VIRTUAL ENVIRONMENTS

AS COMMUNICATION TECHNOLOGIES OF FAITH

by

John F. Kay

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He established a decree in Jacob,
  and appointed a law in Israel,
which he commanded our ancestors
  to teach to their children;
that the next generation might know them,
  the children yet unborn,
and rise up and tell them to their children,
so that they should set their hope in God,
and not forget the works of God,
  but keep his commandments. (Psalm 78:5-7)

This dissertation is dedicated to today's youth and to "the next generation…, the children yet unborn"—to the glory of God.

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by

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In consideration of the United Methodist faith, this project answers the research question, "Do inherent qualities of virtual environments offer additional faith communication dimensions that are different from other media types?" This research takes a journey toward and through the multivalent Virtual—including an understanding of the Virtual as being in God's presence—and back to the physical. Following a historical journey from the church of the first century to The United Methodist Church (U.M.C.) of the 21st-century, an extensive literature review studies the related multidisciplinary scholarship of key communication technology events (K.C.T.E.). This examination includes a socio-cultural analysis of how United Methodists and other Christians have communicated their faith through numerous technologies. The qualitative results of the primary research appear as a deep description of the latest developments in virtual-environment research at eight universities.

Demonstrating how virtual environments (V.E.) could communicate the faith of The U.M.C. would entail the virtual simulation of a worship service with particular focus on the proclamation

of scripture. This project distinctively presents Jerome Berryman's "Godly Play" of as a way to conceptualize how V.E.'s could communicate scripture for pedagogical and worshipful purposes. Regarding V.E.'s and worship, this project recommends the creation of the "Simulated United Methodist Model of A Worship SERvice in a Virtual Environment" (SUMMA SERVE). In order to introduce people, especially young adults, to The U.M.C. and its faith, a second recommendation involves the creation of the "Virtual Faith-Explorer."

The research presents its own taxonomy of fifteen Faith Communication Dimensions. Virtual environments could offer additional faith communication dimensions that differ from those of other media types. First, V.E.'s could impart the aesthetic dimension of biblical accounts. V.E.'s made with high-production qualities could enclose the vision and hearing of a user in such a manner that he or she could uniquely sense the aesthetics of the biblical stories. Second, V.E.'s could uniquely show inclusion in the biblical narrative, that is, V.E.'s of biblical stories could show how Christians fit into the biblical narrative. Third, V.E.'s such as immersive virtual reality (V.R.) and immersive augmented reality (A.R.) could uniquely communicate the teachings that Christians are in the world but not of the world. And fourth, V.E.'s with haptic technologies could uniquely communicate the faith's incarnational dimensions, namely touch and its importance.

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LIST OF ABBREVIATIONS

A.E.L.	Augmented Environments Lab, at the G.V.U. Center
A.I.	Artificial intelligence
A.P.I.	Application programming interface
A.R.	Augmented reality
A.T.E.C.	Arts, Technology, and Emerging Communication, at U.T.D.
CAVE™	"CAVE Automatic Virtual Environment"
C.G.I.	Computer-generated imagery
D.A.R.P.A.	The Defense Advanced Research Projects Agency, of the U.S. Department of Defense
D.F.O.V.	Display field of view
D.H.S.	Department of Homeland Security, of the United States
D.O.F.	Degrees of freedom
E.C.D.S.	Emory Center for Digital Scholarship, in Atlanta
E-M.A.T.	Extremities-Multiple Application Trainer at I.S.T.
F.C.D.	Faith Communication Dimensions
F.G.	Fourth Gospel, i.e., the Gospel according to John
F.O.V.	Field of view
Georgia Tech	Georgia Institute of Technology, in Atlanta
G.P.S.	Global positioning system
G.V.U.	Graphics, Visualization and Usability Center, at Georgia Tech
H.M.D.	Head-mounted display

I.A.R.	Immersive augmented reality
I.C.T.	Institute for Creative Technologies, at U.S.C.
INSITE	"Individual Nystagmus Simulated Training Experience"
I.S.T.	Institute for Simulation and Training, at U.C.F.
I.V.E.	Intelligent virtual environments
I.V.E.T.	Immersive virtual environment technology
I.V.R.	Immersive virtual reality
K.C.T.E.	Key communication technology events
K.J.V.	*King James Version,* of the Bible from 1611
L.I.T.E.	Louisiana Immersive Technologies Enterprise, in Lafayette
M.A.T.	Media Arts and Technology, at U.C.S.B.
M.E.C.	Methodist Episcopal Church
M.E.T.I.L.	Mixed Emerging Technology Integration Lab, at I.S.T.
MMORPG's	Massively multiplayer online role-playing games
M.R.I.	Magnetic resonance imaging, or M.R.I. machine
M.S.	Multiple sclerosis
MxR	Mixed Reality, Lab at I.C.T.
N.I.A.R.	Non-immersive augmented reality
N.I.V.E.	Non-immersive virtual environment
N.I.V.R.	Non-immersive virtual reality
N.R.S.V.	*New Revised Standard Version,* of the Bible from 1989
N.R.U.M.C.	North Raleigh United Methodist Church, in North Carolina

P.I.	Principal investigator
P.V.	Physical virtual
ReCVEB	Research Center for Virtual Environments, at U.C.S.B.
R-SST	"Religious-social shaping of technology"
S.A.V.E.	San Antonio Virtual Environments, Lab at U.T.S.A.
S.D.K.	Software development kit
S.M.L.	Synaesthethic Media Lab, at the G.V.U. Center
SREAL	Synthetic Reality Laboratory, at I.S.T.
SST	"Social shaping of technology"
S.T.E.M.	Science, technology, engineering and math
SUMMA SERVE	Simulated United Methodist Model of A Worship Service in a Virtual Environment
3D	Three-dimensional
T.I.S.	Total Immersion Space, at L.I.T.E.
2D	Two-dimensional
U.C.F.	University of Central Florida, in Orlando
U.C.S.B.	University of California at Santa Barbara
U.I.W.C.G.A.P.	The University of the Incarnate Word's Computer Graphic Arts Program, in San Antonio
U.L.L.	University of Louisiana at Lafayette
U.M.	United Methodist
U.M.B.O.W.	*United Methodist Book of Worship*
U.M.C.	United Methodist Church

U.M.H.	*United Methodist Hymnal*
U.S.C.	University of Southern California, in Los Angeles
U.S.M.C.	United States Marines Corps
U.T.D.	University of Texas at Dallas
U.T.S.A.	University of Texas at San Antonio
V.A.-V.M.C.	Veterans Health Administration's Virtual Medical Center
V.E.	Virtual environment
V.F.E.	Virtual Faith-Explorer
V.R.	Virtual reality

CHAPTER 1

INTRODUCTION

> "The Church is so entirely a matter of communication that like fish that know nothing of water, Christians have no adequate awareness of communication." (McLuhan and Szklarek 1999, xxi)

I. Introduction

Historically in Christianity, faith and communication technology have been intricately interwoven. First-century Christianity benefited from the invaluable heritage received from Judaism, especially the sacred scrolls of the Hebrew Scriptures. At least since the prophet Moses, descending from Mount Sinai after his divine encounter, hand-carried the communication technology known as stone tablets back to those who awaited his return, people of faith have aspired to seek the Virtual, i.e., the Lord made present to them. Those who have longed that God would directly communicate with them as clearly and definitively as God did with Moses on the mountain also have desired to place themselves in the prophet's sandals and safely stand in God's loving presence. They have highly valued media situated between God and them, such as the two stone tablets of Exodus, and have hoped that media would virtually take them into the divine presence. Such emerging media would be virtual communication technologies of faith. *This project embarks on that journey toward and through the Virtual and back to the physical.*

Of the many ways that faith has been defined, this research centers on **faith** as a system of "religious beliefs" (Geertz 1966, 100). One may speak of the *Christian faith*, or more accurately, the *Christian faiths*, such as the faith of The United Methodist Church (U.M.C.), to which the author belongs as a clergy member. Further, communication technology is

increasingly centered on virtual environments (V.E.'s), such as desktop serious games and the extension technologies of virtual reality (V.R.) and augmented reality (A.R.).

This dissertation analyzes the historical relationship between this understanding of faith and communication technology and posits that today's V.E.'s can communicate faith dimensions that previous technologies have been unable to either convey or convey as well. Faith communication dimensions (F.C.D.) refer to the aspects of faith (as a system of religious beliefs), which technology can communicate. Chapter 3 will elaborate on F.C.D. by analyzing established taxonomies of dimensions of religion and by introducing a high-definition taxonomy.

The research focuses on key communication technology events (K.C.T.E.) in Christianity, particularly in the faith of The U.M.C. When Christianity's founder lived, the Psalter served as his hymnal. When the Apostle Paul (II Timothy 3:16) a few decades later wrote to his mentee Timothy, "All scripture is inspired by God and is useful for teaching, for reproof, for correction, and for training in righteousness," the "scripture" referred to the Hebrew Scriptures because Christian writers would not finish the New Testament for half of a century. Since the Greek New Testament builds upon the Hebrew Scriptures, the socio-cultural analysis of K.C.T.E. needs to begin with the event of the genesis of the Hebrew alphabet and writing. The literature review of the second chapter explains the backgrounds of, and the scholarly arguments about, the numerous topics related to communication, technology, and the faith, with particular interest in understanding the virtual. This introduction seeks to start the discussion by defining the terms and specifications associated with V.E.'s.

II. The virtual and virtual environment technology defined

The word **virtual** functions as the first word of the title of this dissertation, *Virtual Environments as Communication Technologies of Faith*. The terms *V.E.'s, virtual worlds, V.R., virtual technologies,* and too many others to enumerate feature the word *virtual*. In the early 21st-century, *virtual* became a popular word, a buzzword, a catchphrase (Watson-Manheim, Chudoba, and Crowston 2002), and a favorite adjective of many marketers wanting to promote their products as the latest and most futuristic and of many educators wanting to demonstrate that their disciplines were technologically keeping up with the times (Johnson, Heimann, O'Neill 2001).

