TCM had been practiced in America by Asian immigrants, but it was not widely recognized until relations between the United States and China improved. The *Journal of Traditional Chinese Medicine* has been published longer (since 1954), but it is focused solely on TCM as practiced in China and has only been available in English translation since 1981. A promising new journal, *The Journal of Chinese Medicine*, is also published in English; while it is satisfactorily comprehensive, its publishing history is not long enough at the present time to consider it in this study.

*AJCM* founder Frederick Kao was editor of the journal for over 20 years. Following the senior Kao’s retirement, the role of editor was first taken over by his son John J. Kao, and then by the younger Kao’s students. Chun-Su Yuan, professor at Tang Center of Herbal Medicine Research, University of Chicago Medical School has edited the journal since 2004. At the time of its founding, the *AJCM* was committed to Chinese medicine in its “broadest sense” (*AJCM* Back Cover). The original goal of the *AJCM* was to “act as liaison between professionals in other countries and in the United States who have common interests in the field of Chinese medicine” and to “keep the American professional community abreast of all developments occurring abroad in the study of Chinese medicine and related topics” (*AJCM* Back Cover). The current
mission of the journal is to “publish original articles and essays relating to traditional or ethnomedicine of all cultures (About the AJCM). Areas of particular interest to the Institute for Advanced Research in Asian Science and Medicine include:

1. Basic scientific and clinical research in indigenous medical techniques, therapeutic procedures, medicinal plants, and traditional medical theories and concepts;

2. Multidisciplinary study of medical practice and health care, especially from historical, cultural, public health, and socioeconomic perspectives;

3. International policy implications of comparative studies of medicine in all cultures, including such issues as health in developing countries, affordability and transferability of health-care techniques and concepts;

4. Translating scholarly ancient texts or modern publications on ethnomedicine (About the AJCM 1).

In the 35 years since its founding, the AJCM’s mission has broadened even more, including traditional medicine from all cultures, not just Chinese or Asian medicine (About the AJCM 1).

**Formatting of the AJCM**

The formatting of the AJCM has also changed over time. During its first year, the AJCM was published semi-annually with approximately fifteen articles in each issue. Thereafter (until 1982), the journal went to quarterly publication, once again with approximately fifteen articles in each issue. In 1982, the journal began publishing a single issue per year with thirty articles. This decrease in material is the result of the Institute for Advanced Research in Asian Science and Medicine concluding that it would be best for scholars to publish their findings in mainstream journals specifically
related to their scientific or cultural field in order to increase awareness of the field. At
this point the AJCM adopted the policy that it would publish only articles that could not
be published elsewhere. This restriction continued until 2004, at which time the journal
moved to the University of Chicago and was published six times per year, with each
issue containing approximately sixteen articles. An editorial note was included in AJCM
vol. 31 stating that there would be “institutional stability” with the change in editorship.
This editorial went on to explain that the “institute’s trustees will continue to oversee
the publication of the journal,” and that the organization wanted to have the power to
“preserve our traditions” with respect to the AJCM (J.J. Kao v-vi).

Why the AJCM was Chosen for this Study

The AJCM was selected for this study over other similar traditional Chinese
medical and alternative/complementary medicine journals because it is a representative
journal, as well as for the following reasons:

1. The frequency of the journal’s articles being cited in other publications;
2. the fact that its articles are all written in English;
3. its relative stability over a significant period of time (members of the same
   family edited the journal for most of its existence);
4. its practice of including a variety of topics and practices;
5. its length of publication, compared to other journals of the same field; and
6. its American editorship, which improves the likelihood of it representing the
   state of Chinese medicine in America.

These six reasons behind choosing the AJCM for this study are discussed in more detail
in chapter one of this dissertation.
Discourse Analysis of the AJCM

A five-pronged approach was used to quantitatively analyze the AJCM. The AJCM is the flagship professional journal of TCM in the United States. It has a thirty-five year history covering over 1500 articles and is thus a sizable corpus to study. Because of this factor, a random, twenty-article sample was selected from each five-year milestone (1973, 1978, 1983, 1988, 1993, 1998, 2003, and 2008.) This provided eight groups of twenty articles each to analyze—a total of 160 articles. Roughly 10% of the entire journal was therefore examined using this sample. The articles were randomly selected using cutting edge technology and the web tools at www.random.org (Haahr). This was done by numbering the articles in each sample period and then getting a random set of numbers from the website. The numbers the website selected were then added to make the corpus.

The Atlas.ti program was chosen to analyze the 160 article sample. The Atlas.ti program codes texts in a fashion that can be numerically analyzed. To make the AJCM (a written corpus) completely electronic and capable of being “crunched” by the Atlas.ti program, the text was first accessed via the University of Minnesota electronic journals catalogue (the catalogue includes the entire AJCM). The articles were downloaded from the library’s catalogue as PDF files. Once an article was transported as a PDF, it appeared to computer software as a picture—simply put, a mere visual facsimile of pages of text. In order for computers to be able to interpret the content as words, each article was converted to rich text format (RTF), using Adobe Acrobat Professional version 7.0 for this purpose. Once the article had been converted back into strings of intelligible text, it was saved as a Microsoft Word document. The articles can only be
read and coded by the Atlas.ti program once they have been through the PDF/RTF and RTF/Word conversion processes.

The Atlas.ti program was configured to analyze the articles for four different sets of characteristics: morphological, lexical, genre, and graphic. These four sets of characteristics were selected in light of earlier studies by Gross et al. and Atkinson that had used these characteristics to examine, and quantify the characteristics of many typical scientific articles. While these studies by Gross et al. and Atkinson examined some 300 years of scientific articles, this study will focus solely on conclusions about the characteristics of late twentieth through early twenty-first century publications.

The following are what should be considered as the genre features of the scientific article for each of the four sets of characteristics:

1) Morphological features of the contemporary scientific article that were coded are:

   a. **A “three-move” introduction (see Swales, 1990, 2004).** A three-move introduction includes three parts by its very definition: first, the author “establishes the territory” of the research to be discussed; secondly, the author “establishes a niche” for the research to fill; in the third move the author “occupies the niche” (Swales, *Research* 227). This three-move introduction follows the C.A.R.S. model (Create A Research Space) that is commonly used analyses conducted in applied linguistics (Swales, *Research* 226). This type of introduction is characteristic of a typical twenty-first century scientific research article, according to Gross et al. (177).
b. **Headings.** Headings are titles of sections or chapters that break up the text on the page, both physically and textually. For this dissertation, each article was examined to see 1) if there were headings, and if so, 2) if they were topical or organizational in nature. By “topical,” I specifically mean headings that divide up content areas, for example, “Sample Preparation,” “Four-Vessel Occlusion Rat Model,” “Animals,” and “Drug Treatment.” By “organizational,” I refer to headings that have a typical experimental structure and organization, specifically “Introduction,” “Methods,” “Results,” “Analysis,” “Discussion,” and “References.” Gross et al.’s research shows that a conventional twenty-first century scientific article generally has organizational rather than topical headings (183). I was able to conduct this analysis by visually inspecting the text myself. However, I used the Atlas.ti program in order to perform a “counting and coding” of how many articles with each type of heading occurred.

2) Lexical features that were coded for are:

a. **Writers’ use of the TCM register.** Thirty terms were determined to be key terms in TCM based on information from my informants and my reading of TCM textbooks. (I used the textbooks to get a basic knowledge of TCM terms and their use.) Each article was scanned for these terms by the Atlas.ti software. The software searched each document, just as the “search” function in Microsoft Word would
operate, but it kept track of how many instances of each word were found in each article, as well as (physically) where each word was located in each article. Examples of these words include “energy,” “chi,” and “acupuncture.” Aided by the information compiled by the program, it was apparent which terms increased and which terms decreased in usage over the thirty-five year period. By determining whether the usage of terms that comprise the TCM register has either increased or decreased, the text can be assessed to have either gained TCM influence or lost it.

b. **Biomedical noun-strings.** I manually counted every biomedical term that had three or more nouns strung together, for example: “ischaemic heart disease,” “cardiac protective action,” and “isoproterenol-induced myocardial necrosis.” These biomedical noun strings were coded as a way to recognize writers’ use of the biomedical lexicon without having to search for specific single-word terms. (The medical vocabulary is vast, with so many different terminologies, that tracking individual terms would be neither practical nor fruitful.) By searching for noun-strings, my analysis was able to determine that there was an increase in the number of noun-strings, and therefore, the extent to which a particular article was influenced by biomedicine. I could make this correlation because Gross et al. proposed that the occurrence of these noun-strings increases markedly as publication dates grow closer to the twenty-first century (173). Scientific articles published this far into the twenty-first
century have indeed had larger numbers of noun-strings than did earlier-published articles (Gross et al. 169). Counting every term would have been difficult because of the sheer numbers of terms, but counting the aggregate use of various biomedical noun-strings was an effective way to track the use of biomedical terms in the AJCM over its thirty-five year life span. I used the Atlas.ti software as a “counter,” but I had to identify and mark each noun-string in the 160 article corpus.

3) Genre categories included:

a. **Scientific experimental.** An article was determined to be a scientific experimental article if it contained a hypothesis about the natural world. However, it was not enough for an article to contain a hypothesis to be identified as “scientific experimental”—the hypothesis also had to be tested and the results reported. These articles account for most science articles which incorporate IMRD (Introduction, Methods, Results, Discussion) format. Gross et al. in *Communicating Science* and Atkinson in his work *Scientific Discourse in Sociohistorical Context the Philosophical Transactions of the Royal Society of London* show that scientific experimental articles with an IMRD structure had become the dominant type of article by the twenty-first century (Gross et al. 189; Atkinson, *Scientific 101*).

b. **Scientific review articles.** Review articles analyze topical experimental articles published over a defined period of time in order to assess the
state of knowledge on that topic. While there are far fewer review articles than there are scientific experimental articles, they are considered a legitimate and significant part of a scientific journal. This is because, in them, the author identifies a consensus on a topic (if a consensus exists).

c. **Historical articles.** These articles examine the culture and events surrounding a period of time, location, or person(s). These articles are generally narratives on a specific topic related to the journal or to one of its specialties. Examples of clearly historical articles in the *AJCM* include: a brief history of Chinese medicine in China over the last 500 years (Kao 59), health care in China (New 15), and the history of acupuncture (Nghi et al. 75). These types of subjects are not customarily a part of Western science.

d. **Philosophical articles.** Philosophical articles explore the underlying knowledge, values, and beliefs of a field. These articles generally have a thesis, which is defended in the article, but some of the philosophical articles in the *AJCM* take a more narrative approach. Examples of philosophical articles include those on the spiritual aspects tied to TCM, explanations of Eastern philosophy (Zhou 263), and the philosophy behind the TCM discipline as a whole (Fisch 99). These types of articles are not typically found in Western scientific journals.

e. **Other.** Articles that did not fit into the above four genres of articles were marked “other” in the coding of the *AJCM*. Examples of these
articles include World Health Organization updates and photo essays (WHO 75). These articles are not generally represented in Western scientific literature. The Atlas.ti program was used as a counter in order to keep track of the numbers of each genre in the sample.

4. Graphics are visual representations of information. The text was searched manually for visual representations, and these were hand-counted. Graphics fell into five categories: graphs, hand drawings, tables, molecular structures, and photographs.

a. **Graphs.** These visual representations included any kind of data that was displayed on an X/Y coordinate system. These graphs include those that are hand-created by researchers and those that are the output of data-producing machinery. Graphs are routinely part of the recording and publishing of science (Gross et al. 201).

b. **Hand drawings.** These are visual representations drawn by a person and are not graphs, tables, or molecules. In the *AJCM*, these are used to identify acupuncture points on a body part of a human or animal. Also, some issues of the *AJCM* contain hand drawings of kabuki actors. Since the advent of color photography and digital imaging, hand drawings are not customarily part of Western scientific publications.

c. **Tables.** These visual representations are data depicted in columns. Tables are routinely seen in Western scientific publications (Gross et al. 203).
d. **Computer-Aided Drawings.** “Stick” drawings and molecular diagrams produced with computer software (e.g. Adobe Illustrator) are often seen in the *AJCM*. These molecular drawings and diagrams are typical of Western scientific publications.

e. **Photographs.** These include photographs taken with a visual light camera. They may be pictures of patients, herbs or herbal concoctions, and needles used in acupuncture. These types of pictures are not part of normal scientific discourse. Photographs are included in what Gross et al. calls “realistic renderings” (206).

**Procedures for Analyzing the Sample of Articles from AJCM**

For the discourse analysis of *AJCM* articles, the 160 article sample corpus was divided into four ten-year periods. I then looked at each of these four periods and identified articles (or sections of articles) that were typical of that period of time, as determined by the qualitative study. I determined what was typical by first examining the data gathered from the Atlas.ti program and then by reading through the articles themselves in search of examples that confirmed (or disproved) this analysis. The qualitative analysis generally allows a greater depth of understanding for the *AJCM* and the biomedicalization of TCM. This “grounded” method for determining the characteristics of each time period was valuable in that, by the end of the analysis, characteristics of the introductions, methods, and discussion sections of the *AJCM* were clear. The differences between one introduction written in the 1970s and another written in the 2000s can clearly be seen and understood.
Qualitative Analysis of Interviews from TCM Practitioners and Researchers

Interviewing Situation

I interviewed ten TCM practitioners and researchers. This number was recommended by the dissertation committee because in basic interviewing projects this number can provide sufficient overlap as well as variety among the interviewees. These interviews investigated whether the textual analyses are supported by practitioners and researchers accounts in the traditional Chinese medical community. I interviewed a variety of TCM community members: those who have been trained both in the United States and abroad, TCM doctors as well as those who are more classically trained, and finally, those who are biomedical researchers. While the group of practitioners I interviewed was located in the Twin Cities, the researchers were affiliated with the University of Chicago’s Tang Center of Herbal Medicine Research. Fortunately, there is a large TCM community in Minnesota with dozens of practitioners and two accredited schools of TCM. The basic interview questions are located in Appendix 2 of this dissertation. The interviews lasted approximately one hour, were semi-structured in format, and explored the subjects’ perspective on the biomedicalization of their discipline by asking them specific questions about it. Questions about the subjects’ professional practices and schooling, and their own perspectives on both, provided indirect feedback.
Background of the Interviews: Theoretical Framework

Interviewing is an important part of understanding the cultural changes in TCM, which is expressed best by Vygotsky, “Every word that people use in telling their stories is a microcosm of their consciousness” (178).

My interviews with TCM practitioners and researchers, as well as my heuristic analysis of the *AJCM* itself, confirmed the data supplied by software-driven textual analysis. The primary interview theme essentially was “How does your TCM-specific experience correspond with your view of the presence of biomedicine?” Much of the theory I will use to support my interviewing technique was taken from Kvale’s often noted work *Introduction to Qualitative Research Interviewing*. Throughout this text Kvale characterizes interviews as “an interchange between two people conversing about a theme of mutual interest” (2).

Using Kvale’s “researchers-as-travelers” metaphor — people talking and learning as they speak to others whom they run into along the journey— is the model that best suits this project. According to this metaphor, the researcher isn’t out to discover any particular “gem” of information, but is instead engaging in pleasant conversation while moving from one interview to the next, exchanging information with others along the way.

According to Kvale the “virtue of the qualitative interview is its openness—no rules exist” (84). This virtue also becomes clear when Kvale states that interviewing is not a science, but a carefully honed art (85). His time-tested, seven-step system of interviewing was used in this study. This system begins with first getting a grasp of the concepts that the investigator wants to study and the purpose of doing the interviews
(89-92). After these first steps, the study itself is planned and the interviewing is conducted and completed. Interviews are transcribed, analyzed, and verified in the next steps; finally, the results are reported.

**Summary**

This chapter has explained how this study was designed and carried out. Having three different data-gathering methods (discourse analysis, representative article analysis, and interviews) permitted the data to be checked against itself and triangulated. In this study, I sought to follow the texts as well as the people of a given culture. Besides being able to apply triangulation for the sake of data reliability, another result of going beyond basic textual analysis is the ability to build a narrative about the TCM community in the Twin Cities.

The next chapter is the first data analysis chapter. It outlines the morphological features of the *AJCM*, and will present specific changes to *AJCM* articles’ structure and appearance over time. By the end of that chapter, readers will understand how the counting and coding processes explained in the current chapter were used to interpret and understand the changes taking place in the *AJCM* and, by extension, in the TCM community itself.
Chapter Three

Morphological Features of the *AJCM*
Introduction

The term “morphological features” used in this dissertation refers to the characteristics of professional journal articles that are considered structural conventions. In order to get a better idea of the state of the structure of the AJCM articles over time, I tracked the structure of the introductions of the articles, the headings (organizational or topical) of the articles, and the format of the articles, as in “Introduction, Methods, Results, Analysis, and Discussion” format, hereafter, referred to as “IMRD.” Both the introduction and content of typical scientific articles had largely been standardized by the end of the twentieth century. Looking at two of these morphological features (introductions and IMRD formatting) I was able to compare the results of my analysis to with that of Gross et al.

The structure of the scientific article format had been discussed for decades by Atkinson, Fahnestock, Gross, and others, but only in relation to specific articles, subjects, or journals. In 2002, Gross et al. looked at 300 years’ history of scientific articles that had been written in three different languages. This massive study defined the nature of scientific article typicality, and in so doing, provided a rubric by which to determine whether or not other articles “qualify” as being typical late twentieth-century scientific written works. The current chapter is specifically concerned with introductions, headings, and format. According to Gross et al., the “modern article consists of headings and subheadings” (181). As shown within table 8.6 in Communicating Science, by the year 1995, 85% of articles surveyed Gross et al. show
that introductions conform to the conventions of the modern scientific article (Gross et al. 187).

This chapter will examine the “moves” of an introduction, the use of headings, and the existence of IMRD format. These features were tracked because they are known features of the twentieth-century scientific article. Throughout the first section of this chapter, I will mainly use the article “Neuroprotection and Enhancement of Spatial Memory by Herbal Mixture HT008-1 in Rat Global Brain Ischemia Model” published in the *American Journal of Chinese Medicine* in 2008 by Kim et al. This article will serve as an example of the standardized system of introductions, headings and IMRD format; the article in its entirety is included in Appendix 1. In order to show examples of articles that deviate from the 2008 norm, other articles will also be referenced, when needed, throughout the chapter.

**Background and Context**

*Three-Part Introductions in Traditional Scientific Articles*

John Swales identified three parts that are traditionally included in introductions to scientific articles (*Research* 227). Swales describes these three parts as follows: first, the author “establishes the territory” of the research to be discussed; secondly, the author “establishes a niche” for the research to fill; in the third part, the author “occupies the niche” (Swales, *Research* 227). This three-part introduction follows the C.A.R.S. model (Create A Research Space) that is commonly used in applied linguistics (Swales, *Research* 226). These parts generally appear in the above order, although they are sometimes arranged differently.
Move One

The first type of move actually has two features. The first is comprised of sentences that introduce the research and establish its significance:

HT008-1, an herbal prescription comprising the roots of Panax ginseng, Scutellaria baicalensis, Angelica sinensis, and Acanthopanax senticosus, is used in traditional Korean medicine (TKM) for the treatment of mental and physical weakness. (Kim 287)

The second feature sets out a brief literature review that introduces relevant previous research (Swales, Research 141):

Many pharmacological studies of the component herbs of HT008-1 have been reported having the memory-enhancing, antipyretic, antibacterial, antihypertensive, antioxidative, hypolipidemic, and anticoagulative effects (Shen et al., 1991; Sui et al., 1994; Zhang et al., 1998; Ye et al., 2001; Abebe et al., 2002; Yim et al., 2002; Shao et al., 2004; Bao et al., 2005). In particular, the component herbs have neuroprotective effects on animal stroke models attributed to antioxidative, neurotrophic factor-like, or anti-inflammatory effects (Choi et al., 1996; Bu et al., 2005; Kang et al., 2005; Zhang et al., 2006). Previous clinical studies have also suggested that HT008-1 has memory-enhancing effects on healthy volunteers. (Kim 287)

The first feature establishes the general territory in which the subject research is being done. The second feature uses citations at the ends of the first and second sentences to
build the credibility of the research topic and inform the reader what kind of research this experiment is built on.

**Move Two**

The second type of move establishes a niche which the research will occupy (Swales, *Research* 141). This is done by identifying a gap in the previously-introduced research: “Despite the long history of clinical use in TKM and pharmacological studies, the neuroprotective effect of HT008-1 on brain ischemia is not well established” (Kim 287).

**Move Three**

In the third and final type of move, the writers occupy the niche by presenting and describing their own research, the subject of the rest of the article (Swales, *Research* 141). This description should fit into the “gap” that was established in the second move:

We investigated whether HT008-1 has a neuroprotective effect on animal stroke models. We used a 4-vessel occlusion (4-VO) rat model, a widely used model introduced by Pulsinelli and Brierley (1979), to represent transient global ischemia. (Kim 287)

The above article about global brain ischemia is an example of an article with all three complete parts of a modern scientific introduction. Had the article possessed only one or two parts it would not have a complete traditional scientific article introduction.

These characteristics have likely persisted because form follows function. For example, listing citations of previous work early in the paper quickly introduces the
reader to the knowledge base of the writers as well as the academic foundation of their experiment.  

**Headings**

In addition to the three-move introduction that is characteristic of twenty-first century scientific articles, the use of specific headings is also a characteristic of these scientific articles. Headings are “title or subtitles within the body of a document” (Alred et al.182). Headings announce what is going to happen beneath them; in so doing, they enhance coherence and help to logically structure a document (Markel 352). By acting as a document map, headings can help the reader quickly understand the basic outline of a scientific article. I tracked headings in *AJCM* articles, first to ascertain the articles’ content and later to compare it with the content of other twentieth-century scientific articles. Organizational headings include introduction, method, results, analysis, discussion, and references. In addition, I included sub-headings germane to a specific article, such as the names of different methods used in the laboratory, or the types of animals used in an experiment. Headings in the sample article by Kim et al. discussed above and located in Appendix 1 are: Introduction, Methods and Materials (with subheadings: Sample Preparation, 4 Vessel Occlusion Rat Model, Animals, and Drug Treatment), Results, Discussion, Acknowledgements, and References. The headings were easy to identify because they were in a larger font and in bold type. Even with the

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1. Scientists generally communicates information in a clear, concise manner, which is easily digestible by a particular scientific audience. However, this current manner of communication could change as new forms of communication come into use. If major changes were made in the manner in which scientific information is disseminated, it would be important to see whether or not the *AJCM* adopted them and if so, how long it took. An example of this might be the movement to put the methods section in an appendix or to make it solely accessible online.
subheadings, which go beyond the usual IMRD headings, this article would be
categorized as having “organizational” headings. By organizational, I mean the same as
(or similar to) the IMRD headings common in conventional twentieth-century scientific
articles.

