

Liberal Arts
Perspectives on
Globalism and
Transnationalism

Liberal Arts Perspectives on Globalism and Transnationalism:

Within the Knot

Edited by

Hyun Wu Lee and Mark van de Logt

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INTRODUCTION

LIBERAL ARTS PERSPECTIVES ON GLOBALIZATION AND TRANSNATIONALISM: WITHIN THE KNOT

HYUN WU LEE AND MARK VAN DE LOGT

Globalization and transnationalism have provided academics many opportunities for international cooperation and study. The use of English as the principal language of communication, video conferencing, email, online discussion forums, improved and cheaper forms of travel, online publishing, and other forms of communication has resulted in a drastic increase in the number of transnational research projects. Globalization has knotted together researchers and research institutions around the world. In addition, globalization and transnationalism are much-studied phenomena in their own right and an increasing number of scholars are looking at them, figuratively speaking, from within the knot.

Globalization and transnationalism also pose challenges. There have always been attempts to untie the knot of global interconnectedness, but recently those reactions have moved from the margins to the center. With the election of Donald Trump to the U.S. presidency, the Brexit referendum, and the rise of nationalist and populist parties all over the world, old and new forms of “tribalism” have popped up which have not only stubbornly resisted but have in fact successfully gained ground in many parts of the world. Indeed, the political climate worldwide seems to have turned against globalization and transnationalism (and their little sibling: multiculturalism). The promise to put “America First,” for example, secured Donald Trump a stunning and largely unexpected electoral victory in 2016. Trump’s victory signaled a repudiation of the principles of internationalism and the globalized economy of which the United States had been a long-time cheerleader. Brexit and the resurgence of right-wing populist parties in the European Union have not only befuddled economists and industrial conglomerates, they have also thrown

up new obstacles for transnational workers and migrants, as well as displaced refugees desperately seeking safety from war-torn or economically depressed areas.

Local resistance against globalization is fiercer and more vocal than ever before. This phenomenon presents us with a paradox because many of those increasingly tribalist societies (for lack of a better word) like to brand themselves as tolerant and cosmopolitan all the same. To be sure, not all anti-globalization movements should be construed as nostalgic and backward-looking; some criticisms of globalization are rooted in reality while others are matters of perception. There is no doubt that global pressures to open up local markets and industry have, temporarily at least, resulted in higher unemployment rates in certain economic sectors, fierce job competition, social frictions (including those created by a sudden influx of refugees), and anxiety over mainstream cultures becoming marginalized. One must understand local interests and properly address local concerns or else globalization projects will almost certainly fail. As global visions and local dreams struggle for supremacy, would it not be better to search for new solutions that grant opportunities to both sides?

The problems associated with globalization and transnationalism have been the topic of the Liberal Arts International Conference (LAIC) held in Qatar since 2013. Hosted annually by the Liberal Arts Department at Texas A&M University at Qatar (TAMU-Q), this conference has brought scholars together from around the world to debate issues and share findings related to global integration. Interestingly, the host country of Qatar struggles with the very same paradoxes that globalization poses in other parts of the world. After all, Qatar is a prime example of a modern state that has benefited from globalism yet also yearns to preserve its local culture and traditions.

Taking as its theme “Local Dreams, Global Visions,” the 2018 LAIC invited papers from all the disciplines in the liberal arts. Just as science, technology, engineering, and mathematics (the so-called STEM fields) continuously adapt to meet the needs of changing industry and market demands, so must the liberal arts. With this mission in mind, the conference organizers invited academics, activists, industry insiders, and artists working in different fields to exchange ideas and insights. Indeed, the conference also promotes interdisciplinary efforts between liberal arts and STEM fields to effect a fruitful cross-pollination.

It is with great pleasure that we publish this edited volume of selected papers from the 2018 Liberal Arts International Conference. Based on the submitted papers, the editors have divided the volume into five sections: “Challenges and Opportunities of Liberal Arts Education in the Middle

East,” “Cultural Dissonance in the Classroom,” “Transnational Migrant Workers and Women,” “The Intersection of Technology and Human Interaction,” and “Deconstructing Digital Identities in Social Media.” The papers included in each section discuss issues related to the consequences of globalization, whether that is teaching liberal arts courses in international branch campuses in the Middle East, examining the experiences of transmigrant workers and women, reflecting on the nature of online technology in educational settings or online dating sites, or exploring new methodologies to research online discourses related to terrorism and refugees in social media.

