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The Everyday Life Intersection of Translational Science and Music[1, 2]

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Abstract The purpose of this paper is to discuss the theoretical relationship between translational science and music. The relationship between science and music has been of great interest to philosophers, historians, and musicologists for centuries. From a sociological perspective, we argue that science and music are closely linked at the level of everyday life in contemporary biomedical science. Translational science is a scientific movement that aims to facilitate the efficient application of bio-medical research to the design and delivery of clinical services, and a qualitative approach inspired by symbolic interactionism provides the opportunity to examine the place of the scientist in this movement. The concept of the *existential self* provides a useful platform for this examination insofar as the reflexive nature of the existential self is the way the person's experience of individuality is affected by and in turn affects organizational change. An ongoing qualitative study of an NIH-funded program in translational science has found that music can serve to help scientists maintain a *balanced self* in light of new expectations placed upon them and their work. We identify six ways in which scientists can use music to enhance their sense of self and their work.

Keywords Translational Science and Music; Sense of Self; Symbolic Interaction

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The world of science has been undergoing tremendous change in the past few years. Particularly in the biomedical realm, such new approaches as proteomic techniques, the use of nanoparticles in research, and biomarker discovery platforms are just a few of many promising advancements scientists have developed to combat disease. Perhaps the greatest advancement at the paradigmatic level has been the widespread movement towards the concept of *translational science* (Wuchty, Jones, and Uzzi 2007). Translational science research is a scientific movement that aims to facilitate the efficient application of bio-medical research to the design and delivery of clinical services, that is, to improving the "bench-to-bedside" process (Wooten et al. 2014). A major organizational strategy for operationalizing translational science is the *team science* concept. Team science is an organizational strategy by which a number of researchers, staff, and administrators work together to attain specific scientific goals (Kotarba et al. 2014). Research teams are expected to be both interdisciplinary and horizontal in leadership, with explicit attention paid to mentorship and community involvement. As the structure of research evolves, one would expect to see everyday values, procedures, assumptions, and practices also evolve. The United States federal government, through the National Institutes of Health, has provided generous support for the implementation of team-based, translational science.

The rational and financial side of translational science requires accountability. All of the 64 Clinical and Translational Science Awards (CTSA) funded by the National Center for Advancing Translational Sciences at the National Institutes of Health (NIH) have established quantitative evaluation programs utilizing a wide range of metrics. However, one feature of the translational science movement, namely, the organizational cultural change associated with the movement, calls for a qualitative, interpretive, and symbolic interactionist regimen. As the structure of research evolves, one would expect to see the everyday values, procedures, assumptions, and practices also evolve.

A qualitative approach inspired by interactionism also provides the opportunity to examine the place of the scientist in the movement. The interactionist concept of the *self* provides a useful platform for this examination, especially in terms of the variant concept of the *existential self*. The reflexive nature of the existential self is the way in which a person's experience of individuality is affected by, and in turn affects, organizational change. I will focus on the experience of music specifically as an example of a bridge—and occasional buffer—between the self and the organization. I will therefore address the following questions:

- How can the interactionist/existential concept of the self help us understand organizational culture and cultural change?

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- What is the reflexive relationship between the scientific/rational features of the (scientist's) self and the aesthetic/humanistic features of the (scientist's) self?

Methods

This report is part of a larger study of the introduction and progression of an NIH-funded Clinical and Translational Science Award (CTSA) to the Institute for Translational Sciences at the University of Texas Medical Branch-Galveston (UTMB). I have been serving as leader of the qualitative, basic, and evaluation research team for the CTSA (Kotarba 2014a). The data for the present report are derived from numerous individual and group interviews, as well as many hours of observing science at UTMB over the course of nine years. The logic of the grounded theory approach to qualitative research directed this research towards discovery and data-generated conceptualization (Charmaz 2014). The Committee for the Protection of Human Subjects at UTMB reviewed this research.