Typical late twentieth-century articles have a specific format for content as well
as structure. An article is made up of sections in the following order: introduction,
methods, results, and discussion; the sections are generally distinguished by headings
(Swales, Genre 181). Sections may be combined (e.g. “results and discussion”) or
expanded (e.g. “methods and materials”). At other times, there are fewer headings
(such as no “introduction” header), but it is clear from the textual content that a given
category exists in the typical sequence. The format of the included example (see
appendix 1) contains all four sections (IMRD) in the traditional order, so this article
would be counted as having an IMRD format.

Gross et al.’s findings concerning introductions, headings, and format are
important not only to this specific project, but also to researchers in the field of
scientific rhetoric in general. Prior to the Gross et al. study, researchers could only
work from qualitative, single-journal experimental articles in defining the “proper”
morphology of scientific articles. In their exhaustive study, Gross and his colleagues
developed a rubric by which future scientific-purporting materials can be judged.
Because of this work, researchers can now examine an article’s morphology, rhetorical
strategy, lexical features, and grammatical features far more easily and consistently.
The Research Process

In order to study changes in the morphological features of the *AJCM* article, the research for this dissertation includes analysis of the structure of entire articles and the coding of these articles into categories. This includes the identification of three features of a standard scientific article three-part introductions, headings, and IMRD format. For each of these characteristics, I will first present the “numbers” gathered from the analysis of the sampled *AJCM* articles and will provide a corresponding graph in the discourse analysis section. Following the discourse analysis section, I will give textual examples of the numerical data from the *AJCM*. Additionally, I will discuss each sample introduction part-by-part, referring to sentences by their given number in the section of text being analyzed.

Three-Part Introductions—Discourse Analysis

By “discourse analysis” I mean the study of patterns characterizing sentence or longer units speech or writing. The characteristics of these introductions are from twenty randomly selected articles from every fifth year over the thirty-five year lifespan of the *AJCM*. The inaugural issue of the journal, published in 1973, contained only one article that had the full three-part introduction that characterizes twentieth-century articles. Approximately half of the articles had only one of these three parts, and four of the twenty articles did not meet the criteria for having any of these parts. As can be seen in figure 3.1 below, during this period, introductions with only one part dominate. By 1983 (ten years later), over half of the articles had all three parts characteristic of twentieth-century scientific articles. Also, the number of those with just one or two parts of the three-part introduction declined to six and two articles each, respectively.
Paradoxically, the number of articles having zero parts of the three part characteristic introduction increased to seven from four during the period 1973 and 1978.

By 1993 (twenty years later), the data shows an even steeper decline in the number of articles with only one, two, or zero parts of the traditional three-part article introductions, compared with the previous period. None of the articles during the 1993 period had zero parts; there were three articles with one part of the three-part introduction, and one article with two parts of the three part traditional introduction. Present in sixteen of the twenty articles, an introduction with all three traditional parts became a dominant characteristic of AJCM introductions.

The last sample was taken from 2008 (thirty-five years after the first published articles), and all twenty of the sampled articles had complete three-part introductions. The hundred-percent level was first achieved in 2003 and was constant thereafter.

Following the green “triangle” line in figure 3.1, we can see that the articles with three moves progressively increase. Over this period of thirty-five years articles with one-, two-, and zero-parts of the traditional three-part introduction disappear, as seen on the blue, red, and purple lines on the graph. While in 1973, complete three-part article introduction was the least prevalent type of introduction, in the years that follow, the three-part introduction surpasses any other type of introduction, continuing to increase until there are exclusively complete three-part introductions in all the journal articles sampled.
The number of articles with a complete three-part introduction steadily increased over the data study period, while the number of articles with two or fewer introductory parts rapidly decreased and then disappeared in the sampled articles.

**One, Two, and Three-Part Article Introductions**

Although the one-part article introduction encompasses the largest number of articles in 1973. Since 1973, there was a significant decline in the number of article introductions with only one of the three major parts of a complete introduction. The number of introductions with only one of the characteristic parts declines to none by 2003. But what do these introductions with only one of the characteristic parts look like? As described above, having an article introduction with only one of the three characteristic parts indicates that the article’s topic was introduced. The text below is an example of the single move variety quoted from an introduction (not a full
introduction), by Staff of the PLA General Hospital, which occurs in the 1973 article
entitled, “Some Insights Concerning the Principles of Acupuncture Anesthesia”:

Based upon the experience of our colleague hospitals, we have
developed operative procedures employing acupuncture anesthesia.
We have performed 200 different kinds of operations with acupuncture
anesthesia in over 10,000 cases with a success rate of over 90% (167).

In this excerpt, only the topic is introduced, as the writers tell the reader that “we have
developed operative procedures employing acupuncture anesthesia.” The first part (of
the three-part introduction) is further reinforced as the authors give an embryonic
literature review (the second part) by stating that there have been “over 10,000 cases
with a success rate of 90.” Also, the reference to other colleagues doing the same work
in other hospitals supports the idea that similar procedures and research have been done
in the past. This example, while giving a definite first move, does have an embryonic
second part of the typical twenty-first century scientific article.

There are many more one- and three-move articles in this study than there are
two-move articles. The two-move article introduces the subject, offers a brief literature
review and then identifies a gap in the research. Most significantly, a two-move article
does not fill that gap with the writer’s own research. An example of this is the 1982
article by Mahdihassan, entitled “The Term Chhi: Its Past and Present Significance,”
which looks at the idea of “chi,” or energy within the body. Numbers following the
sentences are not in the original and have been added to the sample text below to make
my comments clearer.
(1) “We may now turn to Chhi as an idea and to its past. (2) Here, the Chinese-inscribed character, Chhi, can reveal what it signified originally. (3) But we have first to establish what Chhi has finally come to mean, or what its present importance is. (4) Now there can be nothing more valuable than existence, which means the universe as a whole or, in one word, the Cosmos. (5) This would automatically include man; however, for man there can be nothing more precious than himself. (6) Hence, Cosmos has been arbitrarily divided into two divisions, the main as the macrocosm and a part, which identifies man, as the microcosm. (7) Admitting that there are only two important entities, we now have to show how Chhi is related to each of them. (8) Returning to the universe as a whole, Edkins (1, p. 110) writes that "a Taoist priest denied that creation was God's act and maintained that it was the act of the material agent which he called Chhi, a word meaning a very pure form of matter, and was the creator of things." (9) Chhi, then, was a most subtle form of matter which possessed all creative power. (10) Such information on Chhi, however, leaves much to be desired. But the literature usually dispenses with the problem with similar "short notes," never enlightening the subject fully to our entire satisfaction. (11) However, the above information does enable us to realize that there is one Chhi and that it is the source of micro- and macro- cosm. (12) Here Needham (2, p. 76) tells us that Chuang Tzu confirms it stating that "all through the universe there is one Chhi and therefore the sages prized that unity." (13) Then
every form of creation becomes the carrier of the "One-Chhi," which in Chinese is "I-Chhi" or in a dialect "Ek-Chhi." (Mahdi hassan 272)

The writers of this article introduce the philosophical topic it intends to discuss in sentence 1 when the author says, “We may now turn to Chhi as an idea and to its past.” Then, the article reviews in sentences eight and twelve what other researchers have thought about the topic at hand. Here, the writers of this article gain credibility by quoting research that has already been published and supports their assertions. This can be seen in the citations that are present as well as in the text sentences 8 and 12.

Finally, the article goes on to identify the gap in the literature in sentence 10 by stating that we don’t know “how Chhi is related to each of them.” Here, the writers forward that there is a gap, but in that introduction the writers do not try to bridge that gap by creating a niche and filling it. This lack of a solution is what identifies the article as having only two parts of a traditional introduction for a scientific article.

Another example of an article with two of three of the parts of a typical twenty-first century scientific article introduction is from the 1973 article below by James Chen on “Chinese Health Foods and Herb Tonics”:

(1)Like acupuncture and moxibustion, health foods and herb tonics are intricately interwoven, with Chinese philosophy and history dating back centuries before Christ. (2)Since the earliest stages of Chinese history, hygienic food and herbs have been a major preoccupation of Chinese scholars and kings. (3)With the current renewed trade with the People's Republic of China, Chinese foods and medicinal tonics in various forms have appeared in the Chinatown markets in this country. (4)Although
used extensively in China for thousands of years, most of these herbs and tonics are unfamiliar or even strange to Occidentals. Of significance is the fact that as a result of recent integration of traditional and Western medicine in China, most of the herbs are now made available in modern pharmaceutical forms. (Chen 225)

In this introduction, the writer brings up another facet of traditional Chinese medicine, often overshadowed by acupuncture: herbs and health foods. It is clear that the authors are trying to establish the credibility of these practices by pointing out the thousands of years they have been practiced—in the very first sentence. The first of the three part introduction is introduced by the author’s explaining the situation when it comes to the use of Chinese herbal tonics in conjunction with health foods in sentence 1. When, in sentence 2 the author points to the use and knowledge of the herbs by “scholars and kings” for ages, he finishes completing the first part, because this is a modified literature review. The second part, “the gap,” is established in sentence 4 by mentioning that, even though these herbal tonics are available, they are not used by “Occidentals,” i.e., non-Chinese patients. The purpose of their research, therefore, is to fill that gap by introducing AJCM readers (the intended audience being Western medical doctors) to Chinese medicine. We do not see the third and last part of a traditional twenty-first century article, however. It is therefore, an introduction with only the first two parts. What follows in the article are listings of herb tonics and what ailments they remedy.

An example of an introduction is in the 2008 article by Shen et al., “Infrared Radiation Spectrum of Acupuncture Points on Patients with Coronary Heart Disease”: 
(1) Infrared radiation has an intrinsic relationship with basic human vital processes such as oxidation metabolism, information transfer, photosynthesis, cell division, cancer, cell apoptosis and cell growth regulation. (2) The physiological activities of the human body contain thousands upon thousands of biochemical reactions that constantly emit infrared photons at the surface of the body (Shen, 1995). (3) Infrared technology has been widely used for measuring the human body’s infrared radiation in order to determine the physiological status of patients (Zhang et al., 2002; Ovechkin et al., 2001; Hu et al., 2002; Schlebusch et al., 2005). (4) However, this is done with infrared radiation imaging techniques, which only depict the general intensity of infrared radiation at the detected areas. (5) Spectrum analysis can reveal more subtle changes. (6) According to traditional Chinese medical theory, pathological changes in internal organs can be reflected on the body surface through a related acupuncture channel and manifested at specific acupoints on that channel (Cheng, 1999). (7) For example, Neiguan (PC6), commonly used to treat heart disease in the clinic, is located on the Pericardium Meridian and is considered to reflect the pathological changes of the heart. (8) Recently developed infrared technology enables us to measure and analyze such possible biophysical changes at acupoints. (9) In the present study, we employed a newly developed infrared radiation spectrum detecting system adapted from cutting edge space technology (Shen et al., 2006a; Wu et al., 2002). (10) This device
features high sensitivity, low noise, a wide wavelength range and stable performance (Shen et al., 2003; 2006b). (11) The purpose of the present study was to employ this well-developed device to determine 1) whether the infrared radiation spectrums at acupoint Neiguan in patients with coronary heart disease (CHD) differ from those at Neiguan in healthy adults; 2) whether the infrared radiation spectrum at Neiguan in CHD patients differed specifically from that at non-acupuncture control points. (Shen et al. 211)

Here, the first part of the three part introduction takes place when the topic of the article is introduced in sentences 1 and 2 as the author explains the inseparability of infrared radiation and certain human life processes. The authors follow with a miniature literature review in sentence 3 (about infrared), and then later in sentence 9, in which previous research on a new piece of technology is discussed. The second part of the three part introduction can be seen in sentence 5 in which the authors state “Spectrum analysis can reveal more subtle changes,” and it is clear in the context of the sentence that such analysis has yet to be done. What characterizes this as a complete three-part introduction is the fact that the authors explain in sentences 9 through 11 what their study is going to do. The authors explain that they intend to determine if infrared radiation spectra are different in people with coronary heart disease, as compared with healthy adults. Here is where the authors fill in the “gap” that they raised earlier in sentence 5.
A second article that has a complete three-part introduction is the 2008 article by Kang et al. entitled, “Ginseng Total Saponin Enhances the Phagocytic Capacity of Canine Peripheral Blood Phagocytes in Vitro.”

(1) Panax ginseng, also called Asian or Korean ginseng, occupies an important place among the tonic remedies of oriental medicine (Chen et al., 1998) and has been shown to have a variety of beneficial effects (Jin et al., 1999). (2) It is known to improve psychological function, exercise performance, immune function, and conditions associated with diabetes, and to modulate metabolic processes, neuro-endocrine system activities, and cardiovascular function (Gillis, 1997; Kiefer and Pantuso, 2003; Liu and Xiao, 1992). (3) Generally, ginseng was shown to be nontoxic to rats, dogs and human (Hess et al., 1983; Wang et al., 1982). (4) However, adverse effects associated with its inappropriate use, which include nausea, hypertension, hypotension, diarrhea, euphoria, insomnia, headaches, mastalgia and vaginal bleeding, have been also reported (Bahrke and Morgan, 1994; Coon and Ernst, 2002). (5) Ginsenosides, commonly known as saponins, are the key components in the pharmacological application of Panax ginseng. (6) Ginseng saponins are dammarane-type triterpenoid glycosides with aglycons such as panaxatriol and panaxadiol bonded to glucose, rhamnose, xylose and arabinose (Liu and Xiao, 1992). (7) More than 25 ginseng saponins have been separated and identified to date. (8) Recently, the role of ginseng saponins in the modulation of inflammatory and allergic processes has
been documented by some researchers. (9) Ginseng root saponin showed an inhibitory effect on interleukin (IL)-1β and IL-6 gene expressions in a chronic inflammation model of aged rats (Yu and Li, 2000). (10) Ginsenoside Rb1 and Rg1 decreased tumor necrosis factor (TNF)-α production in murine macrophages. (11) Pretreatment with Rg3 abrogated cyclooxygenase-2 expression in response to 12-O-tetradecanoylphorbol -13-acetate (TPA) in mouse skin (Keum et al., 2003). (12) Ginsenosides Rb1 and Rc suppressed histamine and leukotriene release during the activation of guinea-pig lung mast cells in vitro (Ro et al., 1998). (13) BST204, a fermented ginseng extract, can inhibit inducible nitric oxide synthase (iNOS) expression and subsequent nitric oxide production from lipopolysaccharide-stimulated RAW 264.7 murine macrophage (Hofseth and Wargovich, 2007). (14) In contrast, others reported that incubation of the same cells with Panax ginseng showed a dose-dependent stimulation of iNOS (Friedl et al., 2001). (15) Phagocytosis is the central microbicidal function of phagocytes such as polymorphonuclear cells (PMN) and monocytes which play major roles in non-specific and specific immunity (Underhill and Ozinsky, 2002). (16) However, despite the recent advance of biological and pharmacological studies of ginseng saponins, little is known about their effect on the phagocytosis of peripheral blood phagocytes. (17) It was reported that ginseng saponins, including ginseng total saponins (GTS), PT saponin and PD saponin, stimulated feline peripheral blood mononuclear cells (PBMC) to express...
soluble factor(s) including phagocytosis-promoting factor, which may be an important mechanism for the enhancement of non-specific immunity (Park et al., 1998). Therefore, in the present study we examined whether GTS stimulates the phagocytic capacity of canine peripheral blood phagocytes in vitro and whether GTS affects the production of TNF-α which may be a major factor that enhances phagocytic capacity. (Kang et al. 329)

In sentence 1, the authors make the first move toward establishing the significance of their research by stating that, “Panax ginseng, also called Asian or Korean ginseng, occupies an important place among the tonic remedies of oriental medicine (Chen et al., 1998) and has been shown to have a variety of beneficial effects.” A lengthy literature review follows in sentences 2 through 14 to support the authors’ claim in sentence 1. The second part of the three part introduction occurs in sentence 16 where it is stated, “However, despite the recent advance of biological and pharmacological studies of ginseng saponins, little is known about their effect on the phagocytosis of peripheral blood phagocytes.” Here the authors identify a gap to be filled by the present study – that even the latest studies of ginseng saponins have left unanswered questions about how these compounds affect the disease-fighting capabilities of white blood cells. The third step of the three-part introduction takes center stage in sentence 18 when the Kang et al. state, “in the present study we examined whether GTS stimulates the phagocytic capacity of canine peripheral blood phagocytes in vitro and whether GTS affects the production of TNF-α which may be a major factor that enhances phagocytic capacity.”
The examples of complete three-part introductions in this chapter are taken from recent issues of the *AJCM*. During the 1970s, however, it was far more commonplace for articles to appear with some sort of an introduction, but without the specific 3 part introductions. These articles have no grounded topic, literature review, identifiable gap, or a solution for filling that gap. An example of this phenomenon is a 1973 article by Nguyen van Nghi entitled, "An Introduction to Classical Acupuncture." In the example below, it is easy to see that the author begins to talk about the philosophical background of acupuncture in China, but there is no literature review, no gap, and therefore, nothing to fill. The result is an introduction without any of the three traditional parts:

(1) In China, acupuncture has been known for several thousand years. (2) Being part of traditional Chinese medicine it is based on the principle that a disease occurs simultaneously with a disturbance of bodily vital energy and can be treated by puncturing, warming or massaging specific points on the surface of the body, thus re-establishing the disturbed energy circulation. (Nghi 76)

Another example of an introduction without any of the three traditional parts is one in which an author wants to reproduce and/or translate a text and is successful at it, but does not give any introduction to the sections of text or, as in this case, abstracts from a conference in Italy. The *AJCM* article “Abstracts from Rivista Italiana di Agotuntura Anno V-N. 13, Maggio 1972—1973” is a case in point (Musso 183). Here Musso translated from the proceedings of a conference in Italy, the article has no beginning or introduction. The author simply states that the article is “just abstracts about acupuncture (surgery as well as electrical devices).” Needless to say, this lack of
introduction does not satisfy any of the three parts, not even for the first. In the previous section, I provided examples from introductions to articles in the *AJCM*, providing examples of the one-two-and three part traditional introductory schema; in some cases, as I show, the initial comments at the beginning of an article have no specific pattern or structure. While the focus thus far has been on article introductions, the next section examines the headings in each of the articles examined.

**Headings--Summary**

The kinds of headings used throughout the *AJCM* have varied over the journal’s lifespan. Organizational headings (headings that conform to the IMRD structure) evolved over time, while topical headings and authors’ failure to use headings at all declined over the thirty-five year period. For example, in 1973 there were only two articles with organizational headings; four articles had no headings at all; and fourteen articles had topical headings.

By 1983 (ten years later), there were more articles with organizational headings than either topical or no headings—eleven of twenty articles had them. There was also a steep decline in topical headings, as seen in figure 3.2. By 1993, twenty years later, the number of organizational headings in the *AJCM* had continued to steadily increase. The two-decade group boasted seventeen (of twenty articles) with organizational headings. Strangely, articles with topical headings showed a slight increase (to three), but there were zero articles that used no headings at all.

Finally, by 2008 (thirty-five years after the first publication of the *AJCM*) of the twenty articles sampled, all articles used headings, nineteen of the articles had
organizational headings, and only one article had topical headings. This transformation can also be seen in figure 3.2, where the blue diamond line representing organizational headings on the graph is nearly at the twenty article mark; the red square line that represents the topical articles is near the bottom of the graph; and the green triangle line is on the x-axis, indicating that there are no articles without some kind of heading.

**Figure 3.2: Change in AJCM Headings Over Time**

**Headings--Examples from the Corpus**

First looking at our sample article (located in appendix 1) from 2008, “Neuroprotection and Enhancement of Spatial Memory by Herbal Mixture HT008-1 in Rat Global Brain Ischemia Model” published in the *American Journal of Chinese Medicine* in 2008 by Kim et al., one can see that this article is typical of a 2008 article because the headings included organizational headings in bold face (Introduction, Methods, Results, Discussion, Analysis, and Conclusion). In addition the article uses
cues from topical subheadings such as “animal and drug treatments,” and “4-Vessel Occlusion Rat Model” within the methods section to guide the reader through the article.

In the 1973 sample of articles, there were but two articles with headings typical of a twentieth-century scientific article. (The twentieth-century article, according to Gross et al., only uses organizational headings, which, as described in the last section, include Introduction, Methods, Results, Discussion, Analysis, and Conclusion.) A 1973 article, “Some Insights Concerning the Principles of Acupuncture Anesthesia” by the Staff of the PLA General Hospital used topical headings, including: “Sufficient Stimulation Intensity is the Key to the Success of Acupuncture Anesthesia,” “From the Concept of Stimulation Intensity to Making Suppositions on the Principles of Acupuncture Anesthesia,” and “The Manifestation of ‘Dual Dynamic Forces.” Other examples of topical 1973 headings from the “Chinese Health Foods and Herb Tonics” by James Chen include “Chinese Health Foods,” “Butter Melon and Butter Squash,” and “Herb Tonics” (Chen, “Chinese,” 225).

The tide turned in favor of organizational headings in the 1983 sample of articles; for the first time in its history, the AJCM published more articles with organizational, rather than with topical, headings. Examples of topical headings include “Acupuncture and the Three Heaters Are Inseparable,” “The Separate Warmers and Their Function,” “The Anatomical Substratum,” and “The Three Heaters as the Meridian” (from the article “Three Heaters as the Link between Man and the Universe” by Fisch). In another article, “Scientific Clarification of Diagnostics Used in Chinese Traditional Medicine -A Genetic and Biochemical Study of Confirmation” by Shigeru
Arichi, the headings were as follows: “A study of confirmation of taohochengchi-tang,” “Confirmation of environmental factors of Taohochengchi-tang,” and “A study of confirmation of Paweitiaihisa-fang.”