In the first section, “Challenges and Opportunities of Liberal Arts Education in the Middle East,” Prof. Mehran Kamrava (Georgetown University at Qatar) discusses troubling global trends that put academics in the liberal arts and social sciences under pressure. One is the tendency of certain regimes in the Middle East to use liberal arts and social sciences curricula to advance nationalist agendas. The other is taking place in the United States, where certain conservative political groups openly wage “culture war” against supposedly “liberal” university professors with such deplorable tactics as intimidation and bullying. Under the guise of national security, the Trump administration has since codified these attitudes by adopting restrictions on the movement of academics who can no longer travel freely to blacklisted countries that host exchange programs and guest lectures. The recent U.S. sanctions against Iran and the blockade of Qatar by the Saudi-led coalition are examples of nation-states willing to exercise their power to block the free movement of researchers and students across the world. Kamrava warns us that, due to the nature of critical thinking and inquiries embedded in the liberal arts and the social sciences, the risk is great as we may become the victims of national and international politics. His call to resist these pressures and stay committed to our mission to defend academic freedom rings especially pertinent in today’s globalized academic community where international collaboration is essential.

Working in the liberal arts in the Middle East is not only fraught with challenges but also presents opportunities as Summer Bateiha and Sadia Mir (Virginia Commonwealth University at Qatar) demonstrate. They collaborated on a children’s book that teaches math through storytelling. Bateiha and Mir began this project after surveying the current books in use for teaching mathematics at international schools in Qatar. They found that the existing literature lacked Middle Eastern cultural contexts—themes, motifs, characters, and landscapes—that local children can relate to. With this problem in mind, they embarked on a project to write a new story

filled with mathematical riddles. In the chapter in this volume, they reflect on the process of creating the book and analyze the children's feedback, thus underscoring the importance of local cultural contexts and narratives as essential elements to make children's learning experiences memorable and enjoyable. As suggested in this chapter, liberal arts skills such as storytelling and greater cultural sensitivity can be highly useful in improving STEM education.

Teaching liberal arts courses at universities and colleges in Qatar, however, presents other complicated challenges as well. As more international branch campuses are opening up in the Middle East and Asia every year, these global campuses have adopted English as the main instructional language and directly import curricula from their main campuses. Western-trained instructors and faculty without prior experience with local cultures and educational contexts often find themselves at odds with students in the classroom. Michael Telfici (Texas A&M University at Qatar) and Mark Gleason (Community College of Qatar) share their experiences and describe cases of cultural misunderstandings while teaching English and History in Qatar. These case studies illustrate how using seemingly innocent cultural references and teaching materials transplanted from a U.S. context can lead to uncomfortable and awkward situations in the classroom, including charges of "cultural insensitivity" by local students. When non-native instructors transplant or replicate outside learning environments and teaching methods in non-American classrooms, the result may be the opposite of the positive learning experience they intend. Telfici's reflection on teaching at Texas A&M University at Qatar is instructive in that we must consider local culture not only for the sake of avoiding potential risks or faux pas but also to help students feel more comfortable with the more autonomous learning environments they were previously unaccustomed to. Gleason's case study of teaching Qatari history to native students also suggests a dissonance between Western conceptual understandings of history as an academic discipline geared towards expanding public knowledge versus Khaleeji understandings of history, which consist mainly of stories that circulate within tribal and family contexts as private history. Gleason's chapter serves as another reminder that globalizing education requires far greater effort than simply erecting a school building and transplanting degree programs and curricula from one country to another without consideration of local culture.

Another key component in driving the globalization process is online technologies and social network services. Can online technologies alleviate some of the problems associated with cultural differences in

education at international branch campuses as manifested in global campuses? Prof. Kirk St. Amant (Louisiana Tech University) avers that technology cannot realize its full potential or be properly used in online education if it is viewed as “value neutral.” St. Amant insists that hardware and software technologies are not objective and impartial and therefore cannot be applied everywhere in the same way. Using the analogies of “ecological” and “liminal zones,” he offers new conceptual frameworks and forms of analysis. His paper shows that various human factors such as user-behavior, language, and culture should be considered and that technologies must be humanized in order to understand the complexities of online education. Similarly, St. Amant’s colleague Joseph Williams (Louisiana Tech University) examines how people use online dating services by focusing on the information that users post on their profiles. Williams uses the analogy of “prosthesis” to deconstruct and analyze these profiles. In addition, he discusses how online dating services have shifted the sexual norms and social behaviors that regulate human interaction. Both St. Amant and Williams suggest that we need to contextualize technologies through the lens of the humanities if we are to understand how they work and shape our social and cultural interactions.

Although globalization supposedly promotes the free movement of people across borders, the socioeconomic standing of refugees and transnational migrant workers has not improved in meaningful ways over recent years. Push factors such as wars, poverty and ethnic conflicts as well as the growing demand for workers in certain industry sectors continue to attract migrants to developed countries. Yet, we do not know much about their experiences other than what mainstream media outlets present. Maria Lombard (Northwestern University at Qatar) and Fumilayo Showers (Central Connecticut State University) offer insights into these marginalized peoples’ lives and experiences. Lombard analyzes representations of migrant women in literary works from the classical age to present-day refugee mothers desperately attempting to reach western Europe. She suggests that a close reading of these travel and mobility narratives can illuminate the displaced women’s often voiceless migrant experiences. In a similar fashion, Showers discusses the experiences of West African immigrant health care workers in the United States whose skills and degrees are often not recognized in their new country. Despite this transnational barrier in search for employment opportunities, Showers finds that local West African ethnic communities play a far greater role in the job recruitment and placement process in U.S. health care sectors than previously assumed.