Although I have been operating largely as a seemingly autonomous ethnographer, my research is not entirely of my own making. The evaluation component of the CTSA designs its work as a team, integrating quantitative and qualitative methods in, for example, our reports to the external review board and the internal operations committee. The expected dominance of biomedical paradigms in the larger project requires qualitative researchers to learn the various languages of these paradigms in order to maintain ethnographic and interpersonal competency. Our analyses at the organizational level involve understanding, if not occasionally competing with, organizational science, organizational psychology, business, and other contrasting ways of framing research questions and analytical models.

As the leader of the qualitative evaluation research team, I was initially responsible for designing an interactionist-inspired protocol for understanding organizational change related to the introduction of translational science into the traditional medical center setting. Our work complemented the quantitative evaluation research team well. Success for that team consists of deliverables, such as patents, grants, and publications, along with compliance with the CTSA goals as measured through organizational psychology. Our qualitative team measures success in terms of members' meanings for success; members' perceived ability to competently "fit in" the changing organization; and members' perceived ability to master change. Perhaps most importantly, the qualitative team does not operate under the assumption that there is any significant difference between applied qualitative and basic qualitative research. This approach has allowed us to serve both the practical, organizational need of the CTSA for evaluation, as well as the scholarly needs of academic sociology/symbolic interaction in respect to gaining a theoretical understanding of the structure and process of science.

Translational Science at UTMB

Translational science research (TSR) is a scientific movement that aims to facilitate the efficient application of bio-medical research to the design and delivery of clinical services (improving the "bench-

to-bedside" process). The Institute for Translational Sciences (ITS) at UTMB received its CTSA from the NIH in 2009, and it now consists of fifteen interdisciplinary teams:

- Addictions and Impulse Control Disorders
- Aging, Muscle and Sarcopenia
- Burns, Injury and Response
- Epidemiology
- Hepatocellular Carcinoma Biomarker Development
- Maternal Fetal Medicine
- Novel Therapeutics for Clostridial Difficile Infection
- Obesity and Its Metabolic Complications
- Pediatric Respiratory Infections—Bronchiolitis
- Pediatric Respiratory Infections—Otitis Media
- Phenotypes of Severe Asthma
- Reproductive Women's Health
- Development of Novel Therapies for Advanced Colorectal Cancer
- Novel Point-of-Care Diagnostic Tests for Parasitic Diseases
- Patient Centered Decision Support in Cancer

Team science is a major focus at UTMB. The qualitative research team approaches the study and evaluation of the Multidisciplinary Translational Teams (MTTs) and overall program leadership through a fairly integrated symbolic interactionist approach to organizational research (Kotarba et al. 2014).

Organizational Analysis or Organizational Ethnography?

A brief discussion of the two competing schools of thought on the symbolic interactionist study of organizations is in order (McGinty 2014). The first is *social organizational analysis*, which focuses on organizations as structural entities separate from or somewhat elevated over individual activity (Maines 2001). Researchers here view organizations as instrumental forms of secondary groups marked by discernable rules and values. The second is *organizational ethnography*, which focuses on culture, meaning, and the interpretation of work that exists and takes place in complex groups perceived as organizations in everyday life (Fine 1996). Patrick McGinty (2014) argues that interactionists have largely ignored organizational analysis in the past, leaving that work to structuralist sociologists.

Robert Dingwall and Phil Strong (1985:316) offered a general statement in this regard:

> Organizations, then, should be depicted as the products of their members' actions in circumstances that are not entirely of their own making, although allowing scope for manipulation and maneuver.

This is a fairly reasonable approach for our qualitative research team to take. The world of biomedical research is immensely powerful, ruggedly structured, and unforgivingly bureaucratic. Nevertheless, the essence of this world is the scientist, who is much more than merely the engineer for the locomotive. The relationship between the scientist and the system is a fascinating and necessary feature of our understanding of translational science. We will later conceptualize this relationship through the vision of existential social thought as the *scientist/self-confronting organized science/society* (Kotarba 2014b). But, first, we will summarize the core of

our research at UTMB: cultural change since the advent of the CTSA and translational science (Kotarba 2018). In any event, Dingwall and Strong's advice allows us to study scientists interactionally as members of formal organizations, that is, as scientists in medical centers and as individuals with particular biographies, talents, and cultural tastes. We will argue that studying the place scientists hold within a complex organization like UTMB in a holistic manner (structurally and interactionally) will provide insights that are fruitful for evaluating the translational science project.