The long history of the multivalent word *virtual* traveled through its association with computers. The "versatility" of computers turned them into such machines as "virtual calculators," while their storage served as virtual memory (Ryan 2015, 18). The early-1980's personal computers installed with word-processing software and connected to dot-matrix printers, for instance, were virtually, as in "almost real" (Salzman and Salzman 1960, 378) typewriters (Ryan 2015). Benjamin Wooley (1992, 58) notes that in 1972, "IBM introduced 'virtual memory' with two new mainframe computers." Regarding computer hardware such as virtual memory, *The Oxford English Dictionary* ("Virtual" 2016) defines *virtual* as "not physically present as such but made by software to appear to be so from the point of view of a program or user."

Rather than dictate a definition of *virtual*, Marie-Laure Ryan (2015, 8) describes "senses" in how people use the term: "In its everyday usage the word *virtual* is ambiguous, used in the sense of (1) 'imaginary' as well as (2) 'depending on computers.'" Ryan then applies those

senses to the example of virtual technologies, which "fabricate objects that are virtual in sense 1 but are themselves virtual in sense 2." This project centers on the following **technical** definition of the adjective *virtual* from the O.E.D. ("Virtual" 2016)— "That is a computerized or digitized simulation of something; *spec.* (esp. in earlier use) simulated in virtual reality"—and the following **philosophical** understanding of Shields (2003) and Denegri-Knott and Molesworth (2013, 2): "Virtual is understood here … as both real and ideal and entwined with our perception of reality." Sections of Chapter 2 will cover the philosophy and theology of the virtual. *The V.E. family includes V.R., A.R., desktop V.E.'s, M.R., and potentially other technologies to emerge.*

III. Methodology and Methods

A. Methodology

Determining if virtual environments offer additional faith communication dimensions that differ from other media types requires knowledge of the latest developments in V.E. research. To that end the primary research consisted of trips to V.E. labs of universities across the nation. In the theoretical versus practical dichotomy regarding types of dissertations, practical dissertations utilize research methods that might include an experiment or a survey with questionnaires. On the other hand, "abstract theoretical" dissertations are appropriate for "Cultural/Social, Ethical/Religious, Philosophical, Mathematical, Aesthetic" subjects (Walliman 2004, 16). Since this project studies most of these subjects plus technology, this dissertation falls under the "abstract theoretical" type with some of "applied theoretical" type in the primary research and recommendations. In the quantitative versus qualitative dichotomy, this research selects qualitative, in which "phenomena are understood as holistic and complex systems and are

viewed within particular social and/or historical contexts" (Bloomberg and Volpe 2008). This methodology explains the rationale for the choice of methods.

B. Methods

As qualitative research this project turns to the research methods of historical analysis and ethnography. Historical analysis serves as a method in Chapters 4 and 5. In Chapter 4 the research concerns a historical analysis of The U.M.C. and their historical antecedents in order to set the context of the research question. Since Chapter 5 traces the key communication technology events in history, historical analysis serves to locate both the people and the events in time, to analyze the reasons for the moving from using old technologies to using new ones, and to analyze the socio-cultural effects of historical events.

This dissertation employs ethnography as a research method in Chapters 3 and 5. In their text *Ethnography and Virtual Worlds: A Handbook of Method*, Boellstroff (et al. 2012, 1) and his colleagues define ethnography as "an approach for studying everyday life as lived by groups of people." They add, "Historically, ethnographic studies have concerned specific people and the cultures they construct and inhabit" (57). Chapter 3, "Faith Communication Dimensions," deeply describes the collective and individual actions of United Methodists and uses that description to identify dimensions of religion. Since the project socio-culturally analyzes key communication technology events, Chapter 5 studies the "everyday life" use of technologies by Methodists' and earlier people of faith.

In deeply describing the primary research, Chapter 2, like the project as a whole, employs qualitative research. Earl Babbie (2010, 394) sees qualitative analysis as "the nonnumerical examination and interpretation of observations, for the purpose of discovering underlying

meanings and patterns of relationships." This researcher made those observations by personally visiting V.E. research labs across America. The Chair of the dissertation committee, Dr. Marjorie Zielke, recommended university labs that she knew from her expertise stand in the forefront of research of V.E.'s. Initial meetings and tours were scheduled before each trip.

First, following an air trip from Dallas, Texas, to Los Angeles, California, in December, 2014, this researcher visited the Institute for Creative Technologies' Mixed Reality Lab of the University of Southern California. Dr. David Krum, Computer Scientist and Director of the Mixed Reality Lab, provided a tour of the facility, which is housed off campus in an unmarked office building.

Second, the California trip included research at the University of California at Santa Barbara. Lab Manager Brett Ouimette demonstrated immersive V.R. in the Research Center for Virtual Environments and Behavior, which Dr. Jim Blascovich directs. Also, this investigator toured the AlloSphere in the Media Arts and Technology department.

Third, an automobile trip in December, 2014, to the University of Louisiana at Lafayette led to a tour of the Louisiana Immersive Technologies Enterprise (L.I.T.E.) by Business Development Manager Lauren Bostic, who provided the opportunity to experience both non-immersive V.R. and immersive V.R., such as their version of the CAVE™.

Fourth, after a flight to Orlando, Florida, in February, 2015, this researcher interviewed Dr. Julie Salcedo, a post-doctoral researcher at the Institute for Simulation and Training (I.S.T.) at the University of Central Florida. 3D Animation Associate Michael Eakins gave a tour of I.S.T.'s Mixed Emerging Technology Integration Lab (METIL). Other labs visited at I.S.T. included the Synthetic Reality Lab (SReal), the E2i Creative Studio, the Interactive Realities

Lab, and the Simulated Medical Augmented Reality Training (SMART) Lab.

Fifth, a flight to Atlanta, Georgia, in February, 2015, afforded visits at the Georgia Institute of Technology, where interviews of Dr. Jay David Bolter of the G.V.U. Center and Dr. Laura Hollengreen of the School of Architecture occurred. Labs toured at Georgia Tech included the Augmented Environments Lab and the Synaesthethic Media Lab. Sixth, also in Atlanta, the Robert Woodruff Library at Emory University offered an exhibit featuring the Battle of Atlanta and Cyclorama.

Seventh, back in Texas, a flight to San Antonio in September, 2015, enabled a tour of the lab of Dr. John Quarles at The University of Texas at San Antonio, where he serves as an Associate Professor in the Department of Computer Science. And eighth, also in San Antonio, a visit to the campus of the University of the Incarnate Word led to a tour of the McNay Art Museum.

Trips to all eight universities between December, 2014, and September, 2015, afforded tours of the facilities, demonstrations of the V.E. technologies, and interviews of faculty, lab managers, and other researchers. Together, they produced a start of the art of the latest developments in V.E. research. Extensive notes, photographs, and printed pieces provided the material for the writing of Chapter 2, which is entitled "Virtual Environments."

IV. Project Preview

This project seeks to answer the research question, "Do inherent qualities of immersive computer-based media, i.e. virtual environments, offer additional faith communication dimensions that are different from other media types?" The chapters of this dissertation work in progression to answer that question.

Chapter 2 deeply describes V.E.'s, which constitute the **subject of the research question**. The second chapter defines the inherent qualities of V.E.'s, presents the primary research of trips to V.E. labs, and analyzes those technologies and their use for possible faith communication. The chapter ends with an exploration into the theology and philosophy pertinent to V.E.'s. in preparation for the third chapter's articulation of faith communication dimensions, which comprise the **object of the research question** and constitute scholarly contributions.

Chapter 4 sets the **context of the research question** by delineating the historical path that leads from the New Testament times of the first century to The U.M.C. of the 21st-century because this research focuses on the U.M. faith. Chapter 5 blends socio-cultural analysis of key communication technology events (K.C.T.E.) with both the extensive literature review of the multidisciplinary scholarship related to those events and the frameworks employed for that analysis. This project's **research contribution** emerges in the design of V.E.'s for faith communication as found in Chapter 6, which includes the primary research, that is, the investigation into the latest V.E. research at eight universities across America. That penultimate chapter deeply describes and analyzes the primary research. Chapter 7 concludes the dissertation with a summary of findings, potential drawbacks and pitfalls of using V.E.'s for religion, a final discussion of the frameworks, and suggestions for future research. *This researcher presents both historical and new ways for understanding the virtual and invites the reader to imagine the possibilities of using V.E.'s for the communication of the U.M. faith.*

CHAPTER 2

VIRTUAL ENVIRONMENTS

> We are young but getting old before our time. We'll leave the T.V. and the radio behind. Don't you wonder what we'll find, steppin' out tonight? (Jackson 1982)

I. Introduction

V.E.'s are the subject of the project's research question. Before further research can occur, an understanding of technical and related terms is required. This chapter then identifies the inherent qualities of V.E.'s. The primary research of latest developments in V.E.'s and analysis of those developments as well as the philosophy and theology of V.E.'s and the virtual appear here. This extended chapter continues the sojourn toward and through the virtual.

II. Definitions

For Woodrow Barfield and Robert Williges (1998, 351), "The term *virtual environment* represents a family of computer-generated virtual representations of human visual, proprioceptive, haptic, auditory and olfactory displays. The VE can be a mixture of both real and virtual images." This and other definitions of V.E.'s focus on the displays because the displays are the locus of the human-computer interface (Steinicke 2011); however, V.E.'s can involve all of the human senses.