Lastly, the huge success and popularity of social online services like YouTube, Twitter and Facebook present new research opportunities for scholars. What role do social media outlets play in our globally connected world? How do anonymous digital identities operate and shape political, social, and cultural discourses posted on social media? Fabienne Baider, Barbara Lewandowska-Tomaszczyk and Mohammedwesam Amer present innovative research methodologies on the topics related to immigration, xenophobia and terrorism. Baider (University of Cyprus) analyzes hate speech against immigrants and counter-narratives in online spaces in the wake of the refugee crisis that fueled anti-immigration sentiments in Cyprus. Similarly, Lewandowska-Tomaszczyk (University of Lodz) compares the digital identities of Polish and English groups through an analysis of their online discourses on immigrants. Finally, Amer (Newcastle University) examines the interplay between social media and terrorism in his case study of the Islamic State of Iraq and the Levant and discusses the challenges associated with this research methodology.

The world is getting smaller, but as the chapters in this volume suggest, it is also becoming more complex. Luckily, when they pool their strengths, the different disciplines in the liberal arts can help untangle the strange knot that globalization has tied around the world. Perhaps the liberal arts can help allay some of the fears that are driving tribalistic counter-reactions. Of course, it is not the responsibility of the liberal arts to take sides in the debate between local dreams and global visions. Its job is to analyze, assess, clarify, enlighten, and explain both sides of the argument. We hope that this small volume, which represents only a fraction of the topics and papers presented at the 2018 Liberal Arts International Conference, shows that the analytical strengths of the liberal arts disciplines are crucial tools in understanding such complex processes as globalization and transnationalism.

Hyun Wu Lee, editor
Mark van de Logt, co-editor

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Two departmental staff members deserve special mention. It would be a great injustice if we failed to highlight the contributions of Miss Khadija El Cadi, our senior administrative coordinator. Khadija took care of all the minute, and often tedious, details such as processing the inescapable paperwork, logistics, scheduling, and a host of other things that made this year's conference a great success. It is impossible to put into words the gratitude we owe to her. Special thanks also to Miss Olena Snitko, our learning lab coordinator, for her invaluable assistance. She always cheerfully lent her time and help in the editorial process. Olena spent many hours ensuring that every paper adheres to the required style and formatting. Without her assistance, the publication of these conference proceedings would have been significantly delayed.

PART 1:

**CHALLENGES AND OPPORTUNITIES
OF LIBERAL ARTS EDUCATION
IN THE MIDDLE EAST**

CHAPTER ONE

“SPEAK TRUTH TO POWER”: THE STATE OF SOCIAL SCIENCE IN THE MIDDLE EAST

MEHRAN KAMRAVA

Today I want to talk about conducting social science research in a turbulent Middle East.* At the Center for International and Regional Studies at Georgetown University in Qatar, we have been grappling with the issues that often make our tasks all the more difficult and all the more arduous by multiple restrictions and multiple difficulties that we have to overcome.

Critical inquiry in the social sciences has been under assault for some time, but under the current circumstances this assault has been pernicious both in the West and the Middle East. Currently, a number of Middle Eastern countries are undergoing civil conflicts and wars, and experiencing resurgent authoritarianism, and others are in periods of profound instability and crisis. Additionally, the current rupture that we all know too well between the six Gulf Cooperation Council countries creates profound difficulties for scholars, particularly for doctoral students working in or on the Arabian Peninsula. Given these conditions, it is important for academics like us and for the academic community at large to engage in meaningful discussions on how best to support objective, open, safe, and ethical fieldwork.

There are multiple points of pressure on the social sciences in general, but particularly here in the Middle East. I want to spend a little bit of time

* Prof. Mehran Kamrava delivered this keynote address at the Liberal Arts International Conference at Texas A&M University at Qatar on February 6, 2018. His keynote address was transcribed and then edited for this volume of conference proceedings.

talking about each of these points of pressure, starting with the social pressure that all social scientists feel. To be blunt, there are pressure groups in the United States active on the blogger-sphere and in the rest of the West and here in the Middle East that try to influence academic discourse in the social sciences. Some of you might be familiar with the book called *The Professors: The 101 Most Dangerous Academics in America*. This book was published in 2006 by the activist David Horowitz, who outlined the names of 101 professors in the social sciences and humanities in American universities throughout the United States who undermine American values and the social sciences in general. How did he go about researching for this book? He relied on students. He put out a call on the internet to students to report subversive academics and professors. And so there are pressures on social scientists, people who particularly study areas that are considered contentious, to self-censor.

Students oftentimes apply pressure now on Twitter, but also generally through various internet portals to shape discussions in the classroom or topics that faculty do research on. And of course today with the prevalence of social media and the spread of Twitter hashtags, what we discuss has become subject to popular ratings by professors, by parents, and by others who may or may not like the topics of our discussion.