By 1993 there were only three of twenty articles that had topical headings; the rest had organizational headings, and there were no articles without headings. The article “Bioelectrochemical Oscillations in Signal Transduction and Acupuncture--An Emerging Paradigm” by Cheng Shang, has topical headings such as: “I. Calcium oscillation in signal transduction, pattern formation and bioelectromagnetism,” “II. Electric field and morphogenesis,” “III. Similarity between acupuncture points and organizing centers,” “IV. Bioelectrochemical oscillation network -the emerging paradigm,” and “V. Perspective.” Another example of the deviation of headings from the organizational scientific headings is found in the article “Chinese Medicine in Malaysia and Singapore: The Business of Healing” by G.L. Ooi, where the headings are as follows: “Health and Development,” “Institutional Change and Development in Chinese Medicine,” “Chinese Medical Practice in Malaysia and Singapore,” “Consumer Use of Chinese Medicine,” and “Implications for Chinese Medicine.”

In 2008, there was only one article, “Neurophysiologic Basis of Back-Shu and Huatuo-Jiaji Points,” by Cabioglu & Arslan, with topical headings which were as follows: Introduction, Back-Shu Points, Huatuo-Jiaji Points, Segmental Distribution of the Sympathetic and Parasympathetic Nervous Systems, Correlation of the Autonomic Nervous System and the Back-Shu Points, Viscero-Cutaneous Reflex, and Cutaneous-Visceral Reflex (473). Even though there is an organizational heading “Introduction” the rest of the headings in this article are topical.
The Steady March of AJCM Articles Toward the IMRD Format

Twentieth century scientific articles are written in the following order: Introduction, Methods, Results, and lastly, Discussion. When used as an acronym (IMRD), the set of letters indicates the typical format of the article. A way of understanding the order of the content and the typicality of that content is by understanding if it is or isn’t in IMRD format. First, looking specifically at our sample article from 2008 (see Appendix 1) one can see how the article’s content is order in IMRD format.

As seen in figure 3.3 below, in 1973, only one article out of twenty sampled followed the IMRD format. As figure 3.3 shows, there is a steady rise in the number of articles that are in IMRD format over the thirty-five year life of the journal. In 1983, the red line (not IMRD) and the blue line (IMRD) converge, showing that there are ten articles that have IMRD format and ten that don’t. After 1983, the lines pass each other going toward opposite edges of the y-axis. By 2008, nineteen of the twenty articles have IMRD format and only one is not in IMRD format.

Figure 3.3 IMRD Format of the AJCM Over Time
An Interesting Anomaly: IMRD Section Content Minus Headings

The qualitative analysis of the IMRD format study is similar to the qualitative study of headings, since headings were often used as a first indicator of the format of an article. It is important to note, however, that headings are not absolutely necessary for an article to have IMRD format. For example, some of the articles did not have “introduction” or “discussion” headings, but it was clear that the text was introducing the article or discussing the ramifications of the experiment.

Summary

From the discussion above, one can see how several genre conventions--the introductions, headings, and formatting of the AJCM article--moved from being generally diverse to being homogeneous. The unifying characteristics of these articles (a three move introduction, organizational headings, and having an IMRD format) are the characteristics of the twentieth-century scientific article. That is to say, these characteristics of AJCM articles gradually came to reflect, over a thirty-five year period, those of the modern scientific article. Further, between 2003 and 2008, the structure of the AJCM articles became codified in this scientific format. Because the AJCM is a text that is representative of the discipline of traditional Chinese medicine (TCM), this “biomedicalization” of the AJCM can be seen as representative of the practice and view of TCM in America.

This chapter focused on the morphological (i.e., structural elements in articles appearing in the AJCM from 1978 to 2008; I was specifically interested in documenting the ways in which how the AJCM article has changed to structurally resemble the

\[5\text{ Noted by Swales (1990) and Gross et al. later (2002)}\]
IMRD prototype of a twenty-first century scientific article. The next chapter examines the works used in the AJCM over its thirty-five year lifespan. Chapter four will demonstrate how not only the structure, but also the vocabulary of the AJCM shifts toward resembling a twenty-first century biomedical journal.
Chapter 4

Lexical Features of the

American Journal of Chinese Medicine
Introduction

That the language of a given communication are as important as the actual information contained therein is no great revelation. Isocrates, Plato, and Aristotle had each rather alluded to the notion long before McLuhan famously thrust it into the public consciousness. Kenneth Burke also elaborated upon the concept (calling it “terministic screen”) in his book Language As Symbolic Action: Essays on Life, Literature, and Method (LASA), in which he deployed a useful trope about colored filters and camera lenses in order to explain that the very terminology used in a message belies the author’s own ethos and background. Burke’s realization that “any nomenclature necessarily directs the attention into some channels rather than others” offers my research another means of measuring change in the American Journal of Chinese Medicine over its history— the nature of the lexical elements in the register itself (Burke 45).  

Conceptual Background

Burke relates that the idea of the terministic screen came to him as he studied different photographs of the same object, the difference between them being that each photograph had been taken using a different-colored lens filter (Burke, Language 45). Burke realized that a similar mechanism is at work whenever we communicate: our impressions of the outside world are inescapably colored by the lenses through which we observe and experience it. It is inevitable that such an experiential coloration should affect the language and terminology we use when we verbalize; Burke likened the effect

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6 See assumptions made for this study in chapter 2.
to that of a screen or a sieve, device that filters the terminology we use to describe ourselves and our existence.

The practice of using Burke’s terministic screen as a means of rhetorical criticism has been adopted by scholars in the fields of technical communication, law, medical rhetoric, and communication studies. An example of this in the field of communication studies is *And No Birds Sing: Rhetorical Analyses of Rachel Carson’s Silent Spring* by Craig Waddell. Waddell’s collection of essays shows how terministic screens work to emphasize as well as deemphasize certain aspects of our world by using certain particular words in preference to others (74).

I have taken an approach similar to Waddell’s for this dissertation, which is to specifically identify key vocabularies associated with both TCM and biomedical terministic screens. To illustrate: a doctor in a hospital trauma center might say, “The patient is having a myocardial infarction. Get her to CCU STAT!” The doctor’s terminology reflects not only the medical education in his or her background, but it also represents a medical culture that understands CCU as a location for intensive cardiac treatment and STAT as the ultimate degree of haste. In the same way that medical students are indoctrinated in the culture of emergency medicine, acupuncture students are indoctrinated in the culture of TCM. To be certain, both student groups are socialized into and subsequently graduated from different cultures of healing. However, the two educations and cultures are distinct enough that two separate working languages, two different vocabularies, two ways of understanding and acting in the world, and (by extension) two different terministic screens result from those years of disparate training.
Therefore in the critical rhetorical sense, terministic screens indicate an author’s belief-structure as well as that of the audience for whom the author writes. Any socio-cultural shifts will be reflected in terministic screens over time. The changes in the thought-style of the contributors to the AJCM will be revealed by scrutinizing the terms they use. If the thought-style of the writer shifts, so should a shift in the articles published in the journal. This chapter will examine the terministic screens associated with both TCM and biomedicine in the AJCM.

My analysis will show that the terministic screen associated with traditional Chinese medicine and its representation of the body became dramatically less influential over a thirty-five year history of the AJCM. During the same period the biomedicine-associated terministic screen shifted and changed indicating a change in the content and vision of those in the TCM community. In order to see if biomedical lexical features were on the rise in AJCM articles, I counted the number of biomedical noun strings in the AJCM over the thirty-five year period, as well as the number of a variety of TCM terms.

Methods

One of the primary components of this research is to mark the prevalence of specific, characteristic lexical features in articles published in the American Journal of Chinese Medicine over time. I searched for words that are characteristic of TCM terminology— in other words, part of the TCM “register.” These words were selected from a basic knowledge of TCM that I gained using textbooks written by Ted Kaptchuk and Giovanni Maciocia, a course I took on TCM, and discussions I had with
experienced TCM practitioners. In this chapter I will show how the incidence of these lexical features in the *AJCM* has changed over the journal’s history.

I identified a lexicon of thirty-seven terms that are commonly used in the traditional TCM register, but not found or used in the same way in the larger medical community. Examples of these include “chi” “energy,” and “acupuncture.” I searched the entire 160-article sample for these words and tallied their occurrence. Of the thirty-seven terms selected, the terms “acupuncture,” “energy,” and “chi” (in its different forms: chi, qi, chhi) were chosen for in-depth examination due to their fundamental importance to the practice of TCM. Next, a broader look at seven (the three featured terms and four others) of the thirty-seven was undertaken to examine the overall trends of the TCM register in the *AJCM* over the thirty-five year time period. These seven terms were selected because they were frequently used over a long time span.

After the sample was analyzed, the subject text was re-read in order to ensure that the count was not skewed by words with dual meanings. An example of this is the TCM word “yang,” which is both a reference to a spiritual presence in Taoism as well as a common last name in China. It was important to go through and eliminate all of the “yangs” associated with the last name of a person, so that the final number of “yangs” would reflect only the influence of TCM and Buddhism in the journal. “Wind” was another dual-meaning word that could have been problematic. It might refer to part of a TCM diagnosis (“wind heat” for example), yet wind is also used to talk about the

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10 An acupuncturist with twenty-two years of experience helped me to better understand the TCM field by directing me toward texts and answering my many questions. In order to gain basic knowledge of the field of TCM, I took the course Introduction to traditional Chinese medicine at the University of Minnesota, through the Center for Spirituality and Healing during Spring of 2008.
“Chi” was another word that had to be carefully examined in order to avoid the statistical term “chi-square,” instead of referring to the TCM concept. The term “energy” was counted when it referred to the TCM belief that there is a mystical life force inside each person that runs through the body by channels called “meridians.” An example of this usage from the sample text is: “Zen meditation is a mental and physical practice of quieting the practitioner’s mind and focusing the attention on the body’s chakras (energy points) to transcend from a physical and mental level to a spiritual level” (Yu et al. 499). When the word energy was used in a more Western sense of the word, such as the power to do physical work—storage batteries or gasoline engines or hydroelectric dams—the word was not counted. An example of this usage from the text is: “As calculated in Planck’s quantum energy formula $E_n = nh\nu (n = 0, 1, 2, 3…)$, when the energy produced by one ATP molecule converting into ADP is not completely used by a biochemical reaction but radiates in the form of photon, the wavelength of the photon is around 2.5 $\mu m$” (Shen et al. 211). Finally, the word “loci” was only counted if it referred to a point at which the needle was put into the skin, not any other general or geographical area, nor when the term is used in genetics.

In addition to locating words that are part of the TCM lexicon, I also located and counted words that are biomedical in nature. This was done in order to test the hypothesis that there was an increased use of biomedical terms in the *AJCM* as the journal grew older. In order to test this hypothesis, I counted the number of biomedical

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11 “Wind-Heat,” and other terms pairing temperature with environmental phenomenon in TCM are the terms used to label TCM medical and therefore energy problems. This form of diagnosis and medicine has conservatively a 1200 year history. It should be noted that some scholars claim there is a 3500 year history evidenced by the arctic mummies which show signs of acupuncture and tattoos on areas of the body where there are main acupuncture points in TCM (Krutak).
noun strings. Noun strings—three or more sequential biomedical terms in a sentence, e.g., “ischaemic heart disease” for “ischaemic disease of the heart”—are a characteristic feature of modern scientific writing. “Cardiac protective action,” and “isoproterenol-induced myocardial necrosis” are other examples. By tracking the prevalence of these strings we can see how biomedically influenced a particular journal article is.

Results

TCM Lexicon

The term “acupuncture” refers to the Chinese practice of placing needles into the skin at specific points on the body in order to treat an ailment. Acupuncture may also be used as a form of anesthesia. As seen in figure 4.1, the term “acupuncture” appeared 723 times in 1973, but it decreased to 182 incidences in 1978. By 2003, the number of had further decreased to 138, and the usage dropped further still to 134 examples in 2008. There was a paradoxical increase in 1998, to 207 uses in the sample. While the most significant numeric drop is clearly in 1978, it should be noted that the number of pages in the journal increased steadily over the thirty-five year period, making the number of times the word “acupuncture” appears per page much lower over time.
Figure 4.1: The Term “Acupuncture” Over Time

As seen in figure 4.2, the prevalence of the term “energy” drops from 296 uses in 1973 to less than 10 uses in 2008. After a steep drop to below 100 uses of the word “energy” in 1978, the trend continued until there were only six mentions of the word in 2008. There are small rises in the number of times the word “energy” is used in 1983 and 2003, but these minor peaks still represent less than 50 uses in each sample year.

Figure 4.2: The Term “Energy” Over Time (The figure does not include those “dual meaning” words that are not related to TCM)

The term “chi” (also spelled chhi or qi) is the vital force believed in Chinese thought to be inherent in all things. This term was tracked and specifically analyzed here because of its overall importance in TCM. Since it is in “chi” that the philosophy
and spirituality of TCM are rooted, seeing how its prevalence changes over time is significant to my contention that the spirituality, history and philosophy of TCM lost prominence, while the biomedical and positivist orthodoxy, as seen through its lexical features. Namely, biomedical noun strings gained influence.

In figure 4.3, the number of times the word “chi” (any spelling variant) was used dropped from 100 occurrences in 1973 to 97 in 1978 to 12 in 1988. From 1988 thereafter the word “chi” was used less than ten times in each year sampled, with the exception of a brief resurgence in 1998.

![Graph showing the term "Chi" over time](image)

**Figure 4.3: The Term “Chi” Over Time**

Seven major terms were selected from the lexicon of thirty-seven commonly used TCM terms (including the three already examined); these terms were selected because they continued throughout the sample, showed a definite trend, and were significant in terms of meaning. The words tracked were “yin,” “yang,” “meridian,” “energy,” “chi,” “loci,” and “acupuncture.” First, I will define each word not discussed above, and then I will explain the common trends shown in their use, as seen in figure 4.4.
- **Yin** is the negative, dark, feminine half of Chinese philosophy that is a spiritual force and is essential in all living things.

- **Yang** is the positive, bright, masculine half of Chinese philosophy that is a force that plays a role in the lives of all things living and not living.

- **Meridians** are channels that run throughout the body, carrying chi.

- **Loci** are specific locations where needles are to be inserted in order to change the flow of the chi in some way.

The term “yin” is indicated by the blue diamond line below in figure 4.4. In 1973 it had 89 occurrences in the sample text. By 1988 there was only 1 instance of “yin” being used. While there is an anomalous instance of 22 occurrences in 2003, by 2008 the term “yin” was not used at all in the sample. The 22 instances in 2003 can be attributed to one, atypical TCM philosophy article in the sample.

The term “yang” is represented by the red square line in figure 4.4. In 1973 there were 90 occurrences of the term, in the sample. This dropped to nearly half this number in 1983 and then down to 15 occurrences ten years later. In 2008, there were only 2 mentions of the word “yang.” While its numbers have oscillated, the trend of this word is a definite decline over the lifetime of the *AJCM*.

The term “meridian” is represented by the green triangle line, below in figure 4.4. In 1973, there were 93 occurrences of the term but only 10 in 1978. The oscillation of the word “meridian” took place over the entire lifespan of the *AJCM*, but the up and down movement ultimately trended downward. In 2003 there were no mentions of the word and only 10 in the entire 2008 sample.
The term “loci” (locus) is represented in figure 4.4 by the purple “x” line. In 1973, there were 143 occurrences of the term, but this fell to 1 in 1978. After that, the term never hit ten occurrences over the rest of the history of the journal. The terms “acupuncture,” “energy,” and “chi” were discussed at greater length earlier in this chapter.

An overall trend suggested by the change in usage of these terms is that they frequently occurred in 1973 but had dropped dramatically by 1983. In the case of “energy,” the occurrences of this term dropped by almost 500 during the journal’s first five years of publication, as seen in Table 4.1. While decreases in the occurrences of other words are less dramatic, they all show this decline. By 2008, the selected words were each rarely used, if at all, in the AJCM articles. With most of the terms, there were small increases of the use of these TCM words in 1983 and 1998. The companion chart to these graphs can be seen in Table 4.1.

![Selected Terms from the AJCM](image)

**Figure 4.4: Selected Terms from the AJCM Over Time**
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<td>150</td>
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<td>138</td>
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</tr>
</tbody>
</table>

Table 4.1: Lexical Terms in the AJCM Over Time

**Biomedical Lexicon**

In the preceding section of this chapter, I explained how I counted and coded terms from the traditional TCM register, in order to ascertain the level of involvement of TCM in the field. In this section, on the biomedical lexicon, I was not able to count and code individual words because of the breadth of the biomedical vocabulary. The biomedicine discipline has thousands of sub-disciplines, each of which has its own specialized vocabulary. This diversity made selecting a few terms and tracing them through the AJCM unproductive at best and practically impossible. In order to deal with this problem, I located a construction that is common in biomedicine—the noun-string. The noun-string is a kind of word group and, as discussed earlier, the noun-string is one of the most basic features of the scientific style (Bazerman 171; Gross et al. 169; Halliday & Martin 84). This is because such a construction is able to easily communicate technical concepts. Therefore, in the sampled texts, I counted the groups of words that were considered biomedical in content. Focusing on these specific lexical
constructions allowed me to meaningfully count and code the biomedical presence in
the *AJCM*.

The biomedical noun strings were counted using the same computer program as
the TCM words. I coded all 160 documents for biomedical noun strings, and a clear
trend of an increasing number of biomedical noun strings developed over time.
(“Dorsal root ganglia” is an example of a three word noun string.) Noun strings,
according to Gross et al. ultimately “add levels of abstraction” to the text, and in doing
so make the text more complex and therefore harder to discern and understand by those
who are not experienced in a scientific field (169). The noun string is also difficult to
understand because while “it makes explicit the textual and logical interconnectedness
…it leaves many local ambiguities” (Halliday and Martin 67). It can be seen in table
4.2 that in the *AJCM* articles from 1973 there were 110 total biomedical noun strings;
this count more than doubled to 282 by 1983. By 2003 the number of biomedical noun
strings had become overwhelming, with 1,185 noun strings. Five years later, the
number had grown to 1,228 noun strings. As seen in Figure 4.5; the largest period of
growth was between 1998 and 2003, but there was an increase for every year sampled.

|-------------------------|------|------|------|------|------|------|------|

| Biomedical Noun Strings | 110  | 167  | 282  | 486  | 658  | 1185 | 1228 |

Table 4.2 Biomedical Noun Strings in *AJCM* Articles Over Time

Throughout this chapter and others, I use both graphs and charts to visually
display the data that was the result of this study. According to Edward Tufte, tables
work best when the writer wants to show “exact numerical values,” which are
“preferable for small data sets, and when the focus is comparing sets of data” (179).

Here, I wanted to give exact numbers, and I wanted to compare the earlier data with the latter. Using graphs in this study allowed me to look at large sets of data and to compare that data with other data sets over time.

![Figure 4.5: Biomedical Noun-Strings from the AJCM](image)

**Summary**

In my analysis, I attempted to capture how authors of *AJCM* articles shifted in register over a period of thirty-five years. My analysis suggests that the decreased interest and commitment to using historical TCM terms reflects a decreased interest and commitment to TCM history and philosophy. Over time, it is clear that the lexical (terminological) features from the older TCM linguistic register, suggestive as it is of the older TCM “way of seeing,” has faded, thus suggesting a lexical evolutionary process (Gross et al. 221). Texts, like animals, have a way of changing and responding to selection pressures; in the *AJCM*, biomedical terms were selected for, while the TCM register was not selected for and was allowed to disappear. What these linguistic changes imply is that the content and focus of the *AJCM* moved from TCM to
something else. In contrast, the increased use of a highly Western scientific style, as seen in the biomedical noun string count, shows an increase in the use of biomedical language over the thirty-five year span of the study. Looking at quantities of terms in this way, displays the replacement of TCM terms with biomedical terms and makes it clear that attention and interest in biomedicine increased at the same time that interest in the traditional underpinning of TCM decreased. These data support my overall assertion that the AJCM went through a biomedical change from its beginnings in 1973 to the present. It became a journal that was more oriented toward the Western culture of biomedicine than its Eastern roots in TCM.

While chapter four examined the actual words in the AJCM and the meaning of those words, chapter five looks at more classically rhetorical ideas of subject, audience, and genre. The next chapter will have three parts (subject, audience, and genre): by “subject,” I mean the types of Chinese medicine examined in each sampled article, by “audience,” I will examine who was the intended reader of each article; and for “genre” I focus on the type of article. By the end of chapter five, readers will have a better idea of the topics and genre of the AJCM.
Chapter 5

Subject, Audience, and Genre in the AJCM
Introduction

This chapter examines the subject, audience, and genre of the AJCM. Because the lexical elements or features of this journal were examined in the previous chapter, this chapter will focus on changes that have been made to the articles themselves over the lifetime of the journal. This chapter is configured in sections (theory, introduction, findings, and commentary); the sub-sections pertaining to subject, audience, and genre will be found within each of these sections.

Recognizing subject matter trends is important to the analysis of the AJCM, because the journal at once reflects the interests of the writers and (at some level) the discipline as a whole. Subject can also be taken as a reflection of both the minds of those publishing the journal as well those of the potential readers—a change in subject over time indicates a change in what is considered valuable in terms of research. Shifts in audience are important to track because they indicate changes in readership as well as in the aims and the orientation of the publication. As the audience changes, so do the core expectations and content of the journal. The form of the journal also changes. A change in the genre of articles a particular journal is willing to publish reflects a change in the genre of the journal itself and the discipline it serves. A journal that grew significantly in the number of historical articles published on its pages would be regarded as having become an historical journal, while growth in the number of experimental scientific articles within another journal would also change the manner in which that journal was perceived and consumed by its audience. As the genre of the majority of the articles in a journal changes, so too do those interested in reading it, as well as those capable of understanding it. Journals are representative artifacts of
academic culture; by looking at changes in areas as fundamental and centrally important as subject, audience and genre, researchers are able to ascertain what kinds of changes are occurring in a field of inquiry.