The Three Stages of Cultural Change

We organized the process of cultural change in the CTSA in terms of stages—to date, there have been three analytical stages. We have attached dates to the stages not to claim to be definitive, but rather to give the reader a sense of change over time. I will briefly discuss each stage in terms of the cultural items used by several key members in order to monitor change as observed in everyday life at UTMB.

Stage One: Cultural Invasion

Many scientists perceived the implementation of the CTSA project beginning in 2009 as *cultural invasion*. This period lasted until approximately 2012. The traditional meaning of certain significant symbols, such as "my lab" and "mentoring," became problematic. New ideas on the meaning and conduct of science were introduced largely from centralized settings like the NIH as opposed to the scientists' particular specialty areas. While some respondents perceived this as positive and progressive, others regarded it as strange and invasive.

Stage Two: Cultural Accommodation

Internal responses to change followed the normal scientific paradigm, from approximately 2012 to 2014. The business model was increasingly taken-for-granted as terms like "enterprise," "continuous improvement," and "talent" entered everyday conversation. Scientists integrated the translational model into their ongoing work without giving up their fundamental sense of science or self. The perception of TS as a radical shift in research procedures fairly quickly disappeared.

Stage Three: Cultural Expansion

The organizational and cultural platforms for conducting science expanded regionally, nationally, and cross-disciplinarily beginning in approximately 2014. The number of problem area networks and regional data and patient sharing groups continues to expand. The introduction of strategies for continuous improvement and strategic planning added a layer of rationality to the increasingly important concept of accountability in doing and evaluating science. Practical strategies for integrating "continuous change" have been implemented, but their degree of success remains to be seen.

Changes in Key Features of Everyday Life in the CTSA

The scientists' understanding and use of specific cultural features of the CTSA provides us with an

insider/subjectivist understanding of translational science. We will briefly discuss five such features: team; expertise; mentoring; the self-identity of the scientist; and routine and tradition vs. experiment and innovation.

The Team

The *team* concept has been central to the NIH's CTSA program in general and the CTSA project at UTMB since its inception. In both cases, the designing of teams sought to integrate ideas from industry, as well as academia (Calhoun et al. 2013). In the first stage, many scientists felt that they were already working in teams, although organizational experts would classify these as research groups. A major difference in this regard is the move towards horizontal leadership in contrast to traditional vertical leadership. Migrating one's work to a true team configuration placed stress upon the self-identity of certain scientists, some of whom felt that the CTSA leadership was a bit insensitive. Seasoned researchers with lengthy track records of scientific and career accomplishments suddenly found themselves to be regular members of seemingly homogeneous teams in which their expertise was not fully exploited. As one scientist put it, it is really difficult for many scientists at UTMB to park their egos at the door when arriving at a team meeting.

In stage two, the meaning of the word *team* changed positively as the CTSA matured. We commonly heard the following terms used to define the CTSA teams in stage one: *bureaucracy*; *imposed system*; *multiple swat squads*; *group research*; *what we have always done*; *Obama-ism*; and *how scientists have always done their work*. These terms imply either the rejection of change, or the lack of any need to change. In stage two, we observed more frequently such positive terms as: *family* (large size is good; some delegation of responsibility; multi-directional activities; and open visibility); *network*; *holism* (rather than linearism); *simply good, basic science*; and *bridge* (between basic and applied science). Nevertheless, the team model was still not fully accepted, and the enforced management style and leadership were still very vertical.