Reinforcing the social pressures are different kinds of political pressures that all of us have to contend with. Of course, in authoritarian settings here in the Middle East and elsewhere, there is a paranoia about the social sciences. The social sciences and subjects within the humanities, such as philosophy and history, are considered innately subversive so there has always been a preference for the study of topics that are considered “safe” or topics that are considered not controversial. For example, ancient history is always a preferred topic of authoritarian leaders because oftentimes topics within ancient history reinforce objectives of state-building, of nation-building; they reinforce particular interpretations of national identity. The politicization of the social sciences is not limited to dictatorships that inundate our region here in the Middle East. One of the biggest restrictions that researchers like us face when doing research on the Middle East is sanctions by the United States. We have to contend with American sanctions because the United States considers certain regimes as “rogue” and therefore unworthy of academic research and exploration.

There is another pressure point that social scientists often have to contend with, and this is the university administrators. University administrators, and I speak as a former one, or as somebody who straddles the worlds of academia and administration, by nature do not like negative attention. They are reluctant to support faculty who do research on topics

that are considered sensitive or controversial. They do not want to deal with student complaints, they certainly do not want to deal with the complaints of parents. And they are particularly allergic to the complaints of political patrons or financial benefactors. There are also administrators, particularly department chairs and deans, who encourage professors to stick to safe subjects, and then not to explore areas or topics that may be considered antagonistic, that the powers that be consider antagonistic or controversial. For professors in the classroom, this creates an environment that is not conducive to feeling completely free to express oneself or to engage in research. And oftentimes people therefore engage in various kinds of self-censorship, both academics as well as researchers. And there is often, particularly in areas like here in the Middle East, a palpable fear of political repercussions. There is, therefore, unwillingness by university administrators to back professors up when they are faced with complaints from students or hypersensitive parents or, worse yet, political patrons and financial benefactors.

There are, of course, for those of us social scientists who do fieldwork and who engage in research, difficulties in data collection. Data is unavailable or scarce, often we cannot trust the veracity and validity of the data that is out there because it is politically doctored and politically shaped. And of course there is political paranoia about research, and a lack of familiarity, particularly in our own region here, with the essence of academic and critical inquiry. I came to Qatar in 2007, and in the first couple of years I discovered that my job was to travel here in Qatar and also across places like the UAE and explain what social science research was, that I was not somebody seconded from the CIA, that I was not just a busybody, but by nature I was an inquisitive academic, and it was my job to learn the causes and consequences of various phenomena that prevail around us.

So in all of this, what is the responsibility of the social scientist? What is the social scientist to do? To use an overused metaphor, "what is to be done?" Senior academics and scholars bear a particular responsibility in ensuring that proper context for research and scholarly exploration is provided, particularly for younger academics and especially for graduate students and doctoral candidates in whose hands the future of the social sciences rests. Scholars cannot abdicate responsibility, those or the people like me, we cannot abdicate responsibility or engage in self-censorship because of pressure from politicians; we cannot engage in self-censorship because university administrators are eager to please funders and benefactors. We cannot succumb to talking heads on television, and we all know that today there are numerous talking heads on television that

influence the narrative that is around us and the context within which we engage in prolonged academic inquiry rather than come out with sound bites. And we should not and cannot allow the broader social and cultural environment to dictate what it is we do and what it is we say.

At the risk of engaging in hyperbole, it is the job of the social scientist to engage in multiple points of resistance since multiple points of pressure on and within the social sciences exist. Now what does this mean? In terms of the social sciences, in terms of the social pressures within which we operate, the constrained social and cultural context within which we operate, the social scientist needs to engage in critical inquiry of the causes and consequences of the recent past, or of history as it unfolds, of ongoing historical processes. In this regard, the job of the social scientist is to impress upon those and upon others that people who do not know their history are indeed condemned to repeat it.

When it comes to political pressures, the social scientist does have a responsibility to stay safe and avoid unnecessary risk. I am not asking people to become martyrs and go to places like Yemen or Libya today and engage in fieldwork in environments that are not safe. We need to make sure that our own graduate students, our colleagues, our junior colleagues do stay safe and conduct safe research. But it is equally important to stay objective and neutral observers, not to bend to pressures, and to impress upon others that a lack of scientific objectivity only leads to a jaundiced, warped view of the world. We cannot bend the truth or bend facts just because we do not like them.

And, along the same lines, we cannot let political or diplomatic considerations – in the case that I referred to earlier, the diplomatic and political preferences of the government of the United States – to tell us what to study or what not to study just because the West does not like certain countries or because the West has branded certain countries as “rogue,” or, worse yet, because the West seeks to deliberately undermine scientific and scholarly endeavors in those countries it relegates as enemies and adversaries.