**Background**

**Subject**

When the *AJCM* was first published in 1973, the variety of subjects covered in each issue was myriad. The inaugural issue included topics as varied as acupuncture, a cure for deafness, and the philosophy of the triple-burner organ in TCM. To apply a term from Charles Bazerman, the *AJCM* had “the protean possibilities” offered by newly emerging fields for “direction-setting innovation” (324). In so writing, Bazerman postulated that at the beginnings of a new field lie a vast number of different rhetorical directions, which the field might eventually follow. Generally speaking, after an initially wide assortment, the subjects begin to shrink in number as the new discipline begins to specialize and professionalize. Gross et al. explain that this movement toward greater unity within a new discipline is the result of selection (221). Citing the Vienna Academy as an example, Gross et al. show how “Austrians learned by imitating German models” and that it was the “German models that formed the requisite selection pressure” (220). In this way Gross et al. put forth the idea that the many subjects of new academic publications are reduced by selection and, therefore, evolution. Eventually, articles become more and more tailored to a specific audience and discipline, based on the selection pressures that surround the publication.
Audience

When looking at the various audiences of the *AJCM*, we can refer to Ede and Lunsford’s seminal 1984 essay and recognize that the collected *AJCM* audience is neither completely “audience addressed” (written to, specifically) nor completely “audience invoked” (created by the writer). While it is clear that these are each extremes, the reality of “the fluid, dynamic character of rhetorical situations” (of which all discourse is a part) underscores the way in which both readers and writers contribute to audience (Ede and Lunsford 156). We note a change in the *AJCM* audience over time; from this quantitative data one can make some basic observations about how and why the audience changed in such a dramatic way over the 35 year history of the *AJCM*. Since the editorship of this particular journal was— and continues to remain—very stable, it becomes clear that it is chiefly the material submitted to the journal for publication that determines its content—not its editorship.

Genre

In this study, I used the theoretical foundations discussed by Berkenkotter and Huckin in their text *Genre Knowledge in Disciplinary Communication*. Berkenkotter and Huckin state that there are five principles that govern genre: “dynamism, situatedness, form and content, duality of structure, and community ownership” (6). At this juncture, I will highlight each of the five principles and show how they work in this dissertation. By “dynamism” Berkenkotter and Huckin highlight how genres are “dynamic” and change with time. In this study of the *AJCM*, it will become clear that its genre changed over time, having gone without any specific genre in which to
categorize its articles, to having articles with a few different established genres, to finally falling into a single specific genre in almost all of its articles.

Concerning the second principle, “situatedness,” the focus turns to how genres exist as constructions which are part of the very fabric of our daily lives. This aspect of genre becomes particularly clear in chapter seven, where it is exemplified in interviews with researchers who publish in the *AJCM* as well as TCM practitioners: the mode of thinking that is embodied in the *AJCM* stems from the researchers’ own thinking and understanding.

The third principle, “form and content,” makes it clear that, in order to have genre knowledge, a person must first be aware of both the former and the latter principles. *Kairos* is also at work in the third principle; it becomes clear in the study of the *AJCM* that editorial attention is paid to recognizing which form is appropriate for what moment. For example, a photo essay was acceptable in the journal in 1973, but none appeared in 2008. Genres are situational in nature, in that each has a place and a time when they are active and suitable.

The forth principle, duality of structure, that Berkenkotter and Huckin discuss focuses on the idea that “we constitute social structures and simultaneously reproduce these structures” (17). Berkenkotter and Huckin borrow this idea from Giddens who explains that this term refers to the idea that a text has both a structural and an agency pieces (Giddens 25).” For Giddens as well as Berkenkotter and Huckin agency can only exist or analyzed with reference to its structure.

Finally, conventions of genre work to first constitute and then indicate the presence of a discursive community, while at the same time advancing “community
ownership” of the genre. Considering the genre shift experienced by the AJCM, it is clear that by 2003 the journal possessed a certain particular community identity and norms that pervaded its articles. This unity is reflected solely in the 1990s and beyond—not before.

Of relevance to genre in this dissertation is Berkenkotter’s essay “Evolution of a Scholarly Forum: Reader, 1977-1988.” Berkenkotter analyzes the development of the now- academic journal Reader over time and examines the morphological features of the newsletter-turned-journal as well as its citations and content areas. Berkenkotter’s attention to the space that this “evolving” journal makes for those interested in “reader-oriented” literary criticism is an appropriate example of a smaller-scale corpus study with motivations that are similar to this dissertation. The article shows how Reader’s genre shifts along with the changes in readership and community the journal experiences. The changes in the journal are ultimately representative of the changes in the “reader-oriented” community.

Subject

By “subject,” I mean the content of the article or its basic matter of thought. I selected four possible content areas for this analysis: acupuncture, herbs, movement studies (tai-chi or qi-gong), and other. The great majority of the 160 articles I examined easily fell into one of the first three of the categories; the “other” category was reserved for articles that did not:

- Acupuncture: The acupuncture category includes any article that is focused on the effects of pressure, spectral light energy, or needling upon specific points on
the body. While acupuncture primarily involves needling, it should be noted that it may also entail the shining of certain colors of light onto specific points of the body as well as using pressure from hands or other instruments on these acupuncture points.

- Herb: Most of the articles in the herb category were focused on the use of medicinal herbs, although other studies examined the specific plant chemistry that brings about the medicinal effect.

- Movement Studies: The movement studies articles encompassed those Asian movement practices such as tai-chi, qi-gong and other motion-centered practices such as martial arts.

- Other: The other category was put in place as a category for those articles whose subject does not fall into one of the three main categories. For example, a number of “public health” articles were put in the other category, as were some philosophical articles.

By counting and coding for frequency of these four topics over the first thirty-five years of the journal, I hope to provide an overview of what topics were the most salient for writers publishing in the TCM community.

**Audience**

I inferred whom the audience for each sample article might be by looking at the terms used, the background reading level required to understand and make use of the article, as well as who was included or excluded from understanding the article based on the technical language within the article. The audience was assessed and categorized
into one of five different groups. Although audience analysis is a fairly subjective process, it is also an essential part of this dissertation. I approximated the intended audience of each article by reading each article and then asking myself: “Who could read this article?”; “Who would want to read this article?”, and “Who would benefit most directly from reading this article?” I decided on five categories of possible readers by looking at the mission statement of the journal, which expresses the twin goals of being broad and inclusive of all those interested in TCM (website). These categories were discussed with my informant, who agreed with the possible readership categories. He was especially helpful at examining a few of the 2008 articles and confirming that these articles were not written for practitioners of TCM. The five possible categories were: bench research scientists, licensed acupuncturist or Oriental medical doctor (who mostly treat patients), Western medical doctor, the general public, and “other” (when an audience could not be easily assessed).

The characteristics of each of the articles associated with each of the five audiences will now be discussed.

- **Bench Research Scientist**: These articles are written in the genre of an experimental scientific article. Their language is very discipline-specific and it is likely that these articles could not be understood by non-scientists or even by scientists that are not a part of that very particular topic of research. An article of this type is largely determined by its exclusion of all other audiences.

- **Licensed Acupuncturist**: These articles can take many different forms, but what indicates that they are intended for an acupuncturist is that the articles have a TCM register with the treatment of patients as a primary focus. They are
instructional in nature, designed as tools to help the practitioner heal their patients.

- **Western Medical Doctor:** These articles are aimed at introducing an aspect of TCM to those outside the TCM community. These articles use biomedical terms in trying to explain TCM, often in such a way as to promote its being used in a Western medical practice. The main difference between an M.D. and an acupuncturist as evidence is terminology and register.

- **General Public:** These articles attempt to educate the public and therefore do not use biomedical language, which only a health care professional would use or understand. By the same token, complex TCM words or concepts would also be avoided, since the public would have no way of understanding them. These articles are characterized by being very basic in content and form, with no intention of informing a specialist, and instead cater to a general audience.

- **Other:** These articles include those that do not fit in any of the above categories.

**Genre**

In this study, the genre of each article was assessed (Looking at a sample of articles included in a specific professional journal, namely the _AJCM_). In order to better understand the genre of the _AJCM_ over its 35 year history, I took each sample article and determined the genre category into which it would best fit. The categories were delineated as follows: Experimental Scientific, Scientific Review, Philosophical, Historical, and Blurred Genre.
• **Experimental Scientific:** The *experimental scientific* category characteristics are: use of the scientific method, having IMRD format, engaging with the natural world, and being experimental in nature.

• **Scientific Review:** The *scientific review* article does not create new information, but instead synthesizes and critiques work that has already been published. The scientific review article also comes to larger conclusions by gathering information and making generalizations from a set of related articles. Both this and the experimental scientific genres have been well-established in science for at least the last century.

• **Philosophical Review:** The *philosophical review* articles are those in which the author examines the nature of a particular style of thought or attempts to explain the theoretical underpinnings of a certain area of research or a way of thinking. An example of a philosophical article would be one that looks at the theory of the mysterious “triple-burner” organ and how it moves energy in the body.

• **Historical:** An article was deemed *historical* if a pattern of events over time were being analyzed or a series of interrelated events are narrated. Examples of a historical article include: the lifetime of Chinese medicine, an account of acupuncture needles through the ages, or the way a certain plant was used over time to heal the sick.

• **Blurred:** The *blurred* category was used to refer to anything that didn’t fall into the other four categories—generally, this category was used for the public health reports that occurred early in the journal’s history or the photo essay that was in
the 1973 sample. Also an article that fit into multiple categories would be placed in the blurred category.

**Findings**

**Subject**

After examining the entire corpus (160 sample articles), and labeling each article with a subject (acupuncture, herbs, movement studies, other), I am now able to report the raw data collected from this analysis. As seen in figure 5.1, there is a drop in the number of acupuncture and “other” articles over the lifetime of the journal. Looking again at figure 5.1 reveals that there is a general increase in the number of “movement” articles and articles about TCM herbs. Of particular note, in 1978 there was an increase in the number of “other” articles, although by the next time the journal was sampled (1983) those numbers had decreased.

- **Acupuncture:** Of the 20 articles in each sample period, 15 in 1973 had acupuncture or a related field as their subject, fifteen years later, in 1988, there were 5, and thirty years later, in 2003, there were 2. Acupuncture as a subject had an overall high of 15 and a low of 2, as seen in figure 5.2. The mean number of articles is 5.25. The mode of these articles is 5.

- **Herbs:** Of the 20 articles in each sample period, 2 articles in 1973 were related to herbs or herbal treatments; fifteen years later in 1988 there were 11, and thirty years later in 2003 there were 13, as seen in figure 5.2. Herbs as a subject had
an overall high of 14 and a low of 2. The mean number of articles is 11.125.

The mode of the herb articles is 13.

- **Movement Studies:** Of the 20 articles in each sample period, zero articles in 1973 were related to tai-chi or physical movement exercises related to TCM; fifteen years later in 1988 there were again zero, and thirty years later in 2003 there were 3, as seen in figure 5.2. Movement studies as a subject had an overall high of 3 and a low of 0. Although movement articles did not appear until 1993, they continued to be a part of the sample through 2008, as seen in figure 5.2. The mean number of articles is 1. The mode of movement articles is 0.

- **Other:** Of the 20 articles in each sample period, 3 articles in 1973 did not fit into the three main categories. Fifteen years later in 1988 there were 4, and thirty years later in 2003 there were 2 articles that did not fall under the other headings. The “other” category had an overall high of 11 and a low of 1, as seen in figure 5.2. The mean number of the articles is 4. The mode of this set of article is 2.
Figure 5.1: Subject of the AJCM Over Time

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<td>13</td>
<td>12</td>
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<tr>
<td>Other</td>
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<td>12</td>
<td>8</td>
<td>4</td>
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<tr>
<td>Movement Studies</td>
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These data show that acupuncture was the central subject of study in the AJCM during its first years as a journal; over time, however, it became less and less so. Although there was a slight resurgence in acupuncture as a subject in 2008, it still remained a relatively minor subject of study. The decrease in acupuncture as a focus could have come from a variety of causes, not least of which are the inability to
scientifically test how acupuncture works and that the philosophy, which underlies belief in the TCM concept of “chi,” is antithetical to Western science. The 2008 increase in acupuncture articles may have been due to the development of new scientific technologies that may eventually satisfactorily explain the workings of acupuncture to the Western scientific community. Some of these technologies measure body temperature at specific places on the body (the acupuncture points), while others compare radiographic brain imagery taken before and after acupuncture treatments.

Conversely, finding the active ingredients of the Chinese herbs, historically used for medical purposes, is something that Western scientists, using the scientific method, have become familiar doing. This factor would explain the sharp rise in the number of articles focusing on herbal medicine. While the possible commercial value of therapeutic herbal research is abundantly clear, the commercial economic potential of acupuncture is less so. As the importance of formalized biomedical research emerged, non-biomedical articles—those grouped under the heading of “other”—declined. The peak of these articles took place in 1978, because in that year the journal was principally devoted to world-wide public health awareness. Articles that year ranged from original studies of alternative medical facilities around the world (1978) to the reprinting of statements previously made by the World Health Organization (WHO) on a variety of medical issues.

Although the AJCM editors claim to strive for an “inclusive” journal, and again despite their stated position of favoring minority subjects, it is plain that by 2008 the quantity of herbal-medicine-oriented articles published in the journal had become disproportionately high. Either a comparatively large number of these articles had been
submitted annually for editorial review, or the subject was favored in some way by the editorial board. Among the non-herbal articles, the number of TCM movement exercise articles increased from zero in the years preceding 1998 to two in 2008. This might indicate an increased amount of attention being paid to these healing modalities by United States practitioners of TCM during the intervening decade.

**Audience**

Having examined the entire corpus (160 sample articles) and assigned each article to an inferred audience (bench research scientist, licensed acupuncturist, Western medical doctor, general public, other), I will now report the raw data collected from this analysis. As shown in figure 5.4, over the lifetime of the journal there has been a drop in the number of articles aimed at Western medical doctors. A general increase in the number of bench research scientist-directed articles it is also evident in figure 5.4. Having the bench research scientist as the audience was rare in 1973; in that year there was only one article that was experimentally research-oriented, as shown in figure 5.3. The intended audience categories of the sampled articles are summarized below:

- **Bench Research Scientist**: Of the 20 articles sampled for 1973, 1 article met these criteria, fifteen years later 12 articles fit these criteria, and thirty years later 19 of 20 articles fit this description. The “bench research scientist” category had an overall high of 19 and a low of 1, as seen in figure 5.4. The mean number of articles in this category is 11.8. The mode of this set of articles is 19.

- **Licensed Acupuncturist (Acc.) / Oriental Medical Doctor (OMD)**: Of the 20 articles sampled for 1973, 2 articles met these criteria, fifteen years later 4
articles fit this criteria, and thirty years later zero of 20 articles fit this
description. The “licensed acupuncturist” category had an overall high of 4 and
a low of zero, as seen in figure 5.4. The mean number of articles in this
category is 1.75. The mode of this set of articles is 2.

- **Western Medical Doctor**: Of the 20 articles sampled for 1973, 13 articles met
these criteria, fifteen years later 2 articles fit these criteria, and thirty years later
1 article fit this description. The “Western medical doctor” category had an
overall high of 13 and a low of zero, as seen in figure 5.4. The mean number of
articles in this category is 4.75. The mode for each period are 10, 2, and zero.

- **General Public**: Of the 20 articles sampled for 1973, 4 articles met these
criteria, fifteen years later zero articles fit these criteria, and thirty years later
zero articles fit this description. The “general public” category had an overall
high of 5 and a low of zero, as seen in figure 5.4. The mean number of articles
in this category is 1.375. The mode of this set of articles is zero.

- **Other**: Of the 20 articles sampled for 1973, zero articles met these criteria,
fifteen years later 2 articles fit these criteria, and thirty years later zero articles
fit this description. The “other” category had an overall high of 2 and a low of
zero, as seen in figure 5.4. The mean number of articles in this category is 0.25.
The mode of this set of articles is zero.
The perceived audience of individual articles in the *AJCM* had a dramatic shift between 1973 and 2008. In 1973 most articles were primarily geared toward educating Western medical doctors about TCM. In 2008 most articles could only be fully understood by bench research scientists in TCM. This shift indicates not only a shift in intended audience and therefore readership, but also a realignment of the journal’s purpose. By 2008 this journal was no longer an educational tool for medical doctors; it
had become a journal written for the very few bench research scientists primarily doing work on Chinese herbal medicine. This change in audience also supports the view that the journal has professionalized in a very specific way: toward scientists.

No longer is this journal focused on reaching out to those in the Western medical community, whom it hopes to persuade that TCM is credible and should be used in America; these days it is a journal serving a very specific group of people—bench scientists. By shifting audience so dramatically, AJCM is now positioning itself as a flagship scientific journal. By 1988, the data support the view that the journal was no longer bringing TCM to the masses, but was instead creating a space for the publication of scientific studies and research on TCM in America.

**Genre**

After having examined the entire corpus (160 sample articles), and designated a genre for each article (experimental, scientific review, philosophical, historical, blurred), I will next report the raw data collected from this analysis. As shown in figure 5.6, there was a drop in the number of “blurred genre” articles over the lifetime of the journal. By blurred genre I mean that the article fits into more than one category, or no category. Again as shown in figure 5.6, there was a general increase in the number of “experimental” articles.
Figure 5.5: Genre of the AJCM Over Time

Table 5.3: Genre of the AJCM Over Time
Articles of the experimental genre were rare in 1973; in that year there were only 4 articles that were experimentally research-oriented, as seen in figure 5.5. Below is a summary of the data for each genre identified in this study:

- **Experimental**: Of the 20 articles sampled for 1973, 4 articles met these criteria, fifteen years later 17 articles fit these criteria, and thirty years later 19 of 20 articles fit this description. The “experimental” category had an overall high of 19 and a low of 4, as seen in figure 5.5. The mean number of articles in this category is 13.375. The mode of this set of articles is 16. Experimental articles are defined as having a thesis that is supported or rejected after exposed to scientific tests.

- **Review**: Of the 20 articles sampled for 1973, 2 articles met these criteria, fifteen years later zero articles fit these criteria, and thirty years later 1 of 20 articles fit this description. The “review” category had an overall high of 2 and a low of zero, as seen in figure 5.5. The mean number of articles is 1. The mode for each period of articles is 2 and zero. Review articles are based on getting a greater understanding of a subject by looking at several previously published articles.

- **Philosophical**: Of the 20 articles sampled for 1973, 2 articles met these criteria, fifteen years later 2 articles fit these criteria, and thirty years later zero articles fit this description. The “philosophical” category had an overall high of 2 and a low of zero, as seen in figure 5.5. The mean number of articles is 1. The mode for each set of articles is 2 and zero. Philosophical articles are those that focus on answering the question "why" some aspect of TCM.
- **Historical**: Of the 20 articles sampled for 1973, 4 articles met these criteria, fifteen years later zero articles fit these criteria, and thirty years later zero articles fit this description. The “historical” category had an overall high of 4 and a low of zero, as seen in figure 5.5. The mean number of articles is 1.25. The modes for each period of articles is 1 and zero. Historical articles look at what was done in the past with reference to a specific object, idea, or group.

- **Blurred**: Of the 20 articles sampled for 1973, 8 articles met these criteria, fifteen years later 1 article fit these criteria, and thirty years later zero articles fit this description. The “blurred” category had an overall high of 8 and a low of zero, as seen in figure 5.5. The mean number of articles is 2.875. The mode for each period of articles is 5, 1, and zero. Blurred articles are those that do not fit into any of the other categories or include more than one of the categories.

The experimental genre dominates most professional scientific journal articles in the twenty-first century, and the *AJCM* is no exception. In 2003, 19 of 20 articles were experimental, as were 18 of 20 in 2008. In both of these years the non-experimental articles were limited to another type of article that is typical of professional scientific articles—namely, the scientific review article. The data support the premise that in order to be published by the *AJCM* in 2008, writers had to be knowledgeable about the genre of articles then being published by the *AJCM*. “Genre knowledge” (Berkenkotter & Huckin 1996) had become key to being seen as an author worthy of being published in the *AJCM* by 2008. In previous sample group years, articles that did not have a specific genre were labeled “blurred” and this general genre immediately started to decline after the first year.
The genre change could have come about in three ways: reviewers, perhaps, demanded that writers write in a specific genre, or, of their own accord, authors began conforming to the kinds of articles that were accepted by editors in the newer editions, and/or an overwhelming number new writers with specific conventions in mind began to submit articles. In any case, by 2003 there were no “blurred” genre articles. The presence of specific, established genres supports an assertion that by 2003 the *AJCM* was well on its way to becoming professionalized. With the articles’ subjects having become increasingly focused on herbs and plants used in TCM, the experimental genre is the logical genre of these particular biomedical studies in the late 20\textsuperscript{th} and early 21\textsuperscript{st} centuries.

This shift in genre is an indication of the scientific orientation which the *AJCM* has taken on, as evinced in part by the genre realignment in favor of the experimental, as well as the subject-matter movement (increasingly plants and herbs) towards the more bioscientific. Additionally, in order to achieve the credibility and status of being considered a true scientific journal, the *AJCM* needed to publish mostly experimental articles, which has become the case by the end of the period studied in this research.

The historical and philosophical genres never had a major role in the *AJCM*. While humanities journals on medicine do exist, the editors of the *AJCM* were chiefly responsible for a turn taken in the 1980s towards it becoming a journal in support of a scientific experimental view of TCM. This makes sense, because the scientific (medical) journals with the most influence are those that are dominated by experimental articles.
The only other articles maintained in the *AJCM* into the 21st century, which are not experimental in genre, are scientific review articles. This genre of articles is also commonly present in mainstream scientific and medical journals. In fact, case study is the only genre of article found in medical journals that has not yet been seen in the *AJCM*. The absence of the case study may be attributed to the bench experiment-centered nature of the journal.