Haptic means "related to the sense of touch" (Blascovich and Bailenson 2011, 237-238). Haptic differs from **proprioception**, which refers to the ability to sense change in body position or motion (Menguc et al. 2013); in the words of Slater, Steed, and Chrysanthou (2002, 23),

"*Proprioception* refers to the internal (unconscious) mental model that a person has regarding the current state and disposition of their body." Mark Paterson develops the following elaboration of proprioception and related terms:

> [**Proprioception** is the] perception of the position, state and movement of the body and limbs in space. Includes *cutaneous, kinaesthetic*, and *vestibular* sensations. **Cutaneous** [is defined as] pertaining to the skin itself or the skin as a sense organ. Includes sensation of pressure, temperature and pain. **Kinaesthesia** [is] the sensation of movement of body and limbs. Relating to sensations originating in muscles, tendons and joints. **Vestibular** [means] pertaining to the perception of balance, head position, acceleration and deceleration. Information obtained from semi-circular canals in the inner ear. (Paterson 2007, ix)

In order to sense touch in V.E.'s, especially for manipulating virtual 3D objects, users of V.E.'s need haptic input devices, such as data gloves. Bowman et al. (2005, 106, 108) classify data gloves as coming in two types: "bend sensing gloves," which "are purely passive input devices used to detect hand postures … and certain gestures"; and "the Pinch Glove," which "is an input device that determines if a user is touching two or more fingertips together." Bowman et al. recommend a combination of the two categories, called the "Flex and Pinch input system." They write, "The pinch buttons, which are connected to a microcontroller, are made from conductive cloth and can be placed anywhere on the bend-sensing glove" (109). Farhadi-Niaki et al. (2013, 315) utilize a haptic 3D mouse that produces "haptic force-feedback."

Regarding the "manipulat[ion of] 3D objects in virtual environments," Aras, Shen, and Noor (2014, 43) describe the AIREAL as a "device [that] uses free air flow to transfer sense of touch information. The user, while not required to be in contact with the physical device, is able to feel virtual objects, experience dynamically varying textures, and receive feedback on full-body gestures." Other haptic input devices include "ShapeTape," "Interaction Slippers"

(Bowman 2005, 114, 115), Leap Motion detector, and gaming input devices for the Kinect and Wii (Owens 2014).

This project makes an important distinction between two different definitions of **immersion/immersive**. First, the **technical definition** describes the technology rather than the experience of using it. Slater and Wilbur (1997, 3) state that **immersion** "describes the extent to which the computer displays are capable of delivering an inclusive, extensive, surrounding and vivid illusion of reality to the senses of a human participant." **Immersive** means that users can enter a 3D environment that is screen-based or space-based, in which they sense computer-generated sounds, visuals, and/or other-sensory impressions, and have a awareness of **presence**, that is, the sense of actually "being in" the virtual environment (Slater and Wilbur 1997, 607).

The screens of **screen-based** technologies include the screens of desktop/laptop computers, tablets, and smartphones and the small screens inside H.M.D.'s. **Space-based** technologies are ones in which users can physically enter an environment. The CAVE™, similar space-based technologies, and desktop V.R. <u>with</u> H.M.D.'s are immersive, while desktop V.R. with<u>out</u> H.M.D.'s are non-immersive. According to the technical definition, many marketers of videogames erroneously label their games as immersive (Calleja 2011, 25); but without H.M.D.'s, the technology on which games are installed is technically non-immersive because the eyes of the players are not enclosed.

The second, **psychological definition of immersion/immersive** that this project will employ comes from Joseph Nechvatal, for whom "Immersion is the state of consciousness where an immersant's awareness of physical self is diminished or lost by being surrounded in an engrossing total environment; often artificial" (Doyle 2010, 4). While the technical definition

describes the technology, this psychological definition pertains to the experience of the immersant. Although many, sometimes-conflicting definitions of **V.R.** exist, as the literature review later will elaborate, this dissertation turns to the definition of Steve Bryson (1996), who describes V.R. as the "interface paradigm that uses computers and human-computer interfaces to create the effect of a three-dimensional world in which the user interacts directly with virtual objects." According to the technical definition of immersion, V.R. technology can be immersive or non-immersive depending on whether or not the user's vision is completely enveloped, such as by wearing a **head-mounted display** (H.M.D.) or by locating oneself in a CAVE™.

An H.M.D. is a device with a horizontal strap that goes across the back of the user's head and possibly a vertical strap that runs over the top of the head in order to secure the heaviest, front part of the H.M.D., which covers the eyes. For Doug Bowman et al. (2004, 49), "an HMD's main goal is to place images in front of the user's eyes using one (for monoscopic viewing) or two (for stereoscopic viewing) small screens." The H.M.D.'s display serves as a primary interface between the user and the screen-based V.R. environment. Developed by Carolina Cruz-Neira, Daniel J. Sandin, and Thomas A. DeFanti (1993), the "**CAVE** Automatic Virtual Environment" is a small-bedroom-sized cube with rear-mounted video projectors, that is, the projectors project the image from behind the screens to the back of the screens, but the users in the CAVE can clearly see the images. The user or users don special glasses—similar to sunglasses, sometimes with motion-capture sensors, step into the CAVE™ through an open side of the cube, and find themselves surrounded by visual images projected from outside the cube on as few as two or three surfaces or as many as six surfaces.

Designers of V.R. projects employ **V.R. engines** for their projects. V.R. engines often fall under the category of game engines because many V.R. projects take the form of games, also called video games or digital games. In trying to differentiate game engines from games, Jason Gregory (2009, 11) sees a "blurry" line of demarcation between the two and "reserve[s] the term 'game engine' for software that is extensible and can be used as the foundation to many different games without major modification." Popular commercially-developed game engines or game development platforms include the Unity Software Development Kit (S.D.K.) Engine and the Unreal Engine.

H.M.D.'s require a **tracking system** in order to physically locate the users, detect their movements, and then apply such positional information to the V.R. environment. Steinicke et al. (2011) provide the following explanation:

> Most HMDs are commonly equipped with a tracking system, which measures the HMD's position and orientation. This information can be used to update the view of the virtual world according to the HMD's actual movements. This allows users to "look around" in a VR environment similar to the real world…. (888)

Figure 2.1. The Motion Capture Lab in the Edith O'Donnell Arts and Technology Building at U.T.D. Photograph by author.

Such requirements have necessitated that the use of V.R. technologies occur within a **motion-capture laboratory**. Figure 2.1 shows the open room with mounted infrared cameras capable of picking up and tracking the motion of sensors. Users might need additional sensors, such as on the hands and feet. Newer, much-less-expensive H.M.D.'s for consumers, such as the Oculus Rift, need not a motion capture lab but their own camera for position tracking. The year 2016 saw a marketing explosion of headsets that simply hold horizontally-oriented smart phones with V.R. applications including YouTube and many others. These easy-to-use, inexpensive systems do not have proprioceptive capabilities, but they allow a much larger audience to experience the world of V.R.

Whether screen-based or space-based, V.R. systems can include auditory as well as visual displays. **Three-dimensional** can describe both the audio and the visual. Headphones can accompany H.M.D.'s, while space-based V.R. technologies can include external speakers. "One of the major goals of auditory displays in VEs," according to Doug Bowman et al. (2004, 59), "is the generalization and display of spatialized 3D sound, enabling the human participant to take advantage of his auditory localization capabilities." In other words the listener can locate a sound's perceived origin within the V.E. A 3D-auditory display, therefore, is an immersive V.E. technology.

Specifications help to classify and measure V.R. systems and H.M.D.'s. Katerina Mania et al. (2004) states, "Virtual Environment (VE) **latency** is the time lag between a user's action in a VE and the system's response to this action." The greater the latency, measured in milliseconds, the more that system-performance degrades. Moreover, the number of **degrees of freedom** is a key specification for V.R. systems. Degrees of freedom describe the way that an

object is positioned or moves in three-dimensional space, whether that space is physical or virtual. A standard mechanical device, such as a joystick, has two degrees of freedom because the knob moves around two independent axes. Sherman and Craig (2002) provide the following explanation of degrees of freedom:

> When a body can move independently of any mechanical linkages, then any possible movement can be stated in terms of six degrees of freedom. These six degrees are specified as three rotational and three translational degrees…. We can speak of the rotational movements as *roll, pitch,* and *yow* and the translational as simply location along the x, y, and z axes. (80)

In other words the three rotational movements define the body's orientation, while the three translational movements pinpoint the location. The rotational and translational together produce a more-complete description of the object's movement in 3D-space. An object's having more degrees of freedom results in more-accurate location determination by tracking devices as the object moves through space.

V.R. systems are rated on the faithfulness of what they represent. **Faithfulness** is a translation of the Latin word *fides*, from which comes the English word "fidelity" (Fullam 2012). In the context of V.R., Ryan McMahan et al. (2012, 626) define **fidelity** as "the objective degree of exactness with which real-world experiences and effects are reproduced by a computing system." Ragan et al. (2013, 886) observe, "Compared to standard desktop displays, immersive VR systems produce visual stimuli with a higher level of similarity to real-world stimuli (we refer to this as the system's level of *fidelity*)." McMahan et al. (2012, 626) differentiate between "**display fidelity** (the objective degree of exactness with which real-world sensory stimuli are reproduced)," of what one usually thinks of fidelity in regards to V.R. systems, and "**interaction**

fidelity (the objective degree of exactness with which real-world interactions can be reproduced)."