The same thing has to be done in relation to administrative pressure, pressure by academic administrators or university grant administrators when they want social scientists to avoid uncomfortable topics, when they encourage academics to remain within the confines of the uncontroversial, and when they engage in subtle, sometimes overt, pressure of what they can or cannot study. Because of the U.S. sanctions regimes, if somebody is invited to go and present at a conference in Iran, he or she cannot go simply because the government of the United States does not welcome scholarly engagement with the government of Iran. I cannot get a grant to

study Iran, an American grant or a grant from Georgetown University, because Georgetown is an American entity. Simply because the United States considers the Iranian government a “rogue” state. And there are administrators that bend to that kind of political pressure. So when I talk about administrative pressure, it is not always administrators pressuring or bending to pressure by parents or by students or benefactors, it is other larger pressure that the political environment puts on administrators.

We all need to be mindful of the fact that the moment we start censoring ourselves, we stop being social scientists. In other words, regardless of where they may be, or the larger context within which they practice their trade, social scientists should not bend the facts; they should have the courage of their convictions and they should speak the truth to power.

CHAPTER TWO

TEACHING MATHEMATICS THROUGH CULTURALLY RELEVANT STORYTELLING

SUMMER BATEIHA AND SADIA MIR

In my experience, when I (Summer Bateiha) tell people that I teach mathematics, I generally get comments that reflect how boring, pointless and hard mathematics is/was for them. Unfortunately, the emotional response to doing mathematics oftentimes seems to be a negative one. The stories many people tell about their mathematics classrooms reflect difficulty, sadness, anxiety, or frustration. A very select few will say that they enjoy/enjoyed mathematics in school. However, even those who say they liked math often cannot recall significantly impactful lessons from their past experiences. What if those stories could change? What if using storytelling in the mathematics classroom could change personal experiences?

I (Sadia Mir) was one of the few who enjoyed mathematics in school. Maybe it was because I liked playing number games in my mind. I could memorize formulas and make sense of abstract concepts. However, I left math behind after K-12 education to pursue the arts, and decades later, I cannot recall any of the once-memorized formulas. What I can recall from my childhood are my favorite children's books, like *The Paper Bag Princess* by Robert Munsch or *Where the Wild Things Are* by Maurice Sendak. I can retell their tales on command and feel my decades-old emotional attachment to the characters. What if this fondness for and retention of childhood stories could be harnessed in particular for the purpose of teaching mathematics?

In this paper, we explore storytelling as a way to ignite more interest and engagement for students in mathematics classrooms. We outline how storytelling can relate to the teaching of mathematics. Then we explain why we chose to create culturally responsive children's literature that reflects the regional experience and environment of the Middle East. We go on to present a summary of the story we wrote, and we describe the

interdisciplinary work we did to write this story together. We then describe our own reflections about the process of working from both within our own disciplines and the disciplines of others. As part of staying in line with the main idea of this paper, namely, that storytelling can make the academic experience more engaging, appealing and memorable, we present this paper by telling it through a personal scholarly narrative, which situates and centralizes our own story within a wider academic scholarship.¹

The question this paper explores is: How can we provide students with a conceptual understanding of a mathematics topic through a culturally relevant and responsive story?

Overview of Storytelling and Mathematics

The act of telling stories has long been studied for its varied and multiple outcomes – to transform and to heal, to self-identify and to make meaning.² We are storytellers at heart. We are listeners of stories. We relate to each other through stories. Storytelling has been widely used in the classroom, both for fun and for educational purposes. The benefits of storytelling are many. According to Lockett and Jones, listening to stories in the classroom can support students' language development and retention of knowledge and can also help students improve their active listening skills.³ Furthermore, reading stories to children helps imaginative development in young learners.⁴ Students have the opportunity to connect to the characters, create mental pictures and bring the stories alive in their minds. This often leads to emotional connections with stories that resonate. When thinking about the benefits of reading and listening to stories on young children, we also consider the chances for children to discuss their feelings and reactions to the stories, learn new knowledge, and open their minds to new experiences. When using storytelling as pedagogy, there exists a strong potential for meaningful learning.

¹ Robert J. Nash, *Liberating Scholarly Writing: The Power of Personal Narrative* (New York: Teachers College Press, 2004).

² Robert J. Nash and Sydnee Viray, *How Stories Heal: Writing Our Way to Meaning and Wholeness in the Academy* (New York: Peter Lang, 2014); Jerome S. Bruner, *Acts of Meaning*, vol. 3 (Cambridge: Harvard University Press, 1990).

³ Jordan S. Lockett and Rose B. Jones, "Why Tell Stories?" *Kappa Delta Pi Record* 45, no. 4 (2009): 176-78.

⁴ B. F. Ellis, "Why Tell Stories?" *Storytelling Magazine* 9, no. 1 (1997): 21-23.