**Summary**

The data presented above suggest that the *AJCM* underwent many changes between its founding in 1973 to 2008. The changes in subject show a trend in which the number of articles on acupuncture decreases over time and the number of articles on TCM herbs increases. The changes in audience over time show a decrease in the number of articles whose target audiences include the Western medical doctor, the licensed acupuncturist, and the general public. At the same time there has been a dramatic increase in the articles whose target audience is bench research scientists. The change in the article genre over time shows a marked decrease in “blurred” or non-specific genres and a correspondingly dramatic increase in experimental articles. When grouped together, these patterns suggest that the *AJCM* transformed from an eclectic journal with many different subjects, formats, and audiences, into a focused, professional biomedical research journal. The target readers of the journal shifted as well, from mostly TCM practitioners in the beginning, to almost exclusively TCM researchers in 2008. This posits that, over time, the journal has become less about introducing TCM ideas to Western doctors and more about experimentally demonstrating that TCM cures are real. Clearly the articles have a target audience, but
that audience is being positioned by the organization behind the journal, its editorship, and the author contributions to the journal. Also, as more experimental articles are submitted and published, the journal becomes more attractive to TCM experimental scientists because the content has come to more closely resemble their own work. Thus, they become more likely to want to be published in the AJCM. This is a cycle that clearly favors publishing experimental scientific articles.

With the shift toward experimental scientific articles, the subject matter of herbal articles takes center stage—interestingly enough, because they have properties that are measurable by experimental scientists and are of interest to the wider medical community. It is surpassingly easier to fund research on, and produce a publishable experimental article about, the medical benefits of a specific TCM plant than it is to do the same for a topic as “non-scientific” as acupuncture, even if random experimental trials are part of the methodology. This increase in articles concerned with herbs, and their concomitant ability to satisfy the scientific thought-style of Western scientific tradition, has fostered a dramatic rise in the number of scientific articles in the AJCM (Fleck 159). The increase is so dramatic that, by 2008, all AJCM articles were either experimental scientific articles or scientific research review articles. These trends, toward a more scientific and experimental nature, support this study’s overall premise that this journal, the American Journal of Chinese Medicine, and the field it represents, traditional Chinese medicine, are professionalizing into a discipline dominated by bioscience bench scientists, who primarily do experimental work.

The last three data chapters (3-5) are focused on the various trends in the use and selection of words in the AJCM. Chapter six takes the focus of the dissertation off
of the verbal and briefly examines the visual attributes of the *AJCM*. Attention to visuals is an important part of this dissertation, because of the relationship the dissertation has to science. Science is a discipline that depends on visuals in order explain the data at hand. Chapter six will examine how visuals change over the lifetime of the *American Journal of Chinese Medicine*. 
Chapter 6

Visuals in the *American Journal of Chinese Medicine*
Introduction

Visuals are a key part of scientific writing. As described by Gross et al., it is “impossible to conceive of argumentative practices in the twentieth-century science without their visual representations (tables and figures)” (200). Further, Tufte explains that “graphics are instruments for reasoning about quantities of information,” and that the best way to explain what numbers might mean is “with pictures of those numbers” (9). Not only does it make sense, but it is of great importance to track the visuals of the *AJCM* in this study, as it is a study of the scientific article. If I am to determine if *AJCM* articles become more and more like the twenty-first century scientific article, I must attend to the visual aspects of scientific articles. As explained by Gross, in his article “Toward a Theory of Verbal-Visual Interaction: the Example of Lavoisier” visuals in a scientific article play a “significant communicative role in scientific articles” (147). When scientific articles are read by bench research scientists, the scientists focus on the graphics (tables and graphs) not on the text surrounding them (Purugganan). The presence of visuals in communicating science is so great, that examining a journal to see if it would be judged modern and scientific would be incomplete (at best) without analyzing the trends of visuals over time. It could reasonably be argued that this chapter (whose focus is on images and not words) is the most important chapter of this dissertation.

Because of the importance of graphics and my interest in learning more about the visuals in the *AJCM*, I analyzed a number of graphs that appeared in twenty randomly selected articles from every fifth year over the thirty-five year lifespan of the
AJCM. The table outlining the results of the study, table 6.1, is below. Besides the table, there is also a graph for each visual category that explains the change in the number of that visual over time.

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Table 6.1: Visuals in the AJCM from 1973 to 2008

Research Questions

1. Do the visuals in the AJCM become more like the visuals found in journals of Western science over time?

2. Is there an increase in the number of tables and graphs in the AJCM over time?

3. Do the visuals show an increase in technology use in the AJCM over time?

Outline of the Chapter

In this chapter I will first expand on the theoretical background of scientific visuals. This will include a look into the work of Gross et al. I will then list and describe the six types of scientific visuals found in the AJCM. This set of descriptions will explain what characteristics a visual must have to fit into one of the six specific categories. I will then describe the data and results for each of the visuals. Finally, I will examine the results of these analyses together, showing how the results of this study of visuals answer the research questions established in the introduction to the chapter.

Theoretical Framework
For my study of visual representations in *AJCM* and their changes over time, I turned to the research of Alan Gross, Joe Harmon, and Michael Reidy, who have described the graphic (visual) text relationship in the modern scientific article. According to Gross et al., the modern sciences almost always make their cases with both words and visual representation (188). The twentieth-century scientific article, according to Gross’s study, is not complete without a table or graph. In fact, they state that it is impossible to imagine science without visual Representation; this representation is made up almost exclusively of tables and graphs (200). Other types of visuals such as drawings or photos of research, people or equipment are hardly ever seen in a late twentieth-century article. They further explain that the “monarch” visual of the twentieth century article is the graph (Gross et al. 201).

Applying Gross et al.’s analysis of the importance of visuals in the twentieth-century scientific article to the articles of the *AJCM* leads to the hypothesis that, with regard to the role of visuals, early *AJCM* articles would resemble eighteenth century scientific articles while visuals in recent *AJCM* articles would be similar to those of late twentieth-century scientific articles. This hypothesis was confirmed when I counted and classified the different types of visuals in the *AJCM* sample.

**Description of Visual Groups**

For the purpose of this dissertation, any visual can be placed in one of five groups: graphs, drawings, tables, computer-aided drawings, pictures, and other. In order to better understand the role that visuals play in the *AJCM*, and how the *AJCM* visuals show trends that support the journal becoming more scientific and technical over time, I will describe each of these visuals below.
Graphs: Graphs are defined as visuals with distinct x and y axes that work off of points located on the x, y coordinate system. The graph category is broad, in that it includes any type of graph (line, bar, pie...etc).

Drawings: Drawings are hand or computer rendered representations of objects both real and imagined. In the AJCM these drawings were mostly representations of the bodies of humans and other animals, with acupuncture points located on these bodies. This category also includes renderings of TCM plants.

Tables: These are columns of raw data. In the AJCM, the text next to the tables actually says “table 3” instead of “figure 3,” and so, what is a table and what is not is very clear. In the AJCM, tables sometimes support graphs, but often stand alone.

Computer-Aided Drawing: By computer-aided drawings, I specifically identified images of molecular structures that were drawn using very discipline-specific software, in order to correctly reproduce all in the angles required in creating a molecular model. No other computer-aided drawing was observed.

Pictures: Pictures are defined as photos taken and placed in the AJCM. There are several photos of patients, even an entire photo collage. What this category does not include are images captured using light microscopes.

Results

Based on the findings of the Gross, Harmon, and Reidy study, I expect that, as the articles come to resemble scientific experimental articles, the visuals will come to also resemble those of the experimental scientific article. According to Gross et al., late
twentieth century scientific articles are dominated by graphs and tables (200). Overall, 88% of scientific articles have one or more visual. This is an increase from 52% in the nineteenth century. Visuals in the scientific article are an “imposing presence,” according to Gross et al. (200). In this study I have expanded on Gross et al.’s four categories (graphs, tables, diagrams, and photographs or realistic drawings) to include computer aided drawing, and I split photographs and drawings into two separate categories. As seen above, table 6.1 covers all of the data for visuals in the AJCM in tabular form.

**Graphs:** As seen in table 6.1, there were 2 graphs in 1973. Fifteen years later there were 32, and after thirty years there were 53 graphs. As seen in the table 6.1 (page 118) “Visuals in the AJCM from 1973 to 2008,” there is a trend toward an increase in the number of graphs (approaching 90 by 2008, from less than 5 in 1973). It is important to note that there are a large number of graphs (44) in 1978, which deviates from what is typical. In the early period of the AJCM these visuals were mostly graphs that were part of the WHO public health articles, which dominate the 1978 articles. In spite of the overall increase in the number of graphs, there are significant declines in 1983 and 1998. How graphs were typically used can be seen by examining a representative sample.

A representative sample of a graph from the AJCM can be seen in figure 6.2. Figure 6.2 represents the anti-depressant effects of gastrodia elata bl. on forced-swimming test rats. The graph shows that the rats, which were given herbal treatment, tried to swim, and therefore survive for longer than those treated with a placebo or a dosage of Prozac (Chen, “Antidepressant,” 95). This graph supports the hypothesis that
“GE” has anti-depressive qualities in rats. Note that this graph has labels on both the x and y axis and a label with title under the graph.

![Graphs in the AJCM](image)

**Figure 6.1: Graphs in the AJCM Over Time**

![Sample Graph](image)

**Figure 6.2: Sample Graph from the AJCM (2008)**

**Tables:**

As seen in table 6.1 (page 118), there were 27 tables in 1973. Fifteen years later, there were 46, and after thirty years there were 50 tables. The greatest number of tables in the sample was in 1993, with 65 tables. As seen in the figure 6.3 “Tables in the AJCM Over Time,” there is a trend toward an increase in the number of tables up through 1993. After 1993, there is a steady decline in the number of tables, down to 27.
There is an overall net gain of one table when the 1973 data is compared to the 2008 data. See table 6.2 below for a representative table from the *AJCM*. This table uses horizontal lines, but uses spaces to divide the column of data rather than using vertical lines. This is typical throughout the last fifteen years of the *AJCM*. Note that this table in the *AJCM* has a label on top of the table; this is characteristic of the table typical throughout the *AJCM*. This particular table compares “headache severity score” with “days with headache and “medication used.” The point of this particular table is to understand that there is a significant relief from headache when using a particular TCM practice called “wet cupping,” where glass cups are suctioned onto the body. TCM practitioners believe that these treatments are another way to move the chi around the body and therefore relieve the pain of tension headache.

![Tables in the AJCM](image)

**Figure 6.3: Tables in the AJCM Over Time**
Table 6.2: Sample Table from the AJCM (2008)

Drawings:

There are many different types of images that are considered drawings in this study. These drawings range from body parts to hand-drawn maps of areas of China. The highest number of drawings occurred in 1973 with 17 drawings, and their numbers dwindle to only 1 in 2008, as seen in table 6.1 (see page 117). As seen in figure 6.4, there is a dramatic drop in the number of hand drawings in the AJCM. This can be attributed to the journal becoming more experimentally and scientifically oriented. As discussed above by Gross et al., hand drawings are not the visuals of experimental science—graphs and tables are a part of twentieth century scientific documentation (200). As seen in table 6.1, while there is a decrease in hand drawings (many of which serve a cultural and educational purpose), there is an increase in the number of graphs. To provide some sense of the variety of drawings that appeared during the first fifteen year period of the AJCM, I have included a number of the kinds of drawings readers were likely to see.
Figure 6.5: Anatomical Drawing of a Pig in the AJCM (1973)

Figure 6.4: Drawings in the AJCM Over Time

For example, figure 6.5 is an anatomical drawing of a pig, complete with bones and teeth, along with the outline of the animal. The drawing’s purpose is to inform the viewer about the acupuncture points in the animal. These points are labeled with Chinese characters as well as with numbers. This is a typical acupuncture guide found in the AJCM. Other, similar examples include horses as well as people.
Figure 6.6: Diagram of the Five Elements in TCM in the *AJCM* (1973)

Figure 6.6 (1973), above is, a drawn diagram that aims to show how the five elements, yin and yang, and the ten major organs interact with each other. This diagram illustrates, for instance, that both the stomach and the spleen are “earth organs” and that the small intestine and heart are “fire organs.” The basics of TCM are all here, including the yin circle of organs (liver, heart, spleen, lung, kidney) and the yang circle of organs (gallbladder, small intestine, stomach, large intestine, bladder). Not only does this drawing work as a teaching tool for the basics of TCM, this figure also represents the thought and philosophy of the *AJCM* in its early years. During this time, there were significant attempts to “spread the word” of TCM to western medical doctors. Also during this time, there was much attention paid to the philosophy, history, and practice of TCM in the *AJCM*. By 2008, articles of this nature did not exist in the *AJCM*. 
Mentions of the five elements and other philosophies that are part of TCM in 1973 are no longer a part of the *AJCM* in 2008.

![Ginseng Drawing](image)

**Figure 6.7: Ginseng Drawing *AJCM* (1973)**

Figure 6.7 (1973), above, is a drawing of a species of ginseng with its name written in Chinese figures above it. The drawing is very clear and could be used in order to educate readers on the appearance of the plant. The drawing is included in an article on ginseng and its function as a medicine, and serves as a decoration as well. The inclusion of a hand drawing of an herbal remedy is representative of the epistemology of the *AJCM* in 1973, which was aimed at educating those not familiar with TCM concepts, or in this case, TCM plants. The hand drawing is something that can only be found in large numbers at the very beginning of the *AJCM*. The use of Chinese characters, depicted to look as if they were painted with a calligraphic brush, is part of a journal that has a focus on culture and the past, not science. There is only 1 hand drawing in 2008, whereas there are 17 in 1973.
Figure 6.8: Ear with Acupuncture Points Marked on Loci in *AJCM* (1973)

Above is figure 6.8, another example of a hand drawing from early in the life of the *AJCM*. The figure is a drawing of a human ear. Not only does it show the anatomy of the ear, but it also shows major acupuncture points on the ear. In TCM, there is a belief that certain parts of the body have connections to the entire body presented on them. This drawing is an example of that. Instead of showing points on the ear and words only, they have pictures of the various affected parts. For example, at the center of the lobe of the ear, there is a picture of an eye at the point representing where the needle should be placed to treat an eye condition. This drawing is both artistic and educational. Clearly, this is a guide for people learning about acupuncture on a basic level. This drawing reflects the epistemology of the writers and editors of the *AJCM* in 1973. During this time, there was a focus on teaching westerners about TCM, and
therefore, a belief by the writers that the place of this journal was educational. The journal functioned as a way to expose the western doctors and lay people to TCM, for the purposes of integration. At this time, the journal worked to educated westerners about TCM philosophy and practices and convince them to adopt (rather than adapt) TCM. Drawings like this one are rare in 2008. Most articles in the later issues of the *AJCM* are focused on showing how TCM cures can be “proven” with science; there is no education about the history or philosophy of the field in the journal. The diagram of the ear in figure 6.8 is a powerful image because it reveals (as discussed above) a number of TCM concepts that have not come to be accepted by modern science.

**Figure 6.9: Drawing in *AJCM* of Provinces and Major Cities in China (1973)**

Above in figure 6.9, a map is depicted of the provinces and major cities in China. This map was placed in the journal with the intent of educating Westerners about various parts and geographical characteristics of China. I have included it in this chapter over other drawings because it shows that the writers and editors of this journal aimed their discourse at the non-Eastern, non-TCM community (while this is not reflected directly in the data, this is my interpretation). There is a clear attempt to
educate the readers of this journal in some geographical basics of China--not something TCM practitioners or researchers would need to be educated about. This map is part of an article explaining the major sources of certain TCM plants, where they are located in China and the areas where these various medicinal herbs have been used and a medicinal knowledge established. The numbers on the provinces correspond to a list of their names in the journal. Articles, like the one above show the lengths these writers and editors were willing to go to inform readers about the East in a very elementary way. These cultural lessons predominate in the *AJCM* in 1973, but this focus on western education of TCM and the East was something that faded quickly. Knowing more about Chinese geography might make the concept of China a little less nebulous and might lead a Westerner to want to learn more about this mysterious land. Although in 1973 China, was shrouded in mystery, the editors soon realized that giving these bits of cultural information was not a quick or effective way to get TCM into mainstream medicine. By the 1990s, it is clear that the editors and writers have given up on writing articles with drawings like figure 6.9, which try to bring TCM to Western medicine. Instead, they shift their focus to putting TCM in the language of modern science (this is my inference based on the data, not data itself).

**Computer Aided Drawings:**

Computer aided models generally, but specifically computer aided drawings of molecules, did not begin to occur in the *AJCM* until 1988, as seen in table 6.1. Figure 6.10 presents an example of a typical computer-aided drawing (CAD) of a molecular structure. Here, it is clear that this diagram of a molecule was produced via a computer program designed to draw molecules for professional publications. The figure was
taken from a 2003 herbal article in the *AJCM*. This depicts the molecule that was found to be the medicinally active part of a TCM plant.

![Molecule](image)

**Figure 6.10: Computer-Aided Drawing of a Molecule**

CAD drawings increased over time, from none in 1973 to almost 10 in 2003. This trend toward more molecular CAD visuals can be seen in figure 6.11 below. CAD visuals were first present in the sample in 1988. This seems to be for two reasons, it wasn’t until the late 1980s that the *AJCM* started doing scientific work at the molecular level, and no other CAD visuals of equipment or diagrams were noted before 1988. This is indicative of how the *AJCM* turned from a cultural journal, aimed at bringing TCM to the masses in America, to a journal aimed at science during the 1980s. Publishing molecular work in the *AJCM* would indicate a serious commitment to bench science by the writers and editors of the journal; it took until the 1980s for an orientation toward science to begin to happen. Also, CAD software wasn’t widely available until the late 1980s and 1990s. An individual author or practictioner would not normally have had access to CAD software; much more attention to technology and sophisticated research, science would be required to make CAD software prevalent in the *AJCM*. This drawing was selected because it demonstrates a scientific turn in the
At the same time that there is an increase in CAD visuals, there is a decrease in the hand drawings and pictures, as seen in table 6.1 (page 118).

**Figure 6.11: Pictures of CAD drawings in the AJCM Over Time**

**Pictures:**

There was a significant presence of photos of people in everyday life in the AJCM in 1973, but by 2008 there are none. The drop is dramatic. In the second year sampled (1978), there are no photographs. Since that time, photographs never came back into the articles sampled in the AJCM in any great number, as seen below in figure 6.12 and in table 6.1 (page 118). This dramatic drop in the number of pictures shows that there was a dramatic shift away from the use of pictures between 1973 and 2008. Figures 6.13 and 6.14 are examples of two of the photos taken from the 1973 articles.
Figure 6.12: Photographs in the AJCM Over Time

Figure 6.13: Photo of Man Receiving Acupuncture in an Office (1973)
Figure 6.14: Girl Receiving Acupuncture at a Modern Hospital (1973)

The pictures above are two pictures of patients being treated with acupuncture by TCM doctors in China. These pictures are representative of those found in the *AJCM*. Figure 6.14 seems to capture the use of TCM in a hospital setting, while figure 6.13 is a picture taken at a private practice. Figure 6.14 was a part of a collection of about twenty photos that are part of a photo essay in the first volume of the *AJCM*. This photo essay aimed at teaching Westerners, through pictures, about Eastern medicine. Figure 6.13 was part of an article on acupuncture. Both photos work to show readers TCM in action. Both of these pictures come out of 1970’s *AJCM* journals. These photos work to humanize TCM. The people being treated look like they could be in a hospital or private practice in New York or any other city in America. These photos give a positive and health-oriented view to this new medicine. As the pictures are taken in modern settings, they work against the perception of TCM as a folk medicine and forward the idea that this is a modern, acceptable, clean form of medicine.
Summary

Scientific visuals in the AJCM undergo their own metamorphosis, similar to visuals in Gross et al.’s book length study of Western science. The early AJCM articles are filled with drawings of body parts, pictures of patients and images of the medicinal plants that are used. By the twenty-first century, the articles are dominated by graphs and tables, and the articles are visually equivalent to those in other twenty-first century journals like Science or Lancet.

Not only does the appearance of the data change, but so does the content. In the 1970s there was a focus on the history, philosophy and spirituality of TCM. This can be seen in the kind of visual information appearing in the article. For example, there is the diagram that explains the role of the five elements and various organs in diagnosing energy disturbances in all living things, there are pictures of everyday people in a modern hospital getting an acupuncture treatment, and there is also a map of China’s cities and provinces. These visuals are included in the AJCM in order to orient Westerners to what these Eastern practices are and where they come from. By 2008, however, the journal’s visuals don’t even have Chinese characters, much less this focus on communicating ancient philosophy. Rather, the visuals are dominated by graphs and tables that represent data on the use of these medicinal plants on various study animals. Although acupuncture, as a technique, is not the focus of the journal anymore, one can see high tech instruments and readouts, which help practitioners find the “correct” points. The visual change is representative of the theoretical and content changes to the journal. Beginning in the 1990’s the AJCM becomes suggestive of a biomedical journal. This transformation can be seen in the appearance of computer-
aided drawings of molecular models, the increase in graphs and the continued presence of tables in the AJCM. The epistemology of the publication changes from a cultural and philosophical journal, to a scientific journal. The shift in the type of visuals throughout the AJCM reflects a philosophical change in the journal.

While chapter six focused on visuals, specifically how visuals in the AJCM came to resemble visuals in late twentieth-century scientific articles, chapter seven turns away from the AJCM, and focuses on interviews I conducted with TCM practitioners and researchers. This very different form of analysis will examine whether the cultural shifts observed in the AJCM are occurring in the practice of the TCM field.
Chapter Seven

Voices from the Field: Interviews with TCM Practitioners and Researchers
This chapter presents information from interviews with practitioners and researchers of Traditional Chinese Medicine (TCM). This qualitative research examines the attitudes of selected practitioners of TCM in order to assess what perspectives are held by TCM researchers and practitioners in a country where the major medical modality is biomedicine. The hope is that these interviews will complement the analysis of the body of TCM research published in the AJCM, thus providing a more complete picture of TCM in America. After giving a brief description of each interviewee’s training and background, I will describe interviewing methods (i.e.: questions, participants, data collection, and theoretical framework), and then, quote and analyze selected responses of each of the interviewees.

**QUESTIONS**

Interviewees were asked four major questions:

1. What brought you into the field of TCM?
2. What is your perspective on biomedicine?
3. What is your perspective on the place of TCM in America?
4. What changes (if any) do you see in TCM as it has moved into greater prominence in the Western world?