Measured in degrees, **field of view** (F.O.V.) serves as another key specification of V.R. H.M.D.'s. Steinicke et al. (2011) present the following explanation of field of view and display field of view:

> Besides high resolution, one of the most often named requirements for a HMD is a large field of view (FOV). This FOV refers to the horizontal and vertical angles subtended by the display—sometimes referred to as *display field of view* (DFOV)…. Usually a larger DFOV results in a greater sense of immersion and better situational awareness. (888-889)

Head-mounted displays with larger F.O.V.'s offer more peripheral vision than do units with smaller F.O.V.'s; for example, an H.M.D. with a D.F.O.V. of one-hundred-and-fifty degrees increases the viewer's peripheral vision from that of an H.M.D. with a D.F.O.V. of one-hundred-and-twenty degrees and is a more-immersive technology. Like field of view, **field of regard** (F.O.R.) also measures visual display fidelity.

Researchers can measure F.O.V./D.F.O.V. and F.O.R. for H.M.D.'s and spaced-based V.R. technologies. While F.O.V. describes "the size of the visual field (in degrees of visual angle) that can be viewed instantaneously by the user," F.O.R. refers to "the total size of the visual field (in degrees of visual angle) surrounding the user" (McMahan 2011, 6). All else being equal, a display with a larger F.O.R. is a more-immersive technology than is a display with a smaller F.O.R.

A sibling to V.R. in the V.E. family, **augmented reality** (A.R.) "is a technique that combines a live view in real-time with virtual computer-generated images, creating a real-time 'augmented' experience of reality" (van Kleef, Noltes, and Spoel 2010, 1). Frances Tscheu and

Dimitrios Buhalis (2016, 609) acknowledge that A.R. "is not a new concept, but improvements in hardware, bandwidth and technological capabilities, as well as the growing demand for mobile devices, have accelerated the development." As with V.R., A.R. can be non-immersive or immersive. Examples of non-immersive A.R. include Google Glass and tablet apps that allow the user to point the camera at a building location and then see on the screen additional information or superimposed graphics, such as a text listing the contents of the edifice or graphics showing the way that the building used to look. An installation in a Byzantine basilica where images are projected on the walls exemplifies immersive A.R. Visitors to such an installation walk into the basilica and view projected images showing how the structure appeared when new.

Other siblings in the V.E. family, **desktop/laptop V.E.'s** are the most common. Examples include video games, serious games, training V.E.'s, and simulations run on a desktop computer or laptop computer. These V.E.'s become immersive V.R. with the addition of H.M.D.'s, such as the Oculus Rift, which does not require a motion capture lab in order to function. The Oculus Rift H.M.D. for Developer Kit Two "contains a gyroscope, accelerometer, and magnetometer" for orientation tracking and "an array of infrared micro-LEDs, which are tracked in real space by the included infrared camera," for position tracking (Oculus 2016). Current tablet technology does not have graphic cards capable of supporting H.M.D.'s.

The primary research discovered a hybrid V.E. called **mixed reality**. "An MR environment," declare Thomas Holz et al. (2011, 1), "is an environment within which the domains of the virtual and the physical are fused in a spatially coherent manner." Costanza, Kunz, and Fjeld (2009, 49) add, "By its very nature, Mixed Reality (MR) is a highly

interdisciplinary field engaging signal processing, computer vision, computer graphics, user interfaces, human factors, wearable computing, mobile computing, information visualization, and the design of displays and sensors."

Some simulators fall into the M.R. category; for example, the Individual Nystagmus SImulated Training Experience (INSITE) project at The University of Texas at Dallas offers law enforcement officers additional training experiences by combining the virtual environment of a vehicle driver suspected on drunken driving with physical-world tracking of an officer's finger. Mounted on a speaker stand at the height of a life-sized adult, the monitor shows only the head of the suspect. The Leap Motion-detection device on top of the monitor detects the movement of an officer's finger, while the eyes of the virtual suspect follow that finger and also present the visual indications of alcohol and other drugs. Knowledge of these important V.E. terms "lays a foundation for the building" of detailed understanding of V.E.'s.

II. Inherent qualities of virtual environments

A. Immersion

A very-important quality related to V.E.'s, immersion serves as an analytical framework in this major section of the literature review. Two definitions of immersion serve this analysis: the **technical definition** of Slater and Wilber (1997, 3), which describes the technology; and the **psychological definition** of Joseph Nechvatal (Doyle 2010, 4), which pertains to the experience of the immersant. This dissertation will show that some V.E.'s, such as V.R., some A.R., and desktop digital games *with* H.M.D.'s, are immersive technologies, while other V.E.'s, such as desktop digital games *without* H.M.D.'s and some A.R., are not immersive technologies, as

Table 2.1. Virtual Environment Technologies by Type of Technical Immersion

Technical Immersion	V. E. Technologies: Virtual Reality		V. E. Technologies: Augmented Reality
Non-Immersive	Non-Immersive Virtual Reality	Desktop V.E.'s Without H.M.D.'s	Non-Immersive Augmented Reality
Immersive	Immersive Virtual Reality	Desktop Virtual Environments With Head-Mounted Display	Immersive Augmented Reality

shown in Table 2.1. Understanding how other fields appropriate the terms *immersion* and *immersive* illuminates the understanding of how immersion does or does not apply to V.E.'s.

Pastors of The U.M.C. and her predecessors have practiced three forms of Christian water baptism: pouring a pitcher of water over the heads of baptismal candidates as they lean over a font; fully immersing the candidates in a body of water, such as a lake, a river, a baptistery in a church building of another denomination, or a swimming pool; and sprinkling water on the heads of the candidates. Sprinkling has been the most common form of baptism for United Methodists. The water completely covers every square inch of the candidates who receive baptism by immersion. Such imagery illustrates the all-enveloping nature of immersion.

The communication of the faith has required teachers to educate others. Christian educators can examine the practices of teachers in other fields in order to learn how to incorporate immersion in their teaching experiences. For instance, teachers of second languages

for decades have created immersive experiences for their students by requiring that they speak the other language while in class. The educators have varied the amount of immersion by raising or lowering the percentage of the second language read or spoken (Cummins 1998). Usually, educators increase the level of immersion as students become more familiar with the language; for example, students become more immersed as the semester progresses and as they take subsequent courses. Schools and universities have sent students to other countries where the denizens speak another language or have housed students in dormitories or apartments in which they require that the residents speak only the second language.

Professionals and graduate schools appreciate immersion, even if the immersion occurs only briefly; for example, in their annual "10 best online master's degree programs for PR pros," Ragan's *PR Daily* (Reid 2015) awarded Gonzaga University's Master's of Arts in Communication and Leadership Studies degree program for offering the "best campus immersion" because the program in public relations—which falls under communication studies— "requires students to take a three-day trip to Spokane, WA to get acquainted to the program—and their peers—face to face." Teachers of students much younger than those attending colleges and universities also value immersion. Fifth-and-sixth-grade history teachers, for instance, have required students to re-enact battles, such as in the Revolutionary War or the American Civil War. The boys and girls employ most of their senses as play soldiers, military and political leaders, and townspeople. Educators hope to effect a sense of "being there" for the students and thus help them to learn.[1] The disciplines most pertinent to the understanding of

[1] Lithography, materials science, materials engineering, physics, and other sciences immerse materials in organic and inorganic liquids. Even the formal discipline of food science employs immersion in the immersing of food in water, such as when chefs water-chill poultry (Huezo et al. 2007).

immersion for this research are theatre, digital-game studies, and virtual reality, all of which provide frameworks that assist with analysis.

1. Immersion in immersive theatre and worship

The study of immersion in theatre pertains to this research because Christian worship resembles immersive theatre. The psychological definition of immersion applies here because the spotlight shines on the *experiences* of the theatregoers and performers, as well as participants in a worship service. Some Protestant denominations refer to the worship space as the "auditorium" because they concentrate on the *auditory*, namely the words of the Bible read, of the sermon spoken, and of the hymns sung. Roman Catholic and Orthodox churches call the front of the worship space, the area where the priests preside, the "sanctuary" because there the priests perform holy functions, such as the consecration of the elements of the Blessed Sacrament. The word "sacrament" comes originally from the Greek *mystérion*, which is found in the New Testament, "implies acts in which God is disclosed to us," and incorporates "the cosmic dimension of divine personal self-giving" (White 1990, 171). We humans do not know exactly how the Holy God operates in the sacraments. Also, the *sanct-* prefix of "sanctuary" means holy.

United Methodists take more of a *via media*[2] by calling the worship space the "sanctuary" because the church has dedicated the space to the worship of God, by identifying holy communion and Christian baptism as sacraments, and by physically centering the communion table and the pulpit/lecterns at the front of the sanctuary. United Methodists consider the whole space as holy because they follow Martin Luther's call for the priesthood of all believers;

[2] *Via media* means the middle way or path. Church historians describe Anglicanism as the middle way between the rest of Protestantism and Roman Catholicism.

therefore, the holiness of the actions performed by the clergy in the chancel area equal the holiness of the actions of the laity in the nave, i.e., where the congregation sits and stands (Hickman 1991). The whole sanctuary thus serves as the immersive theatre for the drama of worship.

The metaphor of worship as theatre proposed by the nineteenth-century Dutch philosopher and theologian Søren Kierkegaard reverses how many Protestant Christians have conceptualized "conventional roles" in worship services (Thompson 2012, 4). Instead of viewing the congregation as an audience and the preacher as an actor, Kierkegaard (2013) proposes that Christians see the preacher as the director and an actor, the congregation as the actors, and God as the audience and playwright (Hickman 1991). United Methodists traditionally have called the time of corporate worship[3] the worship *service*, not the worship *concert,* the worship *play,* or even the worship *ceremony,* because worshipers *serve* God with their worship. For example, the congregation sings, prays, and reads the liturgy, which etymologically means "work of the people" (Pickstock 2000, 163). Thus, at the start of the service, worship leaders invoke God's name because God is the intended audience for all that happens during the worship service.