How can we benefit from the strengths of storytelling as pedagogy to teach math in a socially relatable and personal way? What if we used the idea of storytelling as a way to convey information while evoking an emotion in more mathematics classrooms to engage students, excite them about mathematical concepts, and motivate them to want to solve problems? When a story is told in the mathematics classroom, the mathematics suddenly takes on life and no longer looks like a plethora of disconnected facts and formulas that are meant to be memorized and drilled into students' heads for some unknown reason to the students.⁵ The mathematics becomes attractive and suddenly has meaning that inspires students to want to understand and partake in a task. The idea of using storytelling in the classroom is not about replacing mathematics with a story but rather contextualizing mathematics so it becomes a part of a more meaningful, complete experience for students. Although many textbooks attempt to add meaning to mathematics through word problems, the contexts used are often superficial, short, and lacking in emotional elements. According to Zazkis and Liljedahl, word problems originally came from meaningful and impactful stories; however, with time, they were stripped down and condensed to the point that the emotional aspects of the stories were lost, and the problems became a dry context that does a better job of giving meaning to the mathematics than no context but does not provide the emotional engagement necessary to move students to really want to participate in doing the mathematics.⁶ Following is an example of the power of storytelling to teach mathematics by first illustrating a traditional mathematics problem, second giving it some context (like a word problem in a textbook would), and third telling a meaningful story.

Traditional Problem:

The sum of the first n whole numbers, S_n , is:

$$S_n = \frac{n(n+1)}{2} = \frac{n^2}{2} + \frac{n}{2}$$

⁵ Rina Zazkis and Peter Liljedahl, *Teaching Mathematics as Storytelling* (Rotterdam: Sense Publishers, 2009).

⁶ Zazkis and Liljedahl, *Teaching Mathematics as Storytelling*.

To find the sum of the first 100 whole numbers, S_{100} , plug 100 in for n and solve as follows:

$$S_{100} = \frac{100(100 + 1)}{2} = 5050$$

Use the formula above to find the sum of the first 200 natural numbers.

Word Problem:

When Karl Gauss, a famous mathematician, was in elementary school, his teacher asked the class to add the numbers 1 to 100, as a task the teacher thought would keep the students occupied for a long period of time. Gauss was able to find the sum within a matter of minutes. He was able to do this by discovering the following pattern:

In order to add $1 + 2 + 3 + 4 + \dots + 98 + 99 + 100$, Gauss noticed that

$$1 + 100 = 101$$

$$2 + 99 = 101$$

$$3 + 98 = 101$$

.

.

.

$$48 + 53 = 101$$

$$49 + 52 = 101$$

$$50 + 51 = 101$$

Gauss realized the sum would be $50(101) = 5050$, since there are 50 pairs of 101.

This discovery led to the following formula for finding the sum of the first n whole numbers, S_n :

$$S_n = \frac{n(n + 1)}{2} = \frac{n^2}{2} + \frac{n}{2}$$

Using this formula, find the sum of the first 200 natural numbers.

Storytelling Problem:

Although Karl Friedrich Gauss (1777-1855) would eventually grow up to be a brilliant mathematician (some would even say the greatest mathematician), as a child he was more than a handful for his teachers. You see, at heart Karl was a happy boy who liked nothing more than to tease and play tricks on his friends. One day, while he was still quite young Gauss was being particularly jovial in class. He had finished his work early and had proceeded to disturb his classmates with his mischievous antics. One of his favourite tricks was to imitate quite ordinary, but annoying sounds. He was very good at imitating the sound of creaking wood – as in a creaking floorboard or a creaking chair. This was especially appropriate given that the school that Karl attended was very old and looked just like the kind of place that would creak and groan when people moved about. In reality, however, the school was very well built and did not at all creak. But, year after year he would torment his teachers with these sounds. As they walked around the room or sat down in a chair, their every move would be accompanied by a cacophony of creaks and groaning wood joints. Some teachers took this better than others, but no one took it worse than Mr. Schmidtsenburgersnoff. Mr. Schmidtsenburgersnoff was Karl's teacher when Karl was 9 years old. He was an overbearing man who was a stickler for discipline and made no bones about dishing out severe punishments for even the slightest misbehaviours. On this particular day Mr. Schmidtsenburgersnoff was in a worse mood than usual. So, annoyed with Karl's joking around, he walked down the aisle to the back of the classroom where Karl was sitting and set a task for him that he was sure would occupy young Karl for the remainder of the day. "For your pestilence, Karl, I will ask you to add up the numbers from 1 to 100!" he barked.

All of Karl's classmates were stunned into silence. This was by far the most severe punishment the teacher had ever given out. Poor Karl, they all thought, this time the teacher had surely broken him. As the teacher turned to walk back to his desk at the head of the class, every child in the room stared at this humourless evil man. Just before he got to the front of the class, the creaking sounds started. Mr. Schmidtsenburgersnoff spun on his heels and stared at Karl. Surely young Karl couldn't be done already. The entire class stared, their collective breath held in anticipation.

“The sum is 5050!”