In stage three, scientists increasingly viewed teams as a normal format/structure for interaction and increasingly horizontal leadership. It is noteworthy that social, behavioral, evaluation, and administrative science types began analyzing translational science by generating new terms or titles for teams, complementing the traditional measurement of teams with the conceptualization of teams. For example, Centallas and colleagues (2013) referred to translational teams as *research calibration*, and Kotarba and colleagues (2014) referred to certain styles of translational teams as *extraterritorial teams*. Nevertheless, team science remains a somewhat distressing work-in-progress as the traditional structure of biomedical research—the NIH, problematic federal funding, and the academic tenure system—constrain the level of local control required for full implementation of the team concept.

Expertise

Some scientists, especially project managers, have been frustrated over the dramatically new and ex-

tensive organizational and professional work and skills suddenly expected of them. They have felt themselves to be inundated with paperwork and organizational logic that has little to do with their mastery of scientific work and logic. One implication of this dilemma is the resentment some scientists have over the imposition of rationalist values in team formation in contrast to more traditional personalistic values. As one director put it, the most effective criterion he uses to decide whether to work with someone is the ability to talk face-to-face over a beer. It remains to be seen how the recent introduction of the business concept of *talent* will affect departmental and team staffing. Nevertheless, new terms from the world of business have gained some currency among the scientists in stage three, such as *entrepreneurialism* and *risk acceptance*.

Mentoring

The CTSA model places great emphasis upon the value of mentoring in biomedical science. Scientists have traditionally viewed mentoring as a voluntary activity among senior researchers. In general, the local culture generally held that certain scientists were skilled at mentoring and were, or at least should be, the ones committed to and engaging in this practice. In terms of junior faculty, as well as postdoctoral and graduate students, a common concern in stage one was gaining access to CTSA funding. Students noted that they could take advantage of CTSA resources only if their mentors were themselves involved in CTSA work. Consequently, the pressure to assemble mentoring relationships was largely fired by financial, not scientific concerns. During stages two and three, however, this distress has been mitigated by the formation at UTMB of a highly successful Academy of Research Mentors. Still, students prefer somewhat contradictory features in their mentors. They want their mentors to teach them good scientific and career skills, but are anxious to strike out on their own, with the highest goal, of course, being "building one's lab."

The Self-Identity of the Scientist

The movement to translational science can seriously impact the scientist's self-identity, and this impact can be positive or negative. A positive impact is the awareness that one is now at the cutting edge of scientific design and strategy. A negative impact can be the awareness that one is now expected to surrender some of the independent comfort zone of isolating oneself, and perhaps a post-doc or two, in one's lab.

Scientists at UTMB generally see themselves—no, fancy themselves—as intellectuals. They maintain this traditional and perhaps somewhat dated self-identity in spite of the massive changes taking place in the organizational and cultural contexts of modern bio-medical research. It seems that the contemporary researcher spends an increasing amount of time and attention on budgets, personnel issues, hiring, legal issues such as patents and permissions, and government relations. The scientists generally refuse to see themselves as all these things, and reject others' definitions of them as such, but prefer to self-define as thoughtful, well-read, politically-astute, rational yet idealistic, warm, and humanistic.

Routine and Tradition vs. Experiment and Innovation

This dilemma exists in the minds of both prospective CTSA participants and those already committed to the program. Scientists view the CTSA as an effort to change both the means and the end of biomedical research. One scientist noted that the scientific method in which he was trained, and which he has pursued for several decades, has served him well in terms of discoveries, publications, prestige, and grants:

> Good science has to take place at its own pace. Adding this translational component simply makes the discovery and application process take longer…You see, to the layperson, scientists seem to apply for the same grant over and over again. We're not reinventing the wheel; we're sanding it and polishing it.

For him and other scientists, especially basic science researchers, the objective of translation should require only a partial revision of the scientific method at UT. This revision would most likely occur at the end of the research process, when scientific discovery is turned over to engineers, patent attorneys, and corporations, such as pharmaceutical and medical technology companies. These traditional scientists still philosophically perceive science as a linear process to be tinkered with when and where necessary. The scientists who have seriously bought into translational science, however, agree with the NIH argument that the entire research process needs to change in order to achieve positive results. Input from engineers, patent attorneys, and corporations should emerge at any point in the research process, when relevant.