**INTERVIEWEES**

For this study, I interviewed ten people. Of these ten people, there were eight clinicians and two researchers; two women and eight men; four of the subjects were Asian and from mainland China, and four were Caucasian and from the United States. These ten people were given pseudonyms in order to ensure their confidentiality.
Clinicians are defined as those who either treat clients for a variety of disorders from psychiatric to orthopedic, or those who teach students preparing to become licensed acupuncturists. The clinicians interviewed were all working in a large Midwestern city at the time of the interview. The clinicians included licensed acupuncturists, oriental medical doctors, or medical doctors; all had at least 200 hours of experience.

Researchers are defined as those who investigate how TCM practices can be explained though science. These researchers are part of an institute, focused on TCM, at a large Midwestern university.

**PROCEDURES**

Eight clinicians were randomly chosen from those listed in the local phone directory, listed under “acupuncturists” or “oriental medical doctor.” Contact was first established by phone. Interview dates were set, along with time and location at which the interview would take place. The interviews occurred between November 2008 and May of 2009. Interviews were conducted face to face, and lasted approximately thirty minutes. The interviewees were asked basic questions about their background and then specific questions about their views on biomedicine and what role it does or doesn’t play in their practices. The interviews were recorded using a tape recorder, and the tapes were transcribed by a third party. The transcripts were then coded.

Two researchers were interviewed. The first of these two researchers was chosen because he was the editor of the *American Journal of Chinese Medicine (AJCM)* at the time of the research. The editor then selected a second researcher to be interviewed based on English language competency and experience with the *AJCM*. Both researchers had been published in the *AJCM*. These interviews occurred in May.
2009. The interviews were conducted by phone; each lasted approximately thirty minutes. The researchers were asked about their background and then specific questions aimed at determining their TCM beliefs and the direction that they perceived that TCM research, and therefore, the field was moving. The interviews were not recorded because of recorder malfunction. In the absence of a recorder I took notes by hand. When necessary, in order to clarify the interview, questions were sent by email to the two researchers. For more specifics on interview method and methodology, see chapter two.

**INTERVIEWS**

**Interviews with Practitioners**

I begin my description of each interview with a brief, quotation by the respondent that is important thematically to the rest of the interview. I then present the gist of what each respondent told me about their views on TCM and how those views changed over time. My aim is to present their views on the changing world of TCM, and I hope to do this through my own descriptions as well as direct quotations from the interviews.

**Robert:** “My point is that we need a super-holism that includes Western medicine, includes Chinese medicine—Chinese medicine allows for such a holistic view of health”

Robert has been a licensed and practicing acupuncturist for the last thirteen years. He was trained in Minnesota at a school that eventually merged with others to become the Northwestern Health Sciences University. He came to the profession after
being a shiatsu massage therapist. He runs his own TCM practice, in which he is currently specializing in acupuncture for macular degeneration.

Robert maintained throughout the interview that biomedicine and TCM (and other folk medicines) should not be divided; he thinks that there should be a medical system that includes both. He maintains that TCM is valuable, but “there is equally a risk if we pretend the modern world doesn’t exist, that modern medicine has nothing to offer us.” He uses the example of acute emergency medicine, that “Western medicine seems to do more good in the short term,” while TCM is especially effective on long-term problems such as lupus or bone de-ossification. He explained that TCM, for example, isn’t going to be able to fix an arm with a compound fracture.

Robert explains that biomedicine strives to “understand things by tearing down into smaller and smaller pieces, and in the process of doing this, if we are trying to attempt to understand life, we tear it down to non-living pieces.” “[Western medicine] has to make life not alive to understand it. That is a real problem.” In addition to TCM being a more holistic medicine and Western medicine being very reductionist, Robert adds that “Chinese medicine is vitalist,” which means that those who believe in TCM believe there is an innate difference between what is living and non-living. Robert explained that the vitalism of TCM conflicts with science and Western medicine. Robert maintained that until this difference is resolved, there will be significant philosophical incompatibilities between biomedicine and TCM. Robert explained that the philosophical differences that divide biomedicine and TCM should be resolved through a “super-holism,” where “medicine would encompass both and would have a holistic viewpoint that would expand to surround and encompass the
ideas of Chinese and western medicine.” With this holistic view, there would be “a spectrum of care,” in which medicine would work on treating the entire person, including their “energy” as well as their anatomy.

Current work to “prove” that TCM is effective, using the scientific method, is seriously flawed, according to Robert. “All the research that has been done tried to turn the herbs into drugs, tried to put randomized people and stick them into big groups, and somewhat create some artificial commonality between them, and you end up testing something that is not Chinese medicine. That is a risk of mixing East and West.”

Robert explains that the mixing of TCM and Western medicine without real understanding damages the relationship between the medical paradigms to an extent that could be fatal. For example, when Western doctors start mixing herbs with prescription drugs, there is a high likelihood of life-threatening harm being done to the patient because chemical interactions between the drugs and the herbs are possible, sometimes likely.

Finally, Robert states that, “We look at things holistically; we don’t break them down.” He fears that, soon enough, TCM will be broken down by Western medicine, leaving a path of destruction through TCM and an end to future collaboration between these different medical perspectives.

James: “[To first year medical students] I would say, ‘Look, this is not some spiritual romantic art. This is a science, but it is a science that requires different testing methods.’ What I would not be telling them is that we need to bring the spirit method into healing.”
James has been a practitioner of oriental medicine for twenty-two years. He received his masters in oriental medicine from the Midwest Center for the Study of Oriental Medicine ten years ago. During this time, he has had several practices, before beginning to teach acupuncture at the Northwestern School of Health Sciences. He is currently a professor, teaching at Northwestern Health Science University.

James rejects the belief of some of the other interviewees who claimed a spiritual quality to TCM and linked this to religious belief. James, in contrast, sees TCM as another form of medicine, not a spiritual belief. “Energy” for James, was an aspect of the body, like an organ, not a spiritual force.

Not only does this spirituality, associated with TCM, mislead both patients and physicians, according to James, but it also creates large problems for the practice as a whole. James explains that this form of medicine, like any other, “should be a secular art, and medicine should resist any attempt on the part of religion to interfere with it.” He goes on to say, “My fear is that we could open this Pandora’s Box by saying ‘mind, body, spirit’ that the devil is going to jump on. Seriously, we have opened a Pandora’s Box, and I already see the problems with it.” One of these problems is, according to James, that if TCM is associated with spirituality, it is unlikely that it will gain credibility in the scientific community.

James further explains that those who practice “classical Chinese medicine” (meaning Chinese medicine before it was standardized in China, becoming TCM, during the early nineteenth century) are leaders in this movement to make Chinese medicine spiritual. These people, within the TCM community, want to pull together TCM and Buddhism in such a way that they will not be able to be separated. If they are
successful, medicine will take a “back seat” to the religious and spiritual aspects of the field. In addition, James insisted that those who trace Chinese medical philosophy to Buddhism are mistaken; the philosophy of TCM dates back to before the time of Buddha, James claimed.

Although James clearly wants to sever TCM from any spiritual or religious ties, he does think that nature is “the healer of man.” He specifically explained that if a person is unexplainably ill, that person should look at the plants outside her or his house. James believes that “Nature is there, kind of pushing toward us,” and if one were to look outside, he or she would find plants that can be prepared to treat the illness. James stated that this belief that nature is the “healer of man” is something believed by healers in many cultures, including some Native Americans. In addition to this belief in the connection of man to nature, he also explained that there is a strong foundation of astrology that is attached to Chinese medicine.

**John: “What Chinese medicine should do is let Western medicine help you to understand the problem better, to help you treat people safe, no harm”**

John has been practicing Chinese medicine in the United States for the last twelve years. Prior to this, he was trained as both a TCM doctor and as an MD in China. He worked in integrated medicine for 9 years before coming to the United States. While he maintains his own practice, he also teaches. Most recently, he taught a set of courses on TCM for medical school students at Harvard Medical School.

John stressed, during the interview, that he was very busy both as a TCM doctor and speaker/teacher. His focus is on getting people in the United States to have access
to integrated medicine. He works on this through advocacy programs for integrated medicine and as a speaker at national and international conferences on bringing holistic medicine and biomedicine together. He believes that there is a place for both TCM and Western medicine in healthcare in the United States and elsewhere. While his experience is with TCM and biomedicine, he is open to other forms of folk medicine being included in everyday medical practice in the United States.

John explained that Western biomedical research on TCM is not meant to take away from the benefits that he clearly believes TCM can bring to patients. Instead, he hopes that his research will explain TCM to Westerners in a way that they can understand—biomedicine. Ultimately, he believes that ongoing work to “prove” how TCM works will lead to a greater understanding of how the body functions. He sees the coming together of TCM and biomedicine as a way to “help treat people safe” and have better overall outcomes for clients.

Even with his knowledge of and work in Western medicine, John maintained that, although he believes in biomedicine’s “uncloaking” TCM, this uncloaking should not be taken too far. Specifically, he stated that Western scientists shouldn’t “go crazy” by trying to turn TCM into a Westernized medicine. He wants practitioners from all backgrounds to “keep an open mind” about other forms of medicine. He stated that “with Chinese medicine energy is essential” and, should not be suppressed, but accepted as part of TCM and, in the larger view, as part of all forms of medicine.

At the end of our interview, he reminded me that there are some aspects of TCM that have to be accepted in order for Chinese medicine to be understood. As he said earlier, “qi” is something Western doctors will have to find a way to accept, as well as
the ways that TCM is taught and understood. He specifically mentioned “that images are very important” in Chinese medicine, and Western medical doctors will have to find ways to understand and appreciate them if there is to be a greater understanding among those practicing all forms of medicine.

**Mark:** “I think it is to the benefit of the patient and I think a benefit to society that the diverse medical perspectives be at least in communication with each other, with some understanding of what each other is doing, and perhaps in active collaboration.”

Mark is a licensed acupuncturist and nationally recognized herbalist. He has been practicing TCM for over 30 years and is part of an alternative medical practice in the Twin Cities. He has taught TCM courses at several colleges, the most recent being Northwestern Health Science University and the University of Minnesota. Recently, he has spoken about TCM to Western medical doctors, researchers, and politicians affiliated with the National Institutes for Health (hereafter NIH).

Throughout the interview, Mark made it clear that the division, and some would say strife, between TCM and Western medicine (or biomedicine) comes down to the economy and politics of “doing” medicine and medical research. He stated that, when it comes to medicine, there is an “economic monopoly of sorts, where we have one medical perspective, biomedicine, as seen as being the arbiter of what is safe and effective.” Since only one perspective is embraced in the modern world, biomedicine is the gatekeeper of all medicine. Mark is curious as to what elements from TCM will eventually be integrated into biomedicine, and what will be left behind, as TCM is
filtered through the biomedical system, forced through the biomedical “gate.” He wonders what “these systems of medicine will look like once they are through the biomedical gate.” Mark is nervous to see if the TCM that he believes in and was trained in will look anything like it did when he was trained thirty years ago. Will the various branches of TCM be “biomedicalized to the point where whatever advantages TCM has had with an alternative perspective will be lost?”

As Mark sees it, alternative vs. Western medicine is not the only problem; the bigger problem is the health care delivery system, itself, in the United States. Mark expressed the view that the health care system in the United States is “not a sustainable economic model” and forwarded the notion that the current medical system “has undermined the very spirit of medicine across the board, not just alternative medicine.” He fears that now “those elements that create ‘illness’ in the current health care delivery system are infecting alternative medicine.”

According to Mark, the largest problem alternative medicine faces today is that it must become “biomedicalized” to one degree or another in order to be easily accessed by patients. For example, “If an alternative medical practitioner wants access to that market share, they have to be willing to change what they do to align themselves with the biomedical perspective in order to get through that gate.” Mark stated, “It seems a lot of practitioners are willing to give up or lay to one side their philosophical differences just to gain that economic advantage.” Mark also stated, “I do think that laying aside the philosophical issue is a dangerous thing to do. We will pay for it later.” In this way, Mark made it clear that, not only is TCM changing because of forces
outside of the discipline, but practitioners within the discipline are causing TCM to become more biomedical, because of their own choices about how they practice.

One example of how TCM practitioners are caught between the language of their practices and the demands that are placed on them by the fiscal constraints of the insurance system in the US is that they must use a codified diagnosis (of diseases and disorders) that fits the insurer’s code category for reimbursement and thereby requires a standardized treatment for each diagnosis. However, from a TCM perspective, the problem is not the flu, for instance, but some energy imbalance in that specific person. Each person would be treated differently in TCM based on their symptoms and their energy. So, not everyone who has “the flu” would get the same herbs. The herbs given would be specific to each person, how their symptoms were manifesting, and what energy imbalance they had. Currently, to be treated under insurance providers, this system of alternative medicine has to be radically adapted.

Mark argues that the existence of non-Western medicine has a lot to offer the world. The greatest strength that non-Western medicine brings to the West is a “different point of view.” Mark notes that this different point of view is being lost in everyday practice of TCM in the United States, not only because of the health care delivery system in place, but also in the training of TCM doctors. Mark maintained that the schools that teach TCM have responded to being surrounded by biomedicine by teaching more of it in their schools. According to Mark, schools are not as focused on theory and philosophy, but more than ever before on Western anatomy, for example. The change in the philosophy of TCM toward that of biomedicine is the most daunting fact facing the field, according to Mark.
Ralph: “If you call medicine Chinese medicine, you need to give [scientists] an answer for the scientific community because there is a scientific curiosity there. They are asking why it works, how it works.”

Ralph is a professor of Chinese medicine at the American Academy of Acupuncture and Oriental Medicine. He has been teaching there for 12 years. He has been part of a team publishing books on the bridges between Chinese medicine, Western medicine, and TCM research. He has written over 75 books, all published in Chinese, on different TCM herbs.

During the interview, Ralph was eager to explain that TCM can benefit greatly from scientific research. His focus is on how scientific research on TCM can work to bring the two fields together and on the sheer number of scientific discoveries that can be made with the help of modern science. Ralph explained that “For both Chinese herbs and acupuncture now there is a strong interest in scientific research. They [scientists] are using scientific research methodology, they apply them to Chinese medicine, to acupuncture. They [Scientists] want to know how it works.” Ralph explained that scientists are just simply curious and that “it is their job” to question fields like TCM.

Ralph explained during the interview that “it is our [TCM practitioners’ and teachers’] responsibility to provide some good information to the community. As practitioners, we know it works, but also we want better communication with patients, with the medical community.” Ralph maintained that it is the place of the TCM community to describe and help the biomedical community understand their medical
field. He explained that “most of the time [the scientific community] doesn’t understand it, you know, chi and yang, but they understand the ten card [numbers]. They understand the meter, the endorphins, serotonins. If you use that language to communicate, that is a good thing.” Ralph explained that understanding TCM from a scientific perspective is a goal that is in the best interests of both TCM and biomedicine. He is clearly excited about the possibility of having scientific answers to all of the questions posed by TCM. The future of TCM scientific research looks promising for Ralph, and he asserted that such research should be a goal for the TCM community.

Ralph explained that in addition to his teaching and practice, he does some research, noting that he is part of a team working to demystify acupuncture. Ralph stated, “We [are] jointly working with [a] team in Beijing, and we are just using functional MRI to observe the brain activities after you stimulate certain points. We found that is a very interesting area. Every research, every project, we gain a lot from insight into acupuncture research. [We are] understanding acupuncture in a very different way.” He is proud of his place in this research and believes that research like this is bridging the gap in TCM between scientific research and the practice of the medicine. He stated that “The researchers are doing [this] for their interest, and the practitioner is moving in the direction of research. We are seeing them merge together.”

Even though his excitement for the westernization of TCM through scientific research is clear, Ralph realizes that the “merging” will be hard. Ralph explained that “When you do some scientific research, utilize the tools, the knowledge accumulated in science, in the biomedicine, and the collision of Chinese medicine, and if you want
everything to fit into the biomedicine model, that is not going to work. So, maybe there is some conflict there [between Western and Eastern medicine].” Additionally, Ralph explained that the two disciplines don’t “speak the same language,” and that, in itself, is a problem. During the interview, he noted that in science “everything is about DNA, and molecules, chemical structures, pure chemical structures. Definitely, Chinese medicine does not fit that well.” Even with these barriers, Ralph is optimistic that, in the future, the understanding of TCM, gained from scientific research, will “greatly” benefit TCM patients, teachers, and practitioners.

Susan: “I honestly don’t know how it [acupuncture] all works. I have gotten so I truly believe it [acupuncture] unblocks some channels. I have no understanding about it, but I know the points that work for certain things do not correlate with what I have learned in medical school, what is connected to what, but I am okay with that.”

Susan is a Western medical doctor who has been practicing medicine since 1984. Susan was trained at Michigan State University, where students have the option of being trained to be acupuncturists as well as medical doctors. She has practiced acupuncture with Western medicine on and off since finishing medical school. Susan has had experience as a general practitioner, ER doctor, and is now working as a medical doctor for a program that specifically works with people who have eating disorders. She has been practicing both acupuncture and Western medicine during her time at this center.
Susan clearly wanted to explain to me during her interview that 1) she sees the possibility of the two medicines coming together (she sees herself as proof of that), and 2) she is unsure how TCM actually works, but she includes TCM methods in her practice because she has seen, and knows, that TCM therapies help patients. Susan found, early in her medical career, that she has had the most effect on helping those patients with fibromyalgia. She thinks that “[acupuncture] works incredibly well for anxiety,” but she has found in her work that acupuncture doesn’t work on everything, “I really didn’t have good luck with migraines, which it is supposed to [help].” My use of acupuncture helped “a lot when someone had a migraine, but in terms of some of the really chronic migraine patients in preventing them, I didn’t have much luck.”

Susan explained that she first learned acupuncture at a two-day course for physicians fifteen years ago. She has no knowledge of herbal treatment and does not use herbs in her treatment of patients, not because she doesn’t believe they are effective, but precisely because they are effective, and she doesn’t have the appropriate training. Susan explained that she was trained to match a biomedical diagnosis with a certain set of points. Instead of determining what kind of energy pattern or deficiency a person has (what a TCM doctor would do), Susan would determine their Western medical ailment and then consult a reference text for which points help those problems.

Susan has been doing acupuncture for over fifteen years, but she began her work in alternative medicine while working on the Blackfoot Indian Reservation. She worked as a doctor on the reservation alongside traditional Native American healers. Many of her patients saw healing practices as a “both and” situation. It was here that Susan had patients who went to both the native healers and her clinic. Susan,
ultimately, encouraged the sick on the reservation to seek both biomedical and native help for their illnesses. Even though her time on the reservation was decades ago, the experience reinforced her belief in the need for a multi-pronged approach to treating illness. Susan explained that “I tell people, try different things. These other countries have so much knowledge about herbal and different things, and you have to be open to that.”

Susan explained that, from her experiences—in medical school, on the reservation, and now practicing at the eating disorders clinic—she has found that Westerners aren’t “aware of the spiritual effects of medicine.” It is this awareness that biomedicine doesn’t consider a part of science or medicine. She thinks having the spiritual awareness in healing “is really important.”

While Susan realizes that Western medicine is more compartmentalized than Eastern medicine, and that Eastern medicine gets into “the whole realm of spirit, body, mind,” she does not deny the great triumphs in medicine that have come through the system of Western medicine. Susan made it clear that “Western medicine is really good—it helps in emergency situations,” making the point that if you have a “gun shot wound, don’t see an acupuncturist, see a surgeon.”

Finally, Susan addressed the biomedical studies that are being done on acupuncture. She stated that these studies are required, “for some Western medical practitioners to accept acupuncture.” “I am not against those studies, but I am not waiting for each thing to be proven either. Some people are, and [these biomedical studies] have changed their minds.”
Nancy: “We all have our place in the work, and I think that we should stay where our vocation led us to, not to mix. I am a massage therapist, and now I am incorporating acupuncture, but that is okay, since it is all the same energetic philosophy in my book.”

Nancy is a licensed acupuncturist and earned her master’s in oriental medicine from Northwestern Health Science University. Nancy has been practicing for three years out of an office located in her home. She came to study TCM after being successfully treated by an acupuncturist after being involved in a serious car accident.

The interview with Nancy was very focused. She believes that Western medicine has a place in our society, as does Eastern medicine, but they should be kept separate. She thinks this because she sees Western medicine degrading Eastern medicine. She explained that people trying to bring together Eastern and Western medicine, are “taking the beauty of Eastern medicine away.” “It is like trying to stick a round peg into a square hole. They can walk side by side. They can both have their place. I wish they would walk side by side.”

Nancy explained some of the problems of westernizing TCM, including the fact that MDs can practice TCM without the extensive training required of licensed acupuncturists. She stated that the medical doctors “don’t have to go through the same schooling, training or national testing, and the medical board accepts them as being able to practice acupuncture. That is scary to me. That would be like me going to take a quarter’s worth of learning how to adjust spines and practice as a chiropractor.” She explained that this injustice is not only bad for patients, but it has a financial impact on
acupuncturists. This is because doctors can go through most insurance companies in order to get paid, but acupuncturists don’t have that as an option.

Nancy explained that she sees the westernization of Eastern medicine, and she thinks that, in doing this, Eastern medicine is altogether becoming lost. The respect patients have for the discipline is dropping, because the acupuncture they knew has become westernized to the point where it is no longer the field it once was. She very much believes that this westernization of TCM is unstoppable, and that neither the patients nor the doctors are going to like what comes out in the end. Just before the interview ended, she looked right into my eyes and said, “There are lots of people who want to take Eastern medicine into this Western place, and I don’t get it, I really don’t.”

Michael: “Chinese medicine is the most elegant [system], and they are getting things done differently [from Western medicine] because they have different focuses. Biomedicine’s focus is on the structure of the body. Chinese medicine focuses on the function of the body. When you look at it from that point of view, the two, although there are many times when they overlap, they also fill in each other’s holes.”

Michael is a doctor of oriental medicine, who, previous to his training in TCM, had careers as a nurse and an emergency medical service worker. He has been working in his own clinic for the last six years. He was trained at Northwestern Health Science University. Uniquely, he has built a base of clients who pay for treatment through their various insurance companies.
One of the interesting points Michael makes in the interview is that TCM can be treated in a biomedical way. According to Michael, when we think of biomedicalization, “we often think of hospitals, pills, and surgery . . .” but instead, Michael shows that the process by which one treats the patient with acupuncture (for example) can also be seen as biomedical. He explained that “Western medicine is very good at treating symptoms. So, the treatment in biomedicine for a headache is pain pills. In Chinese medicine, if you come in with a headache, I can probably kick your headache with a needle in five seconds, which is pretty impressive. But if I send you out the door, say have a good day, pain free, your headache will come back, because I didn’t treat the root cause.” By treating only the symptom and not the root cause, TCM can become like biomedicine.