The classroom erupted into laughter. Once again Karl had gotten the best of the teacher. This was too much! Mr. Schmidtsenburgersnoff stared at Karl and in a very icy voice said, “You are wrong, and as punishment for your pestilence you will come up to the board and work out the sum in front of the whole class.”

So, Karl simply walked up to the blackboard and while Mr. Schmidtsenburgersnoff strutted around in front of the classroom, Karl wrote out the following:

$$1+2+3+4+5 + \dots + \dots + 98+99+100$$

$$1+100=101$$

$$2+99=101$$

$$3+98=101 \dots$$

$$50 \text{ pairs} \times 101 = 5050$$

The laughter in the classroom erupted again. Mr. Schmidtsenburgersnoff turned to the board. At this point he was blinded by his rage and he did not see the details of what was written there. He saw only gibberish. The intolerant behaviour of one student was bad enough but the whole class behaving as they were was too much! He turned to the class and roared, “For your intolerable behaviour, I assign you all the following tasks.” And he walked to the board, erased what Karl had written there and wrote up the following three tasks.

Find the sum of the first 200 natural numbers.

Find the sum of the whole numbers from 201 to 300.

Find the sum of the first 1000 whole numbers.⁷

Notice that the first presentation of the mathematics problem is dry, with no context, and provides little engagement or excitement to motivate students to find the sum of the first 200 natural numbers. Although the second presentation of the problem provides a little more context, the language still does not evoke much emotion in the student. Even though it is somewhat interesting that Gauss solved this problem as an elementary student, the context stops short of igniting excitement in the student to

⁷ Zazkis and Liljedah, *Teaching Mathematics as Storytelling*.

want to be a part of solving the presented problem. However, in the third version of using Gauss's method to find the sum of consecutive whole numbers, the reader becomes engaged in the story about a problem-maker kid, with whom they may relate. All of a sudden, the reader can empathize with being misunderstood and unheard. Emotions become present for the reader and Gauss becomes someone they could be or know. The students can imagine themselves as present in Gauss's classroom and can imagine trying to understand his thinking so that they may solve the problem posed at the end of the story and join Gauss in showing the teacher up. Furthermore, the final version of using Gauss's trick to find the sum of consecutive whole numbers does not reveal the formula that students can just plug numbers into and get an answer. Students are invited to think about the pattern and figure out how to use it for 200 consecutive natural numbers, engaging them in the process of creating the formula itself rather than being handed the formula by a teacher. That makes the mathematics in the third scenario much deeper and more meaningful yet, at the same time, less intimidating than the first two scenarios that use formulas.

Culturally Responsive Mathematical Stories

As a teacher of mathematics, I (Summer) have bought into the idea of storytelling as a powerful tool for teaching mathematics and have used it with my own children and students. As a part of the process of thinking about how to teach mathematics through storytelling, I began collecting children's stories that could be used for teaching mathematics. In doing so, I began to realize there was a lack of mathematical children's books that contained characters that looked like my children and me. I am a half-American, half-Arab female mathematician. My husband is Arab, so my children are three-quarters Arab. Most of the characters they were reading about in the books I found were European/Euro-American.⁸ Although some characters were Asian, African American, or of other ethnic groups, I had difficulty finding Arab/Middle Eastern characters. Furthermore, most of the geographical contexts of the books were not Middle Eastern, and when they were (as in the case of *Mummy Math* by Cindy Neuschwander), the main characters were Western in a Middle Eastern context.

As a documentary filmmaker, writer and professor of English, I (Sadia) have dedicated my work to the telling of stories. Diversity and inclusivity

⁸ "Top Rated Educational Math Books for Children," *Good Reads*, last modified November 9, 2011, <https://www.goodreads.com/list/show/14440>.

have been the founding principles of my work. When I was a film studies undergraduate student, I came across media scholar Gaye Tuchman's work, which surveyed the limited/limiting portrayals and underrepresentation of women in mass media in the 1970s. She argued that such depictions lead to women's symbolic annihilation by the media.⁹ This idea of devaluation of a particular group of people due to stereotypical or underrepresentation in mass media struck a chord as it was part of my lived experience. As a young girl born and raised in Canada, with Pakistani immigrant parents, I rarely saw myself in the media I consumed. How did not seeing myself reflected in the public narrative affect my self-worth? How was media production shaping my perception of self and of those around me? With this critical view, I knew that I wanted to support the telling of diverse and inclusive culturally responsive stories in order to address these imbalances of representation. Whereas children's literature has been a steady professional interest, incorporating mathematics was taking it into a new direction.

One day, at our university campus, we (Summer and Sadia) found ourselves in conversation over a collection of Summer's math children's books. Summer explained that the premise of the books was a way to engage students in more meaningful mathematical experiences and she went on to describe her concern about the lack of Middle Eastern characters in the books she had found. Sadia was interested in this use of story to teach math in a nontraditional way. By the end of the exchange, based on our shared interests, we decided to collaboratively write a culturally responsive Middle Eastern-based mathematics children's book. We knew that the story design would be key. Studies have shown that to create deeper meaning and stronger connections to literature, students needed to see themselves in what they read.¹⁰ Culturally responsive storytelling would be one way to personalize the learning experience and attract students. It was from this position that we set out to write the story.