By stage three, however, many scientists have adopted a useful strategy to manage and maintain a healthy self-identity, given the rapid organizational change taking place around them. This strategy involves arranging the new, as well as traditional expectations that have been placed upon them in a functional order. For example, we have heard several scientists say that they are no longer threatened by the expectation that they learn and adopt certain features of business culture. Instead of viewing business as a threat to their sense of self, they have come to regard it as a limited project and material to be learned, but material that they can easily master—much like a hobby.

The Fourth Stage?

How the fourth stage of cultural change emerges depends on such factors as funding and programmatic directives from NIH; the conflict between research and clinical demands for resources in the health sciences center; and the emergence of junior investigators schooled on the principles of TS. The local culture is very likely to continue evolving in a scholarly direction with the expansion of the Academy of Research Mentors and an expansion of the recent program to improve communications with the media and the various local communities. This latter endeavor will place emphasis upon developing a more robust public identity that is very likely to include "showcasing" the scientists as other than simply scientists.

Science and Music

A common feature of our interviews with scientists at UTMB has been to interject the following questions into the conversation: What kinds of music do you like? What do you listen to? When do you listen to music? These somewhat off-the-wall questions have served two functions. First, they can rejuvenate an aging and perhaps boring interview by drawing the respondents' attention to something perhaps more interesting than discussions of work. Second, these issues help us focus on the self-identity of the scientist directly. They involve experiences in leisure, family life, friendships, community, spirituality, and the *vocation* of being a scientist—in general, the self-identity of the scientist. The specific research question in this regard is: How can self-experience provide a forum for a dialogue between the scientists' sense of who they are and the organizational world of science out there that seemingly wants them to be something different?

This problem was perhaps best illustrated by physical chemist and novelist C. P. Snow (1959), who argued that there is a growing chasm between science and the arts. He called for closer ties between science and the arts in general at the paradigmatic level, proposing that practitioners of science and the arts build bridges among themselves in order to further the progress of both knowledge and society. The present project, being based on social psychology and social science, locates the problem at the level of everyday life. Hypothetically, we argue that music specifically and the arts more generally can and do serve as a bridge between science and the humanities. In the terms of social science, this bridge can be located in everyday life at the level of the self and interaction.

The relationship between music and science has been of great interest to philosophers, historians, musicologists, and now social scientists for millennia. As Peter Pesic (2015) notes, liberal education in ancient Greece consisted of four components, namely, music, arithmetic, geometry, astronomy—the quadrivium. More recently, science has posited music as a charming accompaniment to thought, but less powerful than rational science. A strong voice to the contrary was Albert Einstein. When asked by a friend, *Do you believe that absolutely everything can be expressed scientifically?*" Einstein replied, *Yes, it would be possible, but it would make no sense. It would be description without meaning—as if you described a Beethoven symphony as a variation in wave pressure*.

The historical and philosophical literature still tends to rely upon "Big Scientist" analyses and opinions concerning this relationship, whether they be Steven Weinberg, Stephen Hawking, or Jane Goodall. We argue that the common, university trained, highly specialized, and professional scientist is clearly much more the typical case today. The question then becomes: What place does music have in the everyday life and work of the modern scientist?

Our research has found not only that scientists should integrate the arts into their self-identity, they in fact do so. Music not only provides a charming accompaniment to thought, as Pesic put it so well, but also serves as a particular sort of buffer between the scientist's self and the outside world. The con-

cept of the *existential self* is a very useful framework for exploring the dynamics of this buffer. All paradigms in sociology posit essential relationships between the individual and society. In symbolic interaction, this relationship is conceptualized in terms of the self and society, the self being the person's sense of and experience of individuality (Blumer 1969). A variation of the symbolic interactionist model of the self is the existential model, which posits a *confrontational* relationship between the self and society (Kotarba 1984). The existential self-concept regards the individual as an active agent in seeking meaning for problematic situations in everyday life (Melnikov and Kotarba 2016). Sources for meaning in our postmodern culture increase as the mass and electronic media continue to expand and access to the media becomes widely available in society. The new media create new meanings while also creating new frameworks for old meaning (Altheide 2016; see also Goffman 1974).