According to Michael, another way that biomedicine is influencing TCM is that health management organizations (HMOs) demand a Western medical diagnosis in order for a procedure to be covered. In selecting a Western medical diagnosis, the HMOs are dismissing the TCM forms of diagnosis and the three thousand years of medicine that has been practiced in the East, according to Michael. Complaints must match a Western diagnosis, and it is only a matter of time until TCM doctors will be thinking and ordering treatment through Western diagnosis. Michael predicted that diagnoses linked to the flow of chi will no longer be made; instead, patients will take herbs and have acupuncture done on them for a biomedical diagnosis. To Michael, this kind of move toward biomedicine is a greater threat than other trends (such as biomedical research).
One of the major efforts in TCM (especially in Japan) is to isolate the “active ingredients” in TCM plants. Michael explained that, time and time again, biomedical researchers come to the conclusion that “when you take apart chemical constituents of a plant, the sum is far less than the whole; the sum is far less than the parts.” A recent example is the attempt to take hypericin out of St. John’s wort, in order to design a new anti-depressant drug. What the researchers found was that the many parts of the plant, combined, is what gives the drug its anti-depressant effects. The importance of this synergy is also seen in the importance of the combinations of herbs mixed together under different conditions (heated, boiled, burnt). According to Michael, when researchers try to pull out the chemicals that science says “make [the herbal mix] work,” they find themselves with extracts that have very little (if any) effect in laboratory testing.

Michael explained that his experience in Western medicine has solidified his perception that biomedicine “is the predominant model of medicine in this country . . . it is the most powerful medical model on the planet; no one disputes that.” That being said, he noted that biomedicine does not solve all problems, especially those medical problems that are long-term. Michael forwarded the idea that TCM and other alternative medicines should be used when biomedicine does not meet the needs of the patient. As quoted at the beginning of this section on Michael’s interview, TCM can fill in the “holes” in biomedicine and vice versa. Michael used the example of someone who has a clear break in their leg—they should always first go to an orthopedist in order to have the bone set, but TCM treatment works well to help patients recover (pain, swelling, range of motion) faster, more often than biomedical treatment [does]. For
Michael, having good health care does not mean selecting biomedicine or TCM, but using them both in the areas in which each is the strongest.

Interviews with Researchers

Jack: “I believe in the yin and yang”

Jack is the editor of the American Journal of Chinese Medicine and a researcher at a Midwest “research-one” university, where he is an expert on herbal medicine, a subject on which he has published over 100 articles. He is originally from China, where he received his medical degree. He earned his PhD in physiology in the United States, followed by a fellowship in clinical pharmacology.

In his phone interview, Jack discussed his credentials and his experience of growing up in China and coming up through the medical system there. In China, you can train (as he did) to be both an MD and a doctor of oriental medicine. Since coming to the United States, his focus has been on clinical pharmacology and its relationship to herbs used in TCM. He spoke of the many journal articles he has published, as well as those published in the AJCM under his leadership.

During the phone interview, Jack made it clear that, even though he sees himself chiefly as a scientist, he believes in TCM. He believes that there is an energy that flows through the body that can become disrupted in a number of ways and can be put back into balance with the help of herbal treatments and acupuncture. As a believer in TCM, Jack is enthralled with how the “chi” works in bodies, and he wants to understand how this ancient form of medicine, and perspective on the world, works through the lens of biomedicine. While most of the people interviewed for this study do not believe that
Western science and TCM can come together, this researcher on the forefront of TCM research does.

In the information about himself [that] he sent me through email, Jack explained that he is driven by the possibility of finding cures to help some of the most desperate patients. In fact, the work that he does is patient-centered and not ideology-centered. He stated that “the most important thing is to make discoveries to benefit our patients.” It is clear that Jack is able to be both a scientific researcher and also a believer in TCM.

**Thomas: “Our medical future is imbedded in TCM herbal therapies.”**

Thomas is a widely-published researcher and expert in Chinese herbal medicine. He is part of a prestigious research institute at a Midwest “research-one” university. After coming to America, he received his Ph.D. in pharmacology. He was selected for this interview by the director of the institute in which he is a faculty member.

During his phone interview, Thomas focused on the benefits of scientifically understanding how various herbal therapies work. Unveiling the mystery surrounding TCM is something that he is determined to do, not only because of his own curiosity, but also because of the potential cures for illnesses that might be discovered. He explains that, if the active chemicals involved in TCM healing can be isolated and synthesized, there will be new, powerful drugs.

He feels strongly that this kind of herbal research will bring answers to TCM questions, along with new treatments, both of which will underscore the importance of TCM to those in the biomedical community. He explained that these new cures, being developed out of TCM herbs, will not destroy the “Eastern” aspect of TCM, but will
make TCM useful and palatable to those who work and believe in biomedicine. Thomas used the example of cancer; if a drug is synthesized from a TCM plant that works to treat a certain cancer, those in the biomedical field will not be able to deny the rightful place of TCM in modern medicine.

When asked if he believed in yin, yang, and the energy philosophy that TCM is founded on, he said that he did believe in this. He did not have a problem with believing in the TCM philosophy and also doing cutting-edge research on TCM herbal medicine. This interview ended after approximately twenty minutes, because he was called away from his desk and back to his lab. Thomas is both a successful scientific researcher and believer in TCM.

CONCLUSION

From the interviews with the eight TCM practitioners and the two researchers, one thing is clear: the clash between the world of biomedicine and that of TCM has already occurred or is imminent. There is no question of whether the two fields will come together, only of how their coming together will occur, and what will be the result of this combination. There is a continuum of opinion on this issue.

At one end of the continuum are both of the researchers and one of the practitioners, who see a future promise in TCM being understood scientifically. These three interviewees believe that biomedicine will reveal the “secrets” (how does acupuncture work, why do certain herbs have medicinal value) of TCM and, with this revelation, will come a clearer picture of TCM for Westerners.

In the middle of the continuum are those like “Susan” who don’t desire a scientific answer to how TCM works. She just knows that it works and continues to use
it in her practice. This is very different from the six remaining interviewees, who think that TCM will in some way suffer or be torn apart by biomedicine. “Nancy” is clear in her belief that biomedicine and TCM should not be merged. Her reasons behind this strong belief are not clear, but she believes such a melding of the disciplines does damage to both forms of medicine. Other practitioners also see the coming together of TCM and biomedicine as a disaster, but they have very definite ideas of why bringing the fields together would be disastrous. These include: lack of variety when it comes to health care, a spiritual aspect of TCM dissolving, as well as damage to the way TCM is taught and therefore practiced. While these interviews, on this continuum, do not account for all possible thoughts concerning the movement of TCM toward biomedicine, they do represent the breadth and depth of differences in beliefs on the subject.

These interviews give a ‘voice’ to the textual analysis of the AJCM that is described in the previous chapters. A discussion of how the various AJCM analyses interrelate, and what these interviews have to add to the analysis, will be the focus of the eighth and last chapter of this study.
Chapter 8

Conclusion: A Reflection on Changes in the AJCM and the TCM Community
Introduction

This dissertation has taken the *American Journal of Chinese Medicine* as its principal object of study. It has examined the textual features of that journal over a thirty-five year period and considered them as indicative of changes in the broader field of traditional Chinese medicine—how it is perceived and practiced by those in the field. The dissertation supplemented this textual analysis with interviews of practitioners of traditional Chinese medicine to see if these practitioners’ reports of their own experience in the field support the conclusion from the textual analysis.

Specifically, this dissertation has been guided by three research questions:

1. What textual changes has the *AJCM* undergone over the last thirty-five years, and what do those changes say about the culture of TCM as a whole?

2. In what ways do changes in TCM articles in *AJCM* reflect change in traditional Chinese medicine?

3. To the extent that the *ACJM* has become more biomedicalized (more about biomedicalization shortly), what is lost or silenced?

The following summary of the various sub-topics of this study provides answers these questions from multiple perspectives.

Textual Changes to the *AJCM*

The *AJCM* has undergone distinct changes since its founding in 1973. This transformation was clear from the outset of the research for this dissertation. Just thumbing through “the stacks” of the journal I could see that the oldest articles had characteristics that were very different from the 2008 journals that “looked” like traditional, late twentieth-century scientific articles. The goal of this dissertation was to
document the specific changes and to assess their significance. Specifically, the study examined changing morphological features and lexical features; the changes in the way audiences were constructed within the text and the changes in the conventions of genre.

**Morphological Features**

In chapter three I examined the morphological features of *AJCM*. The chapter examined the introductions of the *AJCM* for features identified by John Swales as characteristic of modern scientific articles. Headings were examined to determine if they changed over time and whether these changes brought the articles in the *AJCM* into closer conformity to the practice of modern Western science. Lastly, chapter three examined the structure of each article, determining if it had clear sections for introduction, methods, results, and discussion (IMRD). The results demonstrated that the *ACJM* came to have the morphological characteristics of modern-day, scientific articles.

As seen in Chapter 3 (figure 3.1), the introductions went from disordered beginnings that didn’t adequately describe the topic of study, to all articles in the sample having traditional 3-part introductions. This change indicates an increased sophistication of the *AJCM* articles. Furthermore, the organization seen in the later articles is the same as the organization of the typical late twentieth-century scientific article as studied and described by Gross et al. (177). This trend of the number of moves increasing over time in the *AJCM* articles tracks changes in introduction in the three hundred year history which Gross et al. documents. This analysis shows that the articles in the *AJCM* eventually changed to incorporate the introduction conventions already established for the scientific article.
Similarly, the headings used to guide the reader through the text of the *AJCM* gradually conformed to the standard four part format of the modern scientific articles—Introduction, Methods, Results and Discussion (IMRD). As seen in Chapter 3 (figure 3.2), by 2008 almost all articles in the *AJCM* incorporate organizational IMRD headings. Gross et al.’s study shows that by the middle of the twentieth-century 63% of all scientific articles use IMRD headings (185). Scientist’s use of IMRD headings is a major morphological characteristic of the twentieth-century scientific research article. Again, while IMRD headings took 300 years to evolve and become adopted into the majority of scientific articles, it took the *AJCM* only thirty-five years to adopt this convention. In this way, the *AJCM*, over its lifetime, took on another characteristic of the twentieth-century scientific article. In 1973, the *AJCM* had few articles with the morphological features of the twentieth-century scientific article, but by 2008 virtually all of the articles in the *AJCM* display the same morphological features of the articles in journals like *Science* and *Nature*. I concluded that this correlation of morphological features between the scientific article and the *AJCM* was not random, but the result of the deliberate work of those contributing to the *AJCM* to make the journal appear more scientific.

**Lexical Features**

In chapter four I examined the lexical features of *AJCM*. The results showed that the linguistic register of articles in the *AJCM* increasingly conforms to the register of modern Western science, with a concomitant decline in the use of terminology associated with TCM. Specifically, the disappearance of the words “acupuncture” and “energy” in the *AJCM* can be seen in Chapter 4 (figures 4.1 and 4.2). In 1973 there
were over 100 references to “chi” but by 2008 there were only 10. This drastic change in language reflects a change of subject and in readership. No longer, are even the most basic concepts in TCM of “energy” and “chi” a significant part of the AJCM by 2008 and no longer do readers have to know what these words are and how they are used. By 2008, Westerners reading the AJCM would not be confounded by these exotic words or unusual word usage.

While there was a decrease in the number of words appearing in the TCM article by 2008, there was a dramatic increase in the number of noun-strings with a biomedical origin. In 1973 there were 110 biomedical noun-strings, but this number balloons to 1228 biomedical noun-strings in 2008. The increase in these groups of scientific words shows a shift in topic and content toward articles with more scientific content (more specifically biomedical words). The content of the sampled articles clearly moved away from TCM and simultaneously toward biomedicine.

Counting the biomedical noun-strings was initially a way to gauge the growth in the use of biomedical terms, but the use of noun phrases is also a characteristic of the scientific article. Gross et al. show that the noun-strings increase in prevalence with the passage of time over his 300 year history. The noun-string was not a part of scientific discourse until the twentieth century when there was a dramatic increase with over three times the number of noun-strings in 1995 as there were in 1900 (Gross et al. 172).

This dissertation shows that this trait of the current iteration of scientific article, developed in scientific literature, is also adopted into articles in the AJCM. This phenomenon is part of the larger conclusion that the AJCM takes on characteristics of
scientific articles over the thirty-five-year period studied. Again, this is not a coincidence, but a deliberate movement on behalf of the authors in the TCM community to have the *AJCM* be accepted by an audience that is familiar with the scientific journal.

**Genre**

The genre of the articles in the *AJCM* changes from being predominately blurred (no specific genre) in 1973 to 90% experimental scientific in 2008. As seen in Chapter 5 (figure 5.6), there is a decline in the number of philosophical, historical, and “blurred” articles, down to zero for each in 2008. The only genres of *AJCM* articles to survive into the twenty-first century are experimental scientific and the occasional scientific review articles. Both types of “review and experimental” articles are characteristic of twenty-first century scientific journals. In Gross et al.’s study, over 70% of articles in the twentieth century are experimental or review articles, whereas in the 19th century they make up only 27% of all articles sampled (189). Gross et al.’s study shows that over three hundred years there is a significant increase in the number of experimental articles. The *AJCM* also undergoes a transformation, but instead of it taking 300 years, it only takes thirty. The genre of the articles in the *AJCM* radically changes to adopt the genre already established for the scientific journal by 2008.

**Audience**

As discussed above, the content and form of articles in the *AJCM* shift dramatically toward more scientific or science-like articles between 1973 and 2008. With this shift in content, there is also appears to be a shift in readership. Early in the history of the *AJCM*, the primary intended audience was the Western public or Western medical doctors, with the goal of educating this public and professional community
about the history and traditions of Chinese medicine. The invoked, constructed audience for journal in 2008 is research scientists. This alteration in readership is demonstrated by the fact that these articles could only be fully understood and of use to those who are bench research scientists. The audience of the AJCM becomes a scientific audience, and the subject matter changes from a study and exposition of a tradition to a scientific and technical analysis of a newly-empirical discipline. While it is unclear which changed first (the content or the audience), one clearly followed the other quickly, to produce a journal with scientific content, scientific form, and a scientific audience.

AJCM Visuals

In chapter six I examined the changes in visuals in AJCM over the course of the study. The visuals in the AJCM shift from being predominately drawings and pictures, in 1973, to almost exclusively graphs and tables. A similar shift occurs in the evolution of the modern scientific article, according to Gross et al. Gross et al. traced the gradual dominance of graphs and tables in the history of the scientific article. This study traced a similar change in the AJCM.

AJCM Representing TCM Culture

The above conclusions about the AJCM support my assertion that the journal became stylistically and rhetorically more like a scientific journal over its lifetime. Some may even argue that the ACJM is today for all intents and purposes a scientific journal. I will forward the assertion that this change occurred because TCM was becoming more science-like in order to appeal to the scientific Western audience. From the audience data, it is clear that in 1973 the intended audience was Westerners with the
intention of educating Westerners in TCM and therefore spreading their discipline
Westward. However, tactics change by the 1990s, and the journal’s target audience
becomes scientists. The AJCM is a cultural document, and as the people, practices, and
beliefs of the TCM culture change, so does its cultural document.

**Lost or Silenced?**

This study of the AJCM shows how actual, established and traditional TCM
terms are absent from the journal and replaced by language and features, including
biomedical noun-strings and traditional three-part introductions. The same process of
biomedicalization is reflected in the reported perceptions of the TCM practitioner
community. My interviews with practitioners of TCM demonstrate how this
subordination of TCM to a Western scientific world-view has begun to change the
community’s diagnostic and treatment practices, as the field seeks to become more
integrated into the health care system in America. In interviews I conducted, some of
these TCM practitioners reported giving a Western diagnosis (for instance, headache)
and then selecting acupuncture points based on that diagnosis, not a TCM diagnosis (for
instance, wind heat). In TCM, acupuncture points are selected based on an entirely
different kind of diagnosis than in Western medicine. In using the terms of Western
medicine and diagnosing using Western medical philosophy and knowledge, the
practice of TCM is becoming more Western and in line with the biomedical model in
place in the West. According to the TCM practitioners interviewed, this biomedical
model also persists in TCM care because of the current health care system in America.
In order for a health insurance company to pay for an acupuncture visit, there has to be
some sort of diagnosis or illness to treat. Each Western diagnosis has a “code” with the
insurance company. The problem is that there are no TCM codes, so TCM practitioners have to select some sort of Western diagnosis before they can seek reimbursement from insurance companies. Simply, the current health care system doesn’t have a word for different “energy” movement problems, and therefore there must be a Western diagnosis in order for treatment to be recognized as legitimate.

Finally, the fading of “TC” from TCM influences the training of TCM practitioners. From my interviews it became clear that new acupuncturists are getting more coursework on biomedical anatomy and physiology and less on the history and texts on which the field of TCM is founded. Also, more experienced practitioners note that to many new TCM practitioners, the discipline is not a calling or belief system, but a job like any other. There are fewer practitioners that buy into “energy systems” and more who just know acupuncture “works,” and so they practice it. The next generations of TCM practitioners are more biomedically oriented, based on their education and motivations.

**Future Research**

The next subject of research on the genre of the TCM article, would likely include a larger study covering more journals, including those translated into English. Further research would include an examination of what is happening in the TCM journals over time in China. While my dissertation provides an interesting analysis of TCM in America, I continue to wonder what genre changes have occurred in TCM journals in China. Any study of the changes in TCM journals in China would necessarily be part of a larger study of the changes in traditional Chinese medicine, in reaction to Western influences.
Conclusion

This dissertation began with quotations from three members of the TCM community, and it will end with one of the voices of those at the heart of TCM practice. Mark, one of the practitioners interviewed, explains that he is unsure of what “[TCM] medicine will look like once they are through the biomedical gate.” Further, Mark wonders if TCM will be “biomedicalized to the point where whatever advantage TCM may have had with an alternative perspective will be lost.” The changes in the AJCM show that as TCM has become more a part of mainstream America, it has changed in order to fit within the biomedical worldview of Western medicine. Is the point of bringing alternative therapies into America that they treat patients in ways that Western medicine does not? Therefore, if an alternative therapy, like TCM, ultimately becomes biomedicalized, what advantages do consumers of medicine gain from it?
Works Cited


APPENDIX 1
Neuroprotection and Enhancement of Spatial Memory by Herbal Mixture HT008-1 in Rat Global Brain Ischemia Model

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Abstract: To investigate whether HT008-1, a prescription used in traditional Korean medicine to treat mental and physical weakness, has a neuroprotective effect on a rat model of global brain ischemia and an enhancing effect against memory deficit following ischemia. Global brain ischemia was induced for 10 min by using 4-vessel occlusion (4-VO). HT008-1 was orally administered at doses of 30, 100, and 300 mg/kg respectively twice at 0 and 90 min after ischemia. The effect on memory deficit was investigated by using a Y-maze neurobehavioral test 4 days after brain ischemia, and the effect on neuronal damage was measured 7 days after ischemia. The mechanism of action was studied immunohistochemically using an anti-CD11b (OX-42) antibody. The oral administration of HT008-1 at 100 and 300 mg/kg significantly reduced hippocampal neuronal cell death by 49% and 53%, respectively, compared with a vehicle-treated group, and also improved spatial memory function in the Y-maze test. Immunohistochemically, HT008-1 inhibited OX-42 expression in the hippocampus. The effects of HT008-1 were more pronounced than those of its individual herb components. The herbal mixture HT008-1 protects the most vulnerable CA1 pyramidal cells of the hippocampus and enhances spatial memory function against global brain ischemia; an anti-inflammatory effect may be one of the mechanisms of action.

Keywords: HT008-1; 4-Vessel Occlusion (4-VO); Brain Ischemia; Neuroprotection; Y-Maze Test.

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Introduction

HT008-1, an herbal prescription comprising the roots of Panax ginseng, Scutellaria baicalensis, Angelica sinensis, and Acanthopanax senticosus, is used in traditional Korean medicine (TKM) for the treatment of mental and physical weakness. Many pharmacological studies of the component herbs of HT008-1 have been reported having the memory-enhancing, antipyretic, antibacterial, antihypertensive, antioxidative, hypolipidemic, and anticoagulative effects (Shen et al., 1991; Sui et al., 1994; Zhang et al., 1998; Ye et al., 2001; Abebe et al., 2002; Yim et al., 2002; Shao et al., 2004; Bao et al., 2005). In particular, the component herbs have neuroprotective effects on animal stroke models attributed to antioxidative, neurotrophic factor-like, or antiinflammatory effects (Choi et al., 1996; Bu et al., 2005; Kang et al., 2005; Zhang et al., 2006). Previous clinical studies have also suggested that HT008-1 has memory-enhancing effects on healthy volunteers (Hwang, 2006; Oh, 2006).

Despite the long history of clinical use in TKM and pharmacological studies, the neuroprotective effect of HT008-1 on brain ischemia is not well established. We investigated whether HT008-1 has a neuroprotective effect on animal stroke models. We used a 4-vessel occlusion (4-VO) rat model, a widely used model introduced by Pulsinelli and Brierley (1979), to represent transient global ischemia. In 4-VO, a selective delayed neuronal damage in the CA1 region of the hippocampus and the caudate putamen were induced by a toxic biochemical cascade that occurs within several minutes or hours (Pulsinelli et al., 1982). Since deficits in cognitive functions are also induced 4 or 5 days after ischemia, this model is also included in behavioral studies (Conrad et al., 1996; Block and Schwarz, 1997; Mori et al., 2001; Yanpallewar et al., 2004).

This study was to investigate the neuroprotective effect of HT008-1 on global brain ischemia and the enhancing effect on spatial memory impairments by using a Y-maze test. The immunohistochemistry was performed by using anti-CD11b (OX-42) antibody for the mechanism study.