Our Children's Story

Spring Bloom tells the story of two Arab siblings, Aliya and Zade, as they help a young falcon reunite with his family at an annual event that

⁹ Gaye Tuchman, Arlene K. Daniels and James W. Benét, *Hearth and Home: Images of Women in the Mass Media* (New York: Oxford University Press, 1978), 9.

¹⁰ Elaine M. Bieger, "Promoting Multicultural Education Through a Literature-Based Approach," *The Reading Teacher* 49, no. 4 (1995): 308-312; Ellin O. Keene and Susan Zimmermann, *Mosaic of Thought: Teaching Comprehension in a Reader's Workshop* (Portsmouth: Heinemann, 1997).

honors the blooming of the desert hyacinth flower. Entrance to the event requires a secret password. In order to receive this password and be given the location to the party, Aliya, Zade and the young falcon must solve a series of riddles. Each of the three riddles draws upon accurate geographical knowledge of the Arabian desert and ask the protagonists to problem-solve based on the mathematical concept of place value.

The story takes place in the mangroves and incorporates culturally representative motifs and imagery. The setting is a key story element that situates the action and supports the unfolding of the plot. For instance, separate from the geographically-specific riddles, the found objects from the environment, which serve as manipulatives for counting, are shells, twigs and pebbles, and the three main characters must navigate the desert landscape in order to complete their adventure.

Furthermore, the secondary characters, a red fox, a group of greater flamingos and a family of long-eared bats, as well as the young falcon, are animals indigenous to the region. The heart of the conflict originates in the young falcon's dilemma – he cannot solve the riddles because he cannot do the math. The aim of the book is to incorporate the mathematical concept as an integral means to progress the plot. The three main characters meet three sets of desert animals and must complete three math tasks.

Spring Bloom targets Grade 2 students (7-8 years old) and aims to engage its readers through an active learning experience where they are encouraged to relate to protagonists of the same age and participate in the journey of discovery and problem-solving. The story is designed in a way that readers are able to follow the characters' journey, solve the riddles, and check their comprehension as the responses to the riddles are revealed. Whereas understanding mathematics is key to the solving the adventure, it is the character-driven story and related themes that are designed to attract the target audience. *Spring Bloom* is a simple coming-of-age story for the young falcon as he completes his first voyage across the desert independent of his family. It is also a story of independence and knowledge acquisition for the sibling pair. Ultimately, it is a story that shines light on the importance of kindness, empathy for others and familial bonds. These universal messages are the locus of engagement for our readers.

About the Writing Process

After deciding our target age group (Grade 2 students), the mathematical concept (place value), and the cultural context (Middle

Eastern), we began to brainstorm the story. In terms of elements, we determined the characters (a girl and boy sibling pair), the secondary characters (various animals indigenous to the region), the setting (desert mangroves), the conflict (they needed to solve riddles to get a password to gain access to ‘the desert party of the year’), and the overall tone (adventurous, exploratory, with a feeling of harmony between the two protagonists).

Research was a key aspect of our process. We surveyed children’s books in both English and Arabic. We reviewed current children’s literature with a mathematics focus. We spoke with Arab students about local customs, rituals, and traditional foods. We considered different locales specific to the region that would serve as unique settings that would be both an entertaining backdrop to a children’s adventure story and an informative story element that could reflect environment features specific to the region. Research and fact-checking were embedded at every stage of the process, and contributed towards the multiple revisions of our manuscript. For example, to gather details of our chosen setting, we took a field trip to the mangroves (northern Qatar) with Summer’s two sons, Zade and Yousef (age 7 and age 11), and observed their interests and reactions to the site. Furthermore, we contacted an outdoor adventurer in Qatar who is an expert on Qatari desert mangroves to ensure the accuracy of the geographic and scientific content.

Feedback from our target audience was another significant aspect of our process. Summer read the first completed draft to Zade. Yousef decided to listen to the story as well. As Summer read the story, Zade tried to solve the riddles being presented and add the numbers in his head to keep track of the totals in the story. He was excited to see if his answers were correct when they were revealed, and he was ready to hear the next riddle each time he finished one. He appeared to be extremely focused on the riddles and the mathematics but did not say much about the content or impact of the story. However, the fact that he was engaged in the mathematics told us again that we were on the right track. Yousef, on the other hand, was not very interested in the riddles and found the mathematics too easy. This was significant as this provided us with the insight that our story was well aimed at our target audience.

Feedback was also provided by a local publisher. This moment in our process was notable as we received criticism that our story did not have a strong enough emotional hook or ‘stake’ to attract our readers and keep them engaged. It was here that we added a third main character, the young falcon, and gave him a conflict: He was lost in the desert and wanted to reunite with his parents at a party. To do this, he needed help to solve a