Within the last decade, scholars of the theatre have identified *immersive* as a form of theatre-going experience. The audience sits in chairs in the auditorium while they watch the actors perform on stage (Theatre Projects Consultants 2009) in traditional-or-conventional theatre-going experiences. With immersive theatre experiences, however, the audience usually

[3] As opposed to "individual worship," "corporate worship" refers to the worship of God by the corpus, or body, of Christians. In a local congregation, those people gathered for a worship service on a weekend are practicing corporate worship.

stands near or among the characters. The lines of demarcation between the physical places where the audience observes or participates and where the actors perform remain fuzzy and fluid. "You," as a person who participates in an immersive-theatre-experience says Josephine Machon (2013, 54), "are physically surrounded by another world," one "that has its own rules…. You feel like you are responsible for the secrets you uncover and performances you find." She provides both concise and extended definitions of immersion. Her succinct definition of immersion alludes to water with her inclusion of "being submerged." Machon (2013, 21-22) writes, "immersive experiences in theatre combine the act of immersion—being submerged in an alternative medium where all the senses are engaged and manipulated—with a deep involvement in the activity within that medium." Throughout her book Machon describes theatre from the vantage point of the experiences *of the people attending the play* instead *of the actors, directors, writers, producers, or house owners.*

Rather than simply consider a performance as immersive or non-immersive, Machon has developed an elaborate qualitative scale of immersivity, based on ten elements or criteria. She insists that a particular performance does not have to possess all of these elements but that the more elements it does have and the greater amount of each element it does show, then the higher the level of immersivity that exists. The first criterion for immersion is that the performance resides "*in-its-own-world"* (emphasis added), that is, another world different from that of everyday life. Second, those people attending the event are keenly aware of the "*space*." Third, each event's "*scenography*" is tailored to the topography of an external location or the architecture of the house. Fourth, regarding "*sound"* Machon (95) asserts, "Designed, composed, and naturally-occurring sound is important, in equal measures." Fifth, "*durational"*

refers, not to the run time, but to the length of time that the characters, audience, and event creators agree is passing in that world, such as hours, days, months, or even years. Sixth, immersive theatres always remain "*interdisciplinary/hybridized practice*" in that they blur "boundaries between installation, performance, private and public ritual, underground gigs and open-air festivals" (97).

Immersive theatre focuses the attention of the audience on the individual "*bodies*" of the performers and sometimes of the audience. The eighth and "pivotal" criterion is the "*audience*." Machon (98) asserts, "The direct, actual, physical insertion of an individual audience member within the world of the event, into the performance itself, is paramount and absolute." A "*contract for participation*" ensures the safety and care of both the audience and the performers. Two additional criteria augment these nine elements: the "*intention*" of the creators and performers of each event and their "*expertise*" in conceptualization and execution. Machon (100) concludes, "If the answer to both of these final two criteria is 'yes,' then it is likely that you have experienced a piece of immersive theatre." Although Machon does not take the additional step of creating a method to quantify the level of immersivity as Mel Slater (2003, 4-5) and Pausch, Proffitt, and Williams (1993) would like to do, her criteria highlight the amount of analysis needed when trying to determine the amount of immersivity of a performance, worship service, or V.E.

Machon's criteria for immersivity describe immersivity also in worship services. Worshippers also can understand that corporate worship takes place "*in-its-own-world.*" In a study of congregations, Richard Wolff (1999, 222) reports, "Ecclesiastic experience consistently emerged among research participants' descriptions as a contrast to 'everyday' experiences." Not

only the conceptual world, but also, the *space* for worship services stands against those of the everyday. "For religious man," writes Mircea Eliade (1987, 20), "sacred" space differs from "profane" space; for example, Christians have believed that worship occurs in sacred space, which differs from the everyday space of the home, the office, the schoolhouse, and the rest of the secular world. Eliade (1987, 26) powerfully proposes, "Every sacred space implies a hierophany, an irruption of the sacred that results in detaching a territory from the surrounding cosmic milieu and making it qualitatively different." For their sacred space, United Methodist Christians point to the sanctuary, whether located in a white-framed country church structure, a medium-sized brick church building, a cavernous cathedral, a church gym with folding chairs, a rented school building, a storefront, or an outdoor venue.

As Machon's "*scenography*" is customized for each immersive theatre venue, worshippers become more immersed when the worship style fits the architecture of the space; for instance, a traditional cathedral needs traditional styles of worship. If the style of worship does not match the style of architecture, the worshippers sense the incongruence as the architecture overwhelms the worship style (Feile 1994). Each location has its own acoustics and ambient *sounds*, to which the instruments, voices, and sound system add intentional sounds. Worshippers hear the sound of baptismal water hitting the font as the deacon or pastor pours it before a baptism by the modes of sprinkling or pouring. Wolff (1999, 229) observes, "Congregants may not see things from the same perspective but they are all immersed in the same sounds - the speaking of the prayers which 'links us up,' the singing of hymns in which individual voices get 'drowned out' and 'blend together.'"

Machon's "*durational"* applies to worship services. Similar to how religious people differentiate between sacred space and profane space, Eliade (1987, 68) contends, "For religious man time too, like space, is neither homogenous nor continuous." Following Judaism's contribution of looking at time as a vector, Christianity examines time by the liturgical season, the seven-day week, and the hour. The secular time before and after the worship service differs from the hour or so that United Methodists dedicate to the corporate worship of God, which usually happens on Sunday mornings because Christians believe that Christ arose early in the morning on the first day of the week. Wolff (1999, 228) reports that the time of the worship service "is a time wherein time's ordinary way of passing is bracketed ('it's sort of a suspension of time' [as one of Wolff's study participants responded]), thus differentiating this time from others."

Worship services involve "*interdisciplinary/hybridized practice.*" The worship arts include music, visual arts, drama, liturgical dance, and projected visual imagery. Preachers turn to theology, philosophy, Biblical studies, psychology, counseling, rhetoric, logic, literature, film, digital media, journalism, technology, science, history, current events, and many other subjects to craft their sermons. Worshippers follow the order of service on printed bulletins, on projected images, with auditory rubrics, and with visual cues.

The physical "*bodies*" of the worship leaders and the congregants play roles. Although an observer might decide that United Methodists want to diminish the importance of bodies during worship because robes cover the bodily frames of the worship leaders, acolytes, and choir members in order to downplay individuality and sexuality, United Methodists actually affirm the importance of the human body to worship services. Robes identify worship roles, mark liturgical

days and seasons, and promote unity. Worshippers might wear their Sunday best or dress casually. People shake hands and give hugs. Some congregations have members hold each other's hands at the end in order to help build or demonstrate community. For worshippers to join a congregation as preparatory members, such as for babies or other children, or as full members, such as for youth or adults, they first must be baptized into the Christian faith. The physical body of the baptismal candidate must come in contact with the baptismal water via sprinkling or pouring on the head or be immersed in water via immersion. Worshippers feel the bread and the cup of Holy Communion. They taste the bread and then drink the wine or grape juice. During services of confirmation or ordination, pastors and others place their hands on the head and shoulders of the candidates to indicate the activity of God the Holy Spirit. This research elsewhere will discuss the importance of incarnation.

In-person worship services solidly meet the "pivotal criterion" for Machon (2013, 98) to determine the level of immersivity in immersive theatre, i.e., the "direct, actual, physical insertion of an *audience* (emphasis added) member within the world of the event, into the performance itself." Once again, Kierkegaard (2012) reminds Christians that the worshipping laity are the actors. Worshippers *serve* God during worship *services*. Although on the historical line from the early church to the Protestant Reformation some priests officiated in private masses (usually for money and on behalf of someone), corporate worship services have had a congregation, no matter how small or large. Mark C. Rehfuss, Agatha Parks-Savage, and Arlene Malone (2007) determined that the best way for counselors to learn about a faith with which they are unfamiliar is for them to have an "immersive experience" by actually attending a worship service of that faith.

Immersive theatre offers their audience a "*contract for participation.*" The U.M. version of such a contract revolves around the church's taking responsibility to care for those in their worship services. If children leave the sanctuary to attend a children's worship service or if parents place their young children in the nursery while they attend worship in the sanctuary, parents trust that their children will be safe. Recent decades have witnessed the formal Safe Sanctuaries movement, in which local congregations have developed policies in order to protect the safety of children, youth, and adults—both staff and attendees. Also, those people attending worship understand that worship leaders have assigned roles. A layperson may preach from the pulpit or read the liturgy from the lectern, for example; but they may do so only with the permission of the pastor or some other church official.

For the church the amount of immersive theatre's last two elements, "*intention*" and "*expertise,*" vary from service to service. Worship services require much planning and practice, especially if the planners want to create immersive experiences for worshippers. The worship planners must intend to have services that provide immersive experiences, and worship leaders must have the expertise to lead the service. The U.M.C. requires its Elders, i.e., its itinerating clergy who are called to Word, Sacrament, Order, and Service, to have a Master of Divinity or similar degree from a seminary approved by the denomination's University Senate. Deacons, i.e., its clergy who are called to Word, Service, Compassion, and Justice, also need a master's degree. The denomination wants its clergy to have such advanced degrees in order to most effectively lead the Church, especially in its liturgical life. As Machon (2013, 100) subjectively determines that a performance probably is "a piece of immersive theatre" if its creators *intended*

for it to be immersive and if the actors had the *expertise* to perform it well, a worship service also probably provides immersive experiences for the worshippers if it meets these last two criteria.