Materials and Methods

Sample Preparation

Each herb was identified by Dr. H. Choi at the Department of Herbal Pharmacology, College of Oriental Medicine, Kyung Hee University, Seoul, Korea. Voucher specimens (P. ginseng, HP085; S. baicalensis, HP012; A. sinensis, HP114; and A. senticosus, HP060) have been deposited at the Department of Herbal Pharmacology of the College of Oriental Medicine.

One hundred grams of the dried roots of P. ginseng, A. senticosus, A. sinensis, and S. baicalensis were extracted separately with 70% ethanol (1,000 ml) for 6 hours at 82°C in a reflux apparatus. After reflux, the samples were evaporated using a rotary evaporator and lyophilized to yield the following amounts of extract: P. ginseng (PGI; 23.5 g), A. senticosus (ASE; 7.8 g), A. sinensis (ASI; 45.6 g), and S. baicalensis (SBA;
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50.6 g). For the preparation of HT008-1 extract, a 3-step procedure was devised in order to improve the extraction yield. Initially, 3 herbs [A. senticosus (41.3 g), A. sinensis (33.0 g) and S. baikalensis (3.7 g)] were extracted together using the same method to produce 17.78 g of extract (yield, 22.8%). Secondly, P. ginseng (22.0 g) was extracted separately to produce 5.61 g of extract (yield, 25.5%). Finally, these 2 types of extracted powder were mixed. The mixed HT008-1 was then stored at -20°C until used.

HPLC Analysis and Compound Profile of HT008-1 and Each Herb

The qualitative and quantitative analyses of the compounds in HT008-1 and each herb were accomplished under the analytical conditions described below. Each dried extract was redissolved in 2 ml of high-performance liquid chromatography (HPLC)-grade methanol, filtered through a 0.45 μm membrane filter and analyzed by HPLC. HPLC with a 600 pump (Waters, Milford, MA, USA) was performed on a 250 mm x 4 mm internal diameter Hypersil™ Gold C18 column (ThermoElectron, Bellefonte, PA, USA) at a flow rate of 1 ml/min under the following conditions with solvent A (1% H3PO4) and solvent B (CH3CN): a linear gradient from 5% to 50% of solvent B in A for 60 min and standing in 70% of solvent B in A from 61 to 85 min. The isolated compounds were monitored with a photodiode array detector (926; Waters, Milford, MA, USA). In HPLC analysis, 10 compounds were identified in HT008-1: ginsenoside Rb1 and Rg1 from P. ginseng; eleutheroside B and E and chlorogenic acid from A. senticosus; ligustilide from A. sinensis; and baicaulein, baicalin, wogonin, and wogonoside from S. baikalensis. Among them, the content of one typical compound for each herb was calculated for standardization. HT008-1 was standardized to contain 0.12% ginsenoside Rb1, 0.75% baicalin, 0.04% eleutheroside E and 0.32% ligustilide. A 3-D HPLC chromatogram and the structures of the constituent compounds of HT008-1 are shown in Fig. 1.

Animals and Drug Treatment

All animal procedures were conducted according to the animal welfare guidelines issued by the Korean National Institute of Health (KNIH) and the Korean Academy of Medical Sciences. Male Wistar rats (SLC, Japan) weighing 180–200 g were used as study subjects. The rats were housed under controlled conditions (22 ± 2°C; lighting, 07:00–19:00), with food and water available ad libitum. Samples were dissolved in distilled water and administered orally twice at doses of 30, 100, and 300 mg/kg respectively at 0 and 90 min after ischemia (administration volume: 1.0 ml/kg). The rats in the vehicle-treated group were administered distilled water.

4-Vessel Occlusion Rat Model

4-VO was induced by using a method described previously (Sak et al., 2002). Briefly, the animals were anesthetized with isoflurane (initiated and maintained with 5% and 1.5%
isoflurane, respectively). After the animals were positioned in stereotaxic ear bars (Kopf; Tujunga, CA, USA), the vertebral arteries at the first cervical vertebra were coagulated by using an electrocoagulator. Both common carotid arteries (CCAs) were then isolated via a ventral, midline neck incision. All wounds were closed with surgical clips, and the rats were allowed to recover from anesthesia. On the following day, 4-VO ischemia was induced through CCA occlusion by applying aneurysm clips for 10 min. In order to minimize the variability among animals, the following criteria were strictly applied for the 10 min ischemic period and the 20 ± 5 min postsischemic coma (loss of righting reflex and bilateral pupil dilation). After 10 min of 4-VO, the aneurysm clips around the CCA were removed, and the neck wound was closed with surgical clips. Body temperature was monitored and maintained at 37°C with a heating blanket (Homeothermic Blanket Control Unit; Harvard Apparatus, Edenbridge, UK) for 6 hours after ischemia. The sham-operated group underwent the same surgical procedures, except that the CCAs were not occluded.

Y-Maze Test

A Y-maze test was performed 4 days after ischemia using the protocol described by Mori et al. (2001), with a slight modification. Spontaneous alternation behavior in the Y-maze was assessed as a measure of short-term spatial memory. The maze was constructed with
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wood painted black, and each arm was 40 cm long, 20 cm high and 10 cm wide. The rats were placed in the Y-maze for 8 min, 4 days after brain ischemia. Entry into an arm was defined as when the hind paws of the rats were completely within the arm. Spontaneous alternation was defined as rats entering all 3 arms in the overlapping triplet sets. The percentage of alternation was calculated as \([\text{successive triplet sets/total number of arm entries} - 2]) \times 100.

**Histology**

Seven days after ischemia, the animals were anesthetized, and their brains were fixed with 4% paraformaldehyde (PFA) after transcardial wash-out with heparinized 5% sodium nitrite saline. The fixed brains were cut into 30 μm sections on a sliding microtome (HM440; Carl Zeiss, Heidelberg, Germany) and the sections, stained with cresyl violet. Neuronal cell density was measured by counting viable cells in a total of 6 frames (1.0 mm × 1.0 mm) of the left and right CA1 regions of 3 coronal sections (approximately +3.3, 3.5, and 3.7 mm caudal to the bregma) for each animal. Neuronal cell density is equivalent to the average number of viable cells in one frame. Cell counting was performed by 3 technicians blinded to the experimental conditions.

**Immunohistochemistry**

Seven days after ischemia, the brains were fixed with 4% PFA. Free-floating (40-μm) sections were incubated with a mouse polyclonal antibody against OX-42 (against the CD11b antigen, diluted 1:100; Scrotec, Oxford, UK) for 60 min at room temperature. After incubation, the sections were reacted with a fluorescein isothiocyanate-conjugated anti-mouse secondary antibody (diluted 1:100; Jackson ImmunoResearch Lab, West Grove, PA, USA) for 60 min at room temperature. The samples were observed by using a confocal laser scanning microscope (LSM5 PASCAL; Carl Zeiss, Heidelberg, Germany). Fluorescence intensities were analyzed using a computer-based image analysis system (Optimas 6.0; Media Cybernetics, Silver Spring, MD, USA).

**Statistical Analysis**

All data are presented as the mean ± SEM. The effects of different treatments were compared by using the student's t-test in GraphPad Prism 4 (GraphPad Software Inc., USA). p < 0.05 were considered to be statistically significant.

**Results**

**Neuronal Cell Density in the CA1 Region of the Hippocampus**

The neuroprotective effects of HT008-1 were evaluated by measuring the neuronal cell density in the CA1 hippocampal region 7 days after ischemia. Representative
photomicrographs of cresyl violet-stained hippocampal neurons in each experimental group are shown in Fig. 2. In the sham-operated group, the neuronal density in the CA1 region was normal (Fig. 2A), and most of the pyramidal neurons in the CA1 region exhibited an intact morphology and no cell damage (Fig. 2A, 2a). In the vehicle-treated group, the neuronal density was reduced, and the neurons exhibited a shrunken morphology (Fig. 2B, 2b). Compared to the vehicle-treated group, the HT008-1-treated animals exhibited dose-dependent increases in neuronal density (Fig. 2).

The neuronal density in the CA1 regions was measured using a blind test as shown in Fig. 3. The neuronal density of the vehicle-treated group was reduced as compared with that
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of the sham-operated group (98.3 ± 12.4 vs 374.1 ± 34.8 cells/mm²). Oral administration of HT008-1 at doses of 100 and 300 mg/kg resulted in neuronal densities of 234.4 ± 20.5 and 245.5 ± 46.4 cells/mm², respectively (p < 0.01 for the 100 mg/kg-treated group and p < 0.05 for the 300 mg/kg-treated group vs the vehicle-treated group; Fig. 3).

In order to investigate the effects of the constituent herbs of HT008-1 on neuronal death in the 4-VO rats, each herb was orally administered at a dosage of 300 mg/kg. Representative photomicrographs of cresyl violet-stained hippocampal neurons in each experimental group are shown in Fig. 4. The numbers of viable CA1 neurons in the treated groups were also counted and compared with that in the vehicle-treated group. Among

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**Figure 4.** Representative photomicrographs of cresyl violet-stained hippocampal regions treated with each component herb of HT008-1 in 4-VO rats. Sham-operated group (A, a), vehicle-treated group (B, b), or HT008-1 (C, c), PGI (D, d), SBA (E, e), ASI (F, f), and ASE (G, g)-treated groups. a–g are boxed regions in A–G, respectively. Scale bar = 100 μm.

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**Figure 5.** Neuronal density of the hippocampal CA1 region after treatment with each component herb of HT008-1. HT008-1 and individual herbs were orally administered at a dosage of 300 mg/kg 0 min and 90 min after of brain ischemia. Neuronal cell density was equivalent to the average number of viable cells in the frames (1.0 × 1.0 mm) of the CA1 regions. The protective effects of HT008-1 were more pronounced than those of the individual components in the 4-VO rats. Each group comprised 4–5 animals. The values are means ± SEM ( p < 0.05, ** p < 0.01, *** p < 0.001 vs. vehicle-treated group).
the animals treated with the component herbs, the PGI- and SBA-treated groups exhibited a significant number of intact neurons — 180.4 ± 13.6 and 182.5 ± 24.6 cells/mm², respectively — compared with the vehicle-treated group (p < 0.05 for the PGI-treated group and p < 0.01 in SBA-treated group; Fig. 5). The protective effects of HT008-1 were more pronounced than those of each component in the 4-VO rat model (Fig. 5).

Y-Maze Test

In order to evaluate the effects of HT008-1 on the spatial memory function after ischemia, we performed a Y-maze test. The percentage of spontaneous alternation over an 8 min period was recorded and used as an index of spatial memory. Among all groups, there were no significant differences in the total number of entries into the arms during the 8 min observation period (Fig. 6A). However, the vehicle-treated group exhibited a significant memory deficit compared to the sham-operated group (45.8 ± 2.4% vs 74.5 ± 5.6%), and the HT008-1-treated group at a dosage of 100 mg/kg exhibited a significant improvement in the 4-VO-induced impairment of spontaneous alternation behavior (74.4 ± 10.7% vs 45.8 ± 2.4%, p < 0.05; Fig. 6B).

Immunohistochemistry

In the vehicle-treated group, the histochemical marker of microglia, OX-42, was upregulated in the CA1 region after ischemia compared to the sham-operated group (Figs. 7a, 7b, 7d, and 7e). In the HT008-1-treated group, the expression was downregulated compared to the vehicle-treated group (Figs. 7b, 7c, 7e, and 7f).

![Figure 6](image_url)

Figure 6. Effects of HT008-1 on spatial memory deficits measured by a Y-maze test after 4-VO. (A) Total entry in the Y-maze test. (B) Protective effects of HT008-1 on changes of spontaneous alternation. Total entry and spontaneous alternation were measured for 8 min, 4 days after ischemia. Notice that the administration of HT008-1 (100 mg/kg) improved the 4-VO-induced spatial memory deficits. Each group comprised 4–5 animals. The values are means ± SEM (*p < 0.05, **p < 0.01 vs. vehicle-treated group).
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Figure 7. Inhibitory effects of HT008-1 on the expression of OX-42 in the hippocampal regions after 4-VO. The samples were stained with the OX-42 antibody activated by fluorescence-conjugated secondary antibodies. The expression of OX-42 was reduced in the HT008-1-treated group compared to the vehicle-treated group. Sham-operated group (a, d), vehicle-treated control group (b, e), HT008-1-treated group (300 mg/kg p.o.; c, f). Scale bars are 100 μm (c) and 25 μm (f). Data shown is typical result from 3 independent experiments. (g) Statistical analysis of data was obtained from observed fluorescence intensities. The values are means ± SEM (***p < 0.001 vs. vehicle-treated group).

Discussion

In the present study, we tested the effects of HT008-1 on hippocampal injury and spatial memory deficits in rats subjected to a 4-VO-induced transient global brain ischemia. At doses of 100 and 300 mg/kg, the oral administration of HT008-1 significantly attenuated hippocampal neuronal cell death and significantly improved the spatial memory function in a Y-maze test. At the same dosage (300 mg/kg), HT008-1 potentiated the neuroprotective effects of ischemia-evoked neuronal cell damage more effectively than its component herbs.
Our study has demonstrated the neuroprotective effects of HT008-1 on the most vulnerable population of CA1 pyramidal cells 10 min after ischemia and 7 days of reperfusion. It can be concluded that the administration of HT008-1 following ischemia has a beneficial effect on the surviving neurons that are destined to die. Among its component herbs, PG1 and SBA (at 300 mg/kg) reduced the neuronal density in transient global ischemic rats by 29% and 30%, respectively. In contrast, in the present study, ASE and ASI failed to exhibit any significant effects, although both herbs have previously been reported to have neuroprotective effects (Liu et al., 2004; Bu et al., 2005; Kuang et al., 2006).

The oral administration of 300 mg/kg of HT008-1 was more effective than the oral administration of the same dosage of any one of its component herbs. Three hundred milligrams of HT008-1 contains 66.0 mg of *P. ginseng*, 123.9 mg of *A. senticosus*, 99.0 mg of *A. sinensis*, and 11.1 mg of *S. baicalensis*. Although we did not compare the effect of HT008-1 with the proportional content dosage of each component herb in HT008-1, none of them was as efficacious as HT008-1, even at the accepted maximum dosage. This suggests that the constituent herbs may exert an additive neuroprotective effect when mixed together. *A. senticosus* and *A. sinensis* did not exhibit a significant neuroprotective effect in this experiment; however, their contribution to the effect cannot be excluded. The results may explain the “harmonizing theory” of herbs empirically used in TKM; when they are administered together, some herbs are synergistic, whereas others are antagonistic.

Immunohistochemical analysis demonstrated that HT008-1 inhibited postischemic OX-42 expression. This result suggests that HT008-1 may inhibit microglial activation following ischemia. Microglia are activated in response to a pathological state in the brain, such as ischemia. Activation of microglia precedes the manifestation of tissue injury and may exert a cytotoxic effect by producing proinflammatory cytokines such as IL-1β, which is a major cytokine produced following ischemia (Bhat et al., 1996). Interference with microglial activation may be the mechanism of HT008-1 action.

Similar to the inhibitory effect on microglial activation, the neuroprotective mechanisms of HT008-1 against ischemic injury are still not completely understood. However, other antiinflammatory and antioxidative activities of the component herbs have previously been considered. *P. ginseng*, for example, has been demonstrated in animal and human studies to exhibit neuroprotective effects. The major effective compounds in this herb were identified as ginsenoside Rb1 and Rg1, and the mechanisms of action are antioxidative and neurotrophic factor-like effects (Chu and Chen, 1990; Wen et al., 1996; Lim et al., 1997; Xuejiang et al., 1999). *S. baicalensis* has also been proved to have neuroprotective effects in global brain ischemia. Its major effective compounds are flavonoids, such as baicalein, baicalin, wogonin, and wogonoside, and the mechanisms of action are antioxidative and antiinflammatory effects (Kim et al., 2001; Lee et al., 2003). Although *A. senticosus* and *A. sinensis* did not exhibit significant effects in the present study, they have previously been reported to have neuroprotective effects attributed to antioxidative and antiinflammatory mechanisms (Liu et al., 2004; Bu et al., 2005). Based on these previous studies on the neuroprotective effects of each constituent herb, we suggest that antioxidative and antiinflammatory effects might constitute the underlying mechanism of action of the observed effect (Kim et al., 1999; Siddique et al., 2000; Kim et al., 2001).
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In the present study, the brains of the experimental animals were histologically processed only at the end of behavioral testing, and only intact-appearing pyramidal neurons were counted. Although ischemia-surviving neurons may appear intact, they may have been dysfunctional at the time of behavioral testing. Here, we demonstrated that 100 mg/kg of HT008-1 reduced ischemia-induced cognitive dysfunction as measured in the Y-maze test, a test used to assess spatial recognition memory caused by brain damage (Conrad et al., 1996; Wright and Conrad, 2005). One of the characteristics of the 4-VO rat model is memory deficit resulting from delayed neuronal death in the region of the hippocampus, which is closely related to memory function (Nunn and Hodges, 1994; Olsen et al., 1994; Squire and Zola, 1996; Milani et al., 1998). This behavioral effect was concomitant with the sustained reduction in hippocampal neuro-degeneration induced by ischemia. These results support the premise that HT008-1 increases spatial memory in addition to protecting against hippocampal neuronal death in transient global ischemia.

In conclusion, our results suggest that the herbal mixture HT008-1 protects the most vulnerable CA1 pyramidal cells and enhances the spatial memory function against global brain ischemia.

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APPENDIX 2
APPENDIX 2

QUESTIONS FOR INTERVIEWS

Name:
Date/Time:

Education
When were you trained?
How long have you been practicing (acupuncture) (herbs)?
Where were you trained? In the USA? Abroad? Both?
What state were you educated in?
How old was/is the school you were educated at?
Did you go through formal schooling, an apprenticeship, or both?
Would you describe your schooling as conservative? Classical? Contemporary?
What kind of degrees or certifications do you have?
Did you take coursework or other training in philosophy, history, spirituality of the discipline?
Should TCM practitioners be trained in western pathology and physiology?
What did you wish you had more courses in?
What was the most valuable aspect or course in your training?
What was the least valuable course or training?
What gaps do you see in TCM education?
What has your clinical practice taught you about your TCM training? What was beneficial? A waste of time?

Twin Cities Connection
How did you come to practice here in the Twin Cities?

Religious Life/Belief System
Do you have a religious life or practice?
Do you meditate?
Does your practice rest on a specific philosophy? Which one?
Do you practice the advice you give your clients?

Motivation to Become a TCM Practitioner
Do you see yourself as a practitioner of TCM, classical Chinese medicine, acupuncture, or both?
Why did you select that particular path?

Practice
What system of diagnosis do you use (5 element, etc)?
Are you an 8 principle and/or 5 element practitioner?
Is this a path to greater understanding and healing or just a day job? 
In your practice do you see your job as fixing a problem or training people to change their lives? 
What kind of continuing education do you do? 
Do you call your customers clients, patients, or something else entirely? 
Is TCM a “health science” or “healing art”?  
Was there a defining situation in which you decided to practice TCM? 
Do you see a power differential between you and your clients? 
Do you see yourself as treating symptoms or an energy pattern? 

Science 
Do you see your work as being necessarily verified by western medicine? 
Are you supportive of science to “uncover truths” of TCM? 
Do you think TCM gains something from the work of ethno botanists and biochemists? 
Do you think the future of Chinese medicine is with western science? 
What role does western medicine play in your practice? 
What is your response to the professionalization of TCM? 
What do you think of the biomedicalization of TCM? 
Are you impressed by new technological breakthroughs in TCM? 
Do you rely more on evidence-based medicine or what you perceive on the body? 
How often do you look at or assess lab results? 

The Work 
How long have you been in practice? 
How satisfied are you with the TCM field? 1-5 
What do you like most about the field? 
What do you disagree with most about your work? 
Have you seen any change in the field during your time in practice? If so, how? 
What are the most prevalent ailments you treat? 
What is the most growing area of treatment? 
Do you see more clients who come in with psychological complaints of physical? 
What is your opinion on insurance reimbursement? 
What is the most difficult aspect of the client/practitioner? 
Is experience more or less important than knowledge? 

Future of TCM 
Is the future of TCM bright? Why or why not? 
Is the alternative medicine label good for TCM? 
What do you think of the new TCM practitioners?
CONSENT FORM

Textual Study of Traditional Chinese Medicine

My name is Erin Wais-Hennen and I am a Ph.D. Candidate in the Department of Writing Studies at the University of Minnesota. You are invited to be in a research study of the growth of Traditional Chinese Medicine in America over the past 35 years. You were selected as a possible participant because you are a practitioner, teacher, or researcher of traditional Chinese medicine. I ask that you read this form and ask any questions you may have before agreeing to be in the study.

Background Information

The purpose of this study is to better understand the changes that traditional Chinese Medicine has gone through over the past 35 years. This study primarily looks at the American Journal of Chinese Medicine and tracks changes in that journal since it was founded in 1973. I am using interviews with traditional Chinese medical practitioners, teachers, and researchers to supplement the textual analysis of the journal.

If you agree to be in this study, I would ask you to do the following things: Meet with me for a face-to-face interview about traditional Chinese medicine and submit to the discussion being anonymously audio-taped. You will only be interviewed once, and each interview will take about one hour.

Risks and Benefits of being in the Study

There are no psychological, social or physical risks to being in this study.

The benefits to participation: having the opportunity to weigh in on the issue of the growth of traditional Chinese medicine and its place with respect to science.

Compensation:

You will receive no monetary payment.

Confidentiality:

The records of this study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. Research records will be stored securely in a locked box and only researchers will have access to the records. Tape recordings will be labeled by number (not by name of
participant) and they will be erased at the end of the two year dissertation process on August 31, 2009.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University of Minnesota. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Contacts and Questions:

The researcher conducting this study is: Erin Wais-Hennen, you may ask any questions you have now. If you have questions later, you are encouraged to contact her at Westbrook Hall, 612-280-4116, wais0002@umn.edu. Her advisor overseeing this research is Dr. Carol Berkenkotter, cberken@umn.edu, 612-624-3721.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), you are encouraged to contact the Research Subjects’ Advocate Line, D528 Mayo, 420 Delaware St. Southeast, Minneapolis, Minnesota 55455; (612) 625-1650.

You will be given a copy of this information to keep for your records.

Statement of Consent:

I have read the above information. I have asked questions and have received answers. I consent to participate in the study.