The point is that scientists already meld science and the arts into their self-identities. More specifically, a common strategy among translational scientists is to use music as a *buffer* against the stressors that the translational science movement both locally and in general places upon the security of their sense of self (Douglas 1970).

The following are six ways in which translational scientists use music to help achieve a sense of a *balanced self*:

Music can reinforce the self-definition of *intellectual*. The self-definition of intellectual, which can emerge from reading history or engaging in quality films, is very important to many scientists. High quality music, largely classical, fits into this picture well.

Music can serve as an escape from the over-rationalized expectations of others. One scientist working extensively with bio-informatics indicated how his "escape" from the NIH is the Grateful Dead. Playing the role of a "Dead Head" in the lab indicated to others that he was not just another lab nerd. The Dead have also helped him establish cognitive and affective distance between his self-identity and that of a business person chasing patent attorneys and preparing 30 second elevator talks.

Music can facilitate a return to the community. One scientist indicated that his current community involvement is to serve as a voluntary board member for the local community orchestra. He sees continuing and even expanding his involvement as a way of easing into retirement after a long and illustrious career as a scientist.

Music provides another outlet for creativity. A junior scientist was very proud of the DVD she assembled of her wedding music mix. She not only assembled the playlist, but received permission to record the actual songs on the list and contributed to the DVD cover as well. She was also proud of the fact that assembling the music reflected her skills at organizing and categorizing tissue samples for her study of inflammation.

Music can facilitate a rhythm for exploration. Several scientists noted that they listen to music through headphones while in the lab. Different lab

tasks require different styles of music. One scientist remarked that thoughtful tasks, such as writing or working on calculations, fit better with ambient music like Moby or Aes Dana, whereas feeding the mice allows for louder and fast paced rock music like the Who or Metallica.

Music can help establish a sense of being alone. Several scientists noted that they will listen to music through headphones to cut out noise while working. Interestingly, one scientist said that the level of noise in her lab has increased since translational science practices were introduced since the size of her team has expanded considerably. Any style of music would work in this respect.

Summary

In tune with the ongoing discussion in the literature and the media on the relationship between the arts and music (e.g., Pesic 2015), our research points to a promising theoretical intersection at the level of everyday life in the self-identity experience of the contemporary translational scientist. We do not intend to generalize to all scientists, or even to all scientists at UTMB. We simply want to highlight a process of self-identity among scientists faced with growing expectations today to be different kinds of scientists or acquire such other kinds of identities as business person or community outreach worker. In addition to music, other scientists may find refuge in art, literature, or architecture as well.

The goal among these scientists, whether consciously or not, is to achieve a *balanced self*. To the degree that their attachment to science is a vocation, they attempt to adjust themselves to new external expectations. To the degree that their attachment to science is a job, or even a profession, then they are more able to incorporate new external expectations into their work and their sense of self.

The approach we have taken in this study is not only compatible with programs or workshops in staff development, professional training, and self-development for junior and senior scientists, it is also supportive. In today's very complex world of biomedical research, one must be in a position to manage the numerous shifting expectations that are placed on the self, as well as on one's time and thought—managing a mutable self, as Louis Zurcher (1977) put it so elegantly. Music can approach the unknown—as does science—but with an aesthetic instead of a reason.

I have one last thought on the sociological/interactionist study of culture. To search for and find music in science is not a reach. William James (1996) wrote about culture as "Much-at-Onceness." Culture is not only in a toolbox or somewhere in the clouds. It is in fact everywhere, and in abundance.

References

Altheide, David L. 2016. *The Media Syndrome*. New York: Routledge.