2. Immersion in digital gaming

The study of immersion in digital gaming affects this research. First, such formal studies serve as the foundation for the study of immersion in immersive theatre; in other words, immersive theatre has borrowed from and built upon digital-gaming studies regarding immersion. For the genesis of the formal use of the term "immersive theatre," Machon (2013, 65) points to 2004, that is, years after the advent of digital-game studies. This research will follow Calleja's lead and use the nomenclature *digital games* instead of *videogames* because *videogames* implies a certain system when *digital games* can be played on multiple platforms and devices. Unfortunately, Calleja (2011) finds in gaming and Machon locates in theatre misuses and overuses of "immersive." These scholars respectively warn that particular digital games and theatrical performances might possess some immersive qualities or be called immersive while not actually falling in that category. For example, a desktop digital game might have avatars and agents interacting within a V.E., and a play might take place outside the theatre or include audience participation; but neither one with only those descriptions is truly immersive, especially under the technical definition of the term.

Overall, immersive theatre and digital game studies share some beneficial affiliations regarding immersion. Calleja (2011, 26) synthesizes the theories of immersion of Elena Gunkel and Salen and Zimmerman into what Calleja labels "immersion as absorption," which Mahon (2013) appropriates for immersive theatres. Although Calleja sees "immersion as absorption" as failing to uniquely describe immersion for digital games, Mahon seeks this kind of immersion

for theatregoers. She (62) states, "The theatre event is able to engage the participant fully in terms of concentration, imagination, action and interest." Calleja (27) adds a needed second type of immersion, "immersion as transportation, which refers to the idea of being present in another place." Mahon (63) applies this type of immersion to the theatre: "immersive theatre worlds afford *actual,* physical cohabitation and contact between human bodies, thereby fusing imagination, interpretation and interaction." Digital-gaming scholars Emily Brown and Paul Cairns add a third, extreme type of immersion, "total immersion" (Calleja 2011, 30). Machon locates all immersive performances somewhere on a line connecting these three types of immersion.

Another, more important reason why the study of immersion in digital gaming affects this research is due to digital gaming's close relationship with desktop V.E.'s, which along with V.R. and A.R., this paper will propose could be used to simulate the system of beliefs of The U.M.C. Calleja (2011, 8) notes that a digital research such as *Grand Theft Auto IV* actually is, not a videogame with a V.E. in it, but a V.E. with embedded digital games and a narrative running through it. Rockstar North commercially developed the *Grand Theft Auto* series of games for entertainment purposes, but other developers and researchers have created serious games.

Marjorie Zielke from U.T.D. calls the virtual worlds of the serious games "living worlds" (Zielke et al. 2009), "virtual environments" (Zielke et al. 2010), "synthetic worlds," "synthetic environments," and "virtual humans and synthetic societies" (Zielke and Hardee, 2011). Zielke, Linehan (2009), and their colleagues developed the "First Person Cultural Trainer" for the TRADOC G2 Intelligents Support Activity in order to train soldiers how to understand the cultures of specific other lands, especially how local people communicate. "First Person" in the

name of this desktop-based V.E.'s simulator refers to the vantage point of the soldier's avatar. Zielke (et al. 2013) and her colleagues worked with nursing school faculty at The University of Texas at Arlington to create "A Game to Learn Important Communication Methods for Patient Safety Enhancement" (GLIMPSE). This asynchronous, web-based, social, serious game trains nurses and physicians how to improve their communication with each other. Judy LeFlore (et al, 2011) and her colleagues worked with Marjorie Zielke and others to develop "NursingAP," a virtual simulator to train nursing students.

All of these worthwhile projects are V.E. serious games. They afford users such as soldiers, physicians, and nurses opportunities to train, learn, and improve communication skills. As simulators they allow users to accumulate practice hours without requiring the use of human trainers and to push limits and safely fail (Donovan 2012, 10), that is, fail without hurting actual civilians or patients. As serious games they monitor progress, provide needed feedback, and appeal to students with various learning styles, such as kinetic and social. As V.E.'s they allow users to see into places and experience situations to which users might not have yet been exposed. V.E.'s can depict any environment and situation that developers can design.

3. Immersion in virtual environments

And thirdly, the study of immersion in V.E.'s influences this research. Unfortunately, definitions of immersion and related qualities and their applications vary from author to author. Many authors correctly label V.R. as immersive but have different definitions for V.R. Writers in the gaming industry use *immersion, presence,* and *engagement* interchangeably, while most authors present separate definitions for each word. Some authors might agree on the definitions of the qualities such as *engagement*, *engrossment, ergodicity, fidelity, immersion,* and *presence*

but disagree on the definitions of the technologies to which they relate. Some apply the terms to the technologies, while others employ them for the experiences of the users. The existence of various definitions and uses of immersion in V.E. can lead to incompatible comparisons.

Some authors write that immersion applies to the user's experience of V.E.'s. Cultural anthropologist Karol A. Chandler-Ezell (2014) views the *experience* of playing a digital game as immersive when players don headphones, sit in a chair in front of a desktop display, turn on Skype to communicate with other players, and lose track of time. Bob Witmer and Michael Singer (1998, 227) provide their definition of immersion: "A psychological state characterized by perceiving oneself to be enveloped by, included in, and interacting with an environment that provides a continuous stream of stimuli and experiences." Janet Murray (1997, 98) in her seminal and creatively-entitled book *Hamlet on the Holodeck* writes that immersion is "the experience of being transported to an elaborately simulated place." Gordon Calleja (2011, 27) groups both immersion definitions coming from the humanities and presence theory under the umbrella of "immersion by absorption." These definitions of immersion resemble the definition of presence by Mel Slater and Sylvia Wilbur (1997, 607): "Presence is a state of consciousness, the (psychological) sense of being in the virtual environment." "Presence" is shortened from Jonathan Steuer's (1992, 76) term "telepresence," which he defines as "the experience of presence in an environment by means of a communication medium."

Other authors appropriately apply *immersive* to the V.E. technology instead of to the user's experience. Slater and Wilbur (1997) declare that immersion "describes the extent to which the computer displays are capable of delivering an inclusive, extensive, surrounding and vivid illusion of reality to the senses of a human participant." With the technical definition,

immersion refers to the objective, measurable qualities of the V.E. system; on the other hand, presence, i.e., the sense of "being there" (Bowman and McMahan 2007), refers to the subjective response of the user of that system. Slater and Wilbur (1997) and Bowman and McMahan (2007) acknowledge that users may have different responses to the system each time that they use it, but the level of immersion remains the same if no hardware or software changes have been made to the system.

These substantive disagreements about immersion and related words have led some scholars to back away from using *immersion.* Gordon Calleja (2011, 169) rejects *immersion* by itself in favor of combining *immersion* and *presence* into *incorporation,* which he defines "as *the absorption of a virtual environment into consciousness, yielding a sense of habitation, which is supported by the systemically upheld embodiment of the player in a single location, as represented by an avatar*." Such a move complicates rather than clarifies the argument about immersion.

Ryan McMahan et al. (2012, 626) travel in the other direction by shifting the discussion from *immersion* to *fidelity*, which they define as "the objective degree of exactness with which real-world experiences and effects are reproduced by a computing system." Like *immersion* and unlike *presence*, *fidelity* is an objective quality of the technology. Unlike immersion, which they limit to immersive V.R., fidelity may refer to any electronic communication technology, such as home audio systems, computer monitors, and television screens. McMahan et al. (2012, 626) narrow the focus to "display fidelity (the objective degree of exactness with which real-world sensory stimuli are reproduced)" and "interaction fidelity (the objective degree of exactness with which real-world interactions can be reproduced)." This research posits that both technical and

psychological meanings of immersion may apply and acknowledges that analysts need to identify with which definition they are working in order to avoid confusion.

B. Inherent qualities of the tools of virtual environments

1. Of artificial intelligence

Although Greek myths of the inventions of Hephaestus and Talos allude to intelligent mechanical robots, John McCarthy coined the term "artificial intelligence" (A.I.) as a topic at the first A.I. conference, held at Dartmouth College in 1956. The Association for the Advancement of Artificial Intelligence (2008) defines A.I. as "the scientific understanding of the mechanisms underlying thought and intelligent behavior and their embodiment in machines." Zhongzhi Shi provides the following definition:

> Artificial intelligence is a branch of computer science and a discipline in the study of machine intelligence, that is, developing intelligent machines or intelligent systems imitating, extending and augmenting human intelligence through artificial means and techniques to realize intelligent behavior. (Shi 2011, 614)

Shi bifurcates A.I. into symbolic intelligence and computational intelligence, while Kevin Warwick (2012) differentiates between "classical A.I." and "modern A.I.".

Artificial intelligence offers numerous features of value. Ghassan Issa of Petra University presents his list of A.I.'s features:

- Use of symbolic reasoning.
- Focus on problems that do not respond to algorithmic solution (Heuristic).
- Work on problems with inexact, missing, or poorly defined information.
- Provide answers that are sufficient but not exact.
- Deals with semantics as well as syntactic.
- Work with qualitative knowledge rather that quantitative knowledge.
- Use large amount of domain specific knowledge. (Issa n.d.)

Meyer (n.d.) identifies requisite characteristics of A.I. as "the ability to act intelligently, as a human… to behave following 'general intelligent action'… to artificially simulate the human brain… to actively learn and adapt as a human… and to process language and symbols." Overall, the key characteristic of A.I. is "the ability for a computer to mimic human intelligence" (Meyer).

Erik Brynjolfsson and Andrew McAfee (2014) stress the importance of A.I. They propose that the advent of "real, useful" A.I. and the connection of most of the globe's people ushered in "the second machine age," which, like the first machine age of the Industrial Revolution, is transforming how people work (90). Although computers, especially ones with A.I., can perform most intelligent tasks more quickly, more efficiently, more reliably, and more inexpensively than can humans, Brynjolfsson and McAfee (2014, 194) have hope that people's cognitive abilities of "ideation [i.e., the development of new ideas], large-frame pattern recognition, and the most complex forms of communication" will give humans the long-term advantage over computers.

2. Of Intelligent Virtual Environments

Luck and Aylett (2000) introduced the concept of "Intelligent Virtual Environments" (I.V.E.), which adds artificial intelligence to virtual environments. Anastassakis and Panayiotopoulos (2012, 431) suggest uses of I.V.E.'s for "entertainment, education and simulation." Lugrin and Cavazza (2007, 225) contend that I.V.E.'s "facilitate a conceptual description of scenes and their evolution" and make possible the following applications: "world creations from ontological descriptions or from Natural Language descriptions, multimodal

interaction, and behaviour simulation and interpretation." I.V.E.'s afford the existence of agents and non-player characters.

3. Of 3D modeling

The process of creating V.E.'s involves three-dimensional (3D) modeling. Remondino and El Hakim (2006, 269) define 3D modeling of an object as "the complete process that starts from data acquisition and ends with a 3D virtual model visually interactive on a computer." The process of 3D modeling produces a computer model, the quality of which affects the fidelity of the V.E., especially simulations. Like Bowman (et al. 2005), Myers, Hudson, and Pausch (2002, 225) found few tools designed specifically for 3D modeling. Bowman and others (2005, 21) note, "Modeling tools used in other domains, such as animation, architecture, and engineering, can also be used to develop the objects and elements in a 3D [user interface (UI)]. Common tools today include AutoCAD, 3D Studio Max, and Maya." Norman Badler and Andrew Glassner find the following uses of 3D modeling:

> To visualize designs… to assess appearance… to observe part relationships… to check feasibility (of manufacture)… to determine cost, volume, area, machining time, etc.… to determine faithfulness to physical phenomena… to exercise display algorithms," and "to express artistic goals." (Badler and Glassner 1997, 5-6)

Three-dimensional modeling and the resulting computer models could provide much insight and design assistance, for example, in the possible development of a 3D communication technology used to simulate a church building.

C. Inherent qualities of desktop serious games and simulations

Desktop serious games once primarily were a combination of education and

entertainment. Although proponents of digital game-based learning touted them for pedagogical purposes, Seymour Papert (1998) labels them "Shavian reversals—offspring that keep the bad features of each parent and lose the good ones." Such edutainment lacked both the fun quality of entertaining games and the best practices of education. They limited the education to rote drills; however, "In the last few years," writes Dennis Charsky (2010, 178), "there has emerged a serious game movement and perspective regarding the use of both computer and video games for nonentertainment purposes (i.e., public policy, education, business, health care, military…)."

Charsky (2010, 178) notices that games played with or without a computer can have the following characteristics:

> Competition and goals… rules… challenging activities… choices… and fantasy elements…. Serious games use those characteristics to provide learners with an authentic learning experience where the entertainment and learning are seamlessly integrated. (Charsky 2010, 178-179)

John Paul Gee (2003, 2) asserts that "good games" such as serious games teach students at the opportune moments during game play so that students can learn in context and "operate at the outer and growing edge of a player's competence, remaining challenging, but do-able, while schools operate at the lowest common denominator." Gee observes that such games highly motivate students, allow them to start with general knowledge, and then build on the knowledge and skills grasped, as the game requires higher levels of thinking to solve more complex problems. Marlene Scardamalia and Carl Bereiter (1994) point to a "process of expertise" that encourages students to reinvest their "mental resources that become available as a result of pattern learning and automaticity, and more particularly their reinvestment in progressive problem solving." Gee (2003, 3) asserts that well-designed games intentionally employ this "cycle of expertise."

The differences between serious games and simulations relate to the roles of the user or player. Margaret Gredler (1996, 523) classifies simulations in two types: experiential and symbolic. She explains, "Experiential simulations are dynamic case studies with participants on the inside" (523). Charsky (2010) names doctors and lawyers as internal roles that users could assume in experiential simulations, which Gredler (1996, 523) claims "originally were developed to provide learner interactions in situations that are too costly or hazardous to provide in a real-world setting." Gredler claims that learners "are not functional elements" in symbolic simulations. Learners interact with symbolic simulations in the external role of researcher or investigator. Both experiential and symbolic V.E. simulations could be used to communicate the faith, but experiential ones would afford a greater sense of presence.

D. Inherent qualities of extension technologies

For Marshall McLuhan (1964, 34), all media are extensions of people's senses. Most media extend what people see and hear, but some extend other senses as well. V.R. and A.R. can extend the human mind and body into the world. Both of these immersive technologies immerse human users, not their avatars.

1. Of virtual reality

V.R., also called I.V.R., is one of three V.E.'s on which this literature review is focusing. The other two V.E.'s of concern include A.R. and desktop V.E., such as serious games and simulations. The primary research revealed a fourth V.E., M.R., which combines V.E.'s and/or adds physical components. Regarding V.R. Biocca and Levy (1995, 15) see V.R. as "an emerging communication system." Ivan Sutherland developed the idea of the first V.R. system in

1968 (Mazuryk and Gervautz 1996, 2). Steve Bryson (1996) defines V.R. as the "interface paradigm that uses computers and human-computer interfaces to create the effect of a three-dimensional world in which the user interacts directly with virtual objects." Bryson (1996) and Azuma (1997) early on equated V.R. and V.E.; however, this research disagrees with this confusing conformation.

Literary scholar and critic Marie-Laure Ryan takes a different path. For Ryan (2001, 1), V.R. is "is an immersive, interactive experience generated by a computer." As does Jonathan Steuer (1992), Frederick Brooks (1999, 16) refers to the user's experience in his definition of V.R.: "I define a *virtual reality experience* as any in which the user is effectively immersed in a responsive virtual world." Bryson (1996, 2) claims, "It is the interface, not the content, that characterizes virtual reality." Later famous for his "Last Lecture," Randy Pausch, Dennis Proffitt, and George Williams (1997) define V.R. "to mean any system that allows the user to look in all directions and updates the user's viewpoint by passively tracking head motion." Writing a decade before the introduction of the Oculus Rift, other reasonably-priced H.M.D.'s, and inexpensive headsets that hold smartphones with V.R. applications, Grigore Burdea and Philippe Coiffet (2003) provide the following definition of V.R.:

> Virtual reality is a high-end user-computer interface that involves real-time simulation and interactions through multiple sensorial channels. These sensorial modalities are visual, auditory, tactile, smell, and taste. (3)

Existing V.R. displays include HMDs and CAVEs™. Carolina Cruz-Neira, Daniel J. Sandin, and Thomas A. DeFanti (1993) developed the "CAVE Automatic Virtual Environment."

V.R. has many beneficial inherent qualities. Immersive V.R. allows users to interact with a V.E. Users can transverse the V.E. by moving their feet, their hands, the rest of their

bodies, and their heads in physical space by donning H.M.D.'s and wearing haptic sleeves and gloves. Mark Paterson (2007, ix) states that the adjective *haptic* "refers to the sense of touch in all its forms." "The ultimate goal of VR interface design," declare Biocca and Levy (1995, 17), "is nothing less than the *full immersion of the human sensorimotor channels* into a vivid computer-generated experience." Mark Mobach (2008) delineates the design benefits of V.R. for architecture:

> [V.R.] extends the depth of one's knowledge and experience… brings spatial reality to our consciousness… is extremely helpful whenever the real world site is unavailable… allows a client to see and use a research before its actual construction… provides insight into the complex routes in building designs… [and] offers instant clues about the performance of a design. (2)

These benefits to architecture apply to numerous other design applications or "production applications" (Brooks 1999, 16) as well. Bowman and McMahan (2007, 39) state that, since V.R. immerses its users, the immersion potentially provides "*spatial understanding*" and "depth cues" not available with non-immersive V.E.'s or other technologies. The immersion of V.R. also could potentially lead to "a decrease in *information clutter*" by replacing an icon-filled computer desktop with the V.R. interface (39).

V.R. technology, especially desktop V.E., affords the creation of V.E.'s and virtual worlds, which are a type of V.E. Ralph Schroeder (2008, 2) sees virtual worlds as "virtual environments that people experience as ongoing over time and that have large populations which they experience together with others as a world for social interaction." A difference between online social games, such as Massively Multiplayer Online Role-Playing Games (MMORPG's), which belong in the larger virtual worlds category, and virtual worlds is that the latter "are third spaces, online places for socializing" (Schroeder 2008, 2). The development of reasonably-

priced, commercially-manufactured V.R. H.M.D.'s such as the Oculus Rift, which probably will cost approximately $350 instead of $10,000 for earlier H.M.D.'s, should lead to an explosion of V.R. applications. V.R. H.M.D.'s and headphones allow people to step into V.E.'s and see and hear 3D worlds. The addition of haptic technologies will afford the ability to touch and feel the contents of the V.E. If a U.M. worship service were simulated in V.R. with haptic capabilities, for example, the user could touch and feel a virtual holy-communion cup.

2. Of augmented reality

This project is focusing also on A.R. Like those of V.R., the technologies of A.R. can be immersive. Broll et al. (2008), for example, present A.R. games on mobile phones, but these technologies are not immersive. Milgram et al. (1994, 283) define A.R. broadly as "augmenting natural feedback to the operator with simulated cues" and more narrowly as "a form of virtual reality where the participant's head-mounted display is transparent, allowing a clear view of the real world." Kloper and Squirer (2008, 205) "define 'augmented reality' broadly as a situation in which a real world context is dynamically overlaid with coherent location or context sensitive virtual information." As with this project's technical and psychological definitions of immersion, Milgram's stricter definition of A.R. focuses on the technology, while the definition of Kloper and Squire lifts the experience. However, Kloper and Sheldon (2010, 86) refer to A.R. as "technology that blends real-and virtual-world experiences." Azuma (1997, 356) "defines AR as any system that has the following three characteristics: 1. Combines real and virtual 2. Is interactive in real time 3. Is registered in three dimensions." As with the recommendations for V.R., the understanding of A.R. should start with *technological* definitions before advancing to the affordances; otherwise, the result is a comparison of incompatibles.

A.R. has beneficial qualities that can lead to many interesting applications of the technology. Studying the educational uses of A.R., Wu et al. (2013) state that A.R. "enables students to use 3D synthetic objects to augment the visual perception of the target system or environment." Wu describes A.R.'s benefits:

> With mobile devices, wireless connection, and location-registered technology, the pervasive or mobile-A.R. system could enable ubiquitous, collaborative and situated learning enhanced by computer simulations, games, models, and virtual objects in real environments…. The affordances of such a system could include portability, social interactivity, context sensitivity, connectivity, and individuality. (Wu et al. 2013, 43-44)

The benefits reported by Arvanitis et al. (2007) particularly interest this research. They found that A.R. helps students to visualize complex and invisible concepts. In an example of non-immersive A.R., Rachel Wagner (2012, 89-91) declares that a digital screen at the Abbey at Cluny, France, allows visitors to peer through it and see not war-ravaged ruins but an overlay of how the Abbey looked hundreds of years ago when it was in good repair. She proposes that a temple created in *Second Life* could be located in the physical world. Only people wearing A.R. H.M.D.'s could see the temple. In an example of immersive A.R., a hologram of Christ or biblical characters could be projected into a room. Visitors could see the projected hologram from multiple points of view, or visitors with A.R. glasses could see the image, with which they interact via A.I. programs. Such uses of the technologies could help people to learn more about the faith and possibly provide spiritual insights unavailable through other means.

III. Introduction to the primary research: Latest developments in V.E.'s

Multiple disciplines come together in V.E. technologies. The literature review in this chapter has showed the historical development of these fields. Trips to the following eight

universities provided the opportunity to learn about current developments in, and research about, V.E. technologies. Some labs are using V.E.'s to simulate historical events and locales in order to bring history to life and to create new possibilities for analysis of their historical subjects, while a few centers are following the vectors of earlier, low technologies into the new high technologies of V.E. Many labs are using V.E.'s to safely and cost-effectively simulate possible scenarios for the training of people working in the military, heavy industry, and health care. Other sectors are using the affordances of V.E.'s to create new ways to communicate and entertain, to modernize homes, and to improve life for the disabled. Deep descriptions paint pictures of current research in immersive and non-immersive V.E. technologies.

IV. The Emory Center for Digital Scholarship at Emory University

A. Research at E.C.D.S.

As part of the Emory Libraries and Information Technology Department, the Emory Center for Digital Scholarship (E.C.D.S.) offers a N.I.A.R. project entitled *The Battle of Atlanta: A Tour of History and Remembrance*. General William Tecumseh Sherman and his Union armies besieged Atlanta on July 22, 1864. Artists and historians have produced creations to commemorate such a pivotal battle in the Civil War. One of the participants in the battle, Union Army General John A. Logan in 1885 commissioned the American Panorama Company of Milwaukee, Wisconsin, to paint a 42-feet-high by 358-feet-long mural of the battle. *The Battle of Atlanta*, the largest oil painting in the world at the time, toured across the United States in the 1880's. Atlanta businessman George V. Gress purchased it in 1893 and then five years later gave it to the City of Atlanta, who placed it on display in a wooden structure in Grant Park.

A more-fire-resistant stone structure resembling a bank with ionic columns was built in 1921 (Lee 2014). The massive size of the mural posed some problems but led to some creative solutions. The height of the painting was reduced by ten feet so that the mural could stand upright within the confines of the building, while the long length led to the forming of the mural into the shape of a cylinder. *The Battle of Atlanta* painting thus became the mural housed in the cylindrical theater known as the Atlanta Cyclorama. Stadium seating was added to the center of the room and installed on a turntable measuring approximately ninety feet in diameter. After patrons entered the theater and took their seats, the motorized turntable moved a full 360-degrees so that the audience could view the massive painting while listening to audiotaped narration. In other words, the seating platform for the audience moved in a circle in order for them to see the entire stationary painting. Tasnim Shamma (2015) reports, "In 1936, the Cyclorama went 3D when a diorama was added to the bottom." Seventeen-inches tall statues of soldiers in front of the painting augmented the viewing experience by providing depth. Jay David Bolter (2015) of the Georgia Institute of Technology described the Cyclorama as an early technology that approached V.R. by giving patrons immersive, physically-moving experiences in which they traveled past visual 3D scenes and heard accompanying sounds. The Atlanta Cyclorama closed in June, 2015, so that the building in Grant Park could be used for other purposes and so that it could be moved to a bigger facility, where the height of the painting will be raised by the return of the ten feet of sky.

The Atlanta Cyclorama and Civil War Museum, to where the painting will be moved, publicized a N.I.A.R. technology to commemorate the sesquicentennial of the Battle of Atlanta. Rather than enter a dramatic theater augmented with a 2D painting, a 3D diorama, recorded

sounds of battle, and taped narration, people interested in the battle may utilize a mobile app on their smart phones to direct them on a driving tour of Atlanta to the physical sites where the fighting occurred. Emory's Robert W. Woodruff Library, the E.C.D.S., and Dr. Daniel A. Pollock, who works as a physician with the Centers for Disease Control and Prevention, created *The Battle of Atlanta: History and Remembrance* project in 2014. Instead of downloading the app from the App Store or Google Play, the smartphone user directs the web browser to http://battleatl.org. The Battle of Atlanta Tour App uses the E.C.D.S.'s Open Tour Builder software and relies upon the Google Maps Application Programming Interface (A.P.I.).

The tour begins by bringing up a list of the twelve tour stops. The app asks for permission to access the phone's location. Pressing on the map leads to a drop menu for directions via walking, driving, bicycling, or transit. Google Maps A.P.I.'s use the phone's G.P.S. to direct the user to the first tour stop—"Gen. Sherman's Headquarters during the Battle." Once the user reaches the first site, the President Jimmy Carter Center, he or she can augment reality by reading on the app that General Sherman set up his field headquarters in that location, watching videos in which Dr. Pollock explains what happened there in 1864, viewing appropriate portions of the Cyclorama painting, referring to historical maps, looking at Matthew Brady's photograph of a serious-looking General Sherman, seeing a sketch of the house where he stayed, and reading additional information from Dr. Pollock's companion article on Southern Spaces.org. Similar features await the app user at the other eleven stops.

Figure 2.2. *Virtual Rome at the Carlos Museum*. (Museum 2013).

The E.C.D.S. also showcases the technically-N.I.V.E. project *Virtual Rome*. Winship Distinguished Professor of Art History, Sarah McPhee and Associate Professor of Art History Eric Varner worked as the leading faculty members on this project to build a virtual version of Rome based on Giovanni Battista Falda's 1676 drawings of the city, as shown in Appendix D. McPhee and Lewitt transformed Falda's intricate overhead view of Rome into a 3D virtual space. The Managing Partner of nVis360, architect Erik Lewitt utilized architectural Unity V.R. software for V.E. construction, which he based on the nVis360 gaming platform. Users of the desktop V.E. without an H.M.D. can use either a mouse or an Xbox360 gaming joystick for interaction. Of the two buttons on the gaming joystick, one allows the user to look around the

virtual space from a first-person perspective, while the other one enables the user to walk around the 3D space. Simultaneously pushing the buttons leads to looking and traversing the space at the same time. Sounds, such as from the movement of water in the Roman fountains, become louder as the user walks more closely to the source.

The computer screen can become "hypermediated" (Bolter and Grusin 2000) when the user clicks with a mouse on an icon on the upper left. A window, covering about a ninth of the screen, appears in the lower left, displays a portion of Falda's 2D map, and enables "wayfinding" (Lidwell, Holden, and Butler 2010) through *Virtual Rome*, à la an amusement-park directory with a "you are here" pin. A drop menu allows the user to view that map of where he or she is located, "select fly mode, walk mode, and choose your avatar," change the sun's direction on the city, see Falda's prints, view photographs of Rome today, and select various locations in the city (McPhee 2013).

The online placement of the program adds a social component. "The exciting thing about the nVis360 platform," McPhee (2013) says, "is that we can eventually communicate worldwide in our virtual creation. I could be in Atlanta, and a colleague in Cambridge can drop in, and a colleague in Italy can drop in. And we could actually communicate in the space." Future users could include students and other educators; for example, an art history professor could have students log on to the site while he or she takes apart a building in order to teach about how the Romans constructed the building.

B. E.C.D.S.: Summary and analysis

These projects of the E.C.D.S. demonstrate how researchers build upon the past to bring history to life. First, Cyclorama of Atlanta includes a historical painting measuring the length of

one-and-a-half football fields and the height of a four-story building—large enough to surround the guest's field of view; a theatrical seating design that uniquely moves the viewer through the space; the playing of an audio recording with narration, period music, and battle sounds; and additional 3D-figures to add visual depth. These features put the cylindrical panoramic painting exhibition on the vector headed toward I.V.R. (Bolter 2015).

Applying the framework of the "ritual view of communication" (Carey 2009, 15) to Cyclorama demonstrates "the extension of society in time." As evidenced by the expansive painting's commissioning only two decades after the Civil War and Cyclorama's existence since 1921, Cyclorama exemplifies the importance that the people of Atlanta have granted both to what happened at the Battle of Atlanta and to how the destruction of their beloved city has shaped their culture. Cyclorama has extended post-bellum society by dramatically communicating their version of what happened in 1864. Cyclorama became a tourist attraction as its directors wanted to share Atlanta's history, even though they decisively lost the battle, with visitors to their city. Cyclorama serves as a "representation of shared beliefs" (*ibid*) of the residents of Atlanta about their corporate identity as people who rebounded from loss, rebuilt the city, and became even larger than they were before the war. Hickey (2003, 3) contends, "Atlanta took