Blumer, Herbert. 1969. *Symbolic Interaction*. Englewood Cliffs, NJ: Prentice-Hall.

Calhoun, William et al. 2013. "The CTSA as an Exemplar Framework for Developing Multidisciplinary Translational Teams." *Clinical and Translational Science* 6(1):60-71.

Centallas, Kate M., Regina E. Smardon, and Steve Fifield. 2013. "Calibrating Translational Cancer Research." *Science, Technology, and Human Values* 39(3):311-335.

Charmaz, Kathy. 2014. *Constructing Grounded Theory: A Practical Guide through Qualitative Analysis*. London: Sage.

Dingwall, Robert and Phil M. Strong. 1985. "The Interactional Study of Organizations: A Critique and Reformulation." *Urban Life* 14:205-231.

Douglas, Jack D. 1970. *Understanding Everyday Life*. Chicago: Aldine.

Fine, Gary Alan. 1996. *Kitchens: The Culture of Restaurant Work*. Berkeley, CA: University of California Press.

Goffman, Erving. 1974. *Frame Analysis: An Essay on the Organization of Experience*. London: Harper and Row.

James, William. 1996. *Some Problems of Philosophy.* Lincoln, NE: University of Nebraska Press.

Kotarba, Joseph A. 1984. "The Existential Self in Society: A Synthesis." Pp. 222-234 in *The Existential Self in Society*, edited by J. A. Kotarba and A. Fontana. Chicago: University of Chicago Press.

Kotarba, Joseph A. 2014a. "Symbolic Interaction and Applied Social Research: A Focus on Translational Science Research." *Symbolic Interaction* 37(3):412-425.

Kotarba, Joseph A. 2014b. "Existential Sociology." Pp. 258-297 in *The Sociologies of Everyday Life*, edited by M. H. Jacobsen and S. Kristiansen. Copenhagen: Hans Reitzel Publishers.

Kotarba, Joseph A. 2018. "Three Stages of Cultural Change in Translational Science." *Clinical and Translational Science* 1(1):44.

Kotarba, Joseph A. et al. 2014. "Collaborating with the Community: The Extra-Territorial Translational Research Team." *Journal of Translational Medicine and Epidemiology* 2(2):1038-1041.

Maines, David. 2001. *The Faultline of Consciousness: A View of Interactionism in Sociology*. New York: Aldine de Gruyter.

McGinty, Patrick. 2014. "Divided and Drifting: Interactionism and the Neglect of Social Organizational Analyses in Organization Studies." *Symbolic Interaction* 37(2):155-186.

Melnikov, Andrey and Joseph A. Kotarba. 2016. "Existential Sociology." In *The Blackwell Encyclopedia of Sociology*, edited by G. Ritzer. Oxford: Blackwell Publishing. Retrieved May 10 2016 (http://www.sociologyencyclopedia.com/subscriber/tocnode.html?id=g9781405124331_yr2015_chunk_g978140512433111_ss1-83).

Pesic, Peter. 2015. *Music and the Making of Modern Science*. Cambridge, MA: MIT Press.

Snow, Charles Percy. 1959. *The Two Cultures*. London: Cambridge University Press.

Wooten, Kevin C. et al. 2014. "Translational Science Project Team Managers: Qualitative Insights and Implications from Current and Previous Postdoctoral Experiences." *Journal of Postdoctoral Research* 2(7):37-49.

Wuchty, Stefan, Benjamin F. Jones, and Brian Uzzi. 2007. "The Increasing Dominance of Teams in Production of Knowledge." *Science* 316:1036-1039.

Zurcher, Louis. 1977. *The Mutable Self*. Oxford: Sage.

Kotarba, Joseph A. 2019. "The Everyday Life Intersection of Translational Science and Music." *Qualitative Sociology Review* 15(2):44-55. Retrieved Month, Year (http://www.qualitativesociologyreview.org/ENG/archive_eng.php). DOI: http://dx.doi.org/10.18778/1733-8077.15.2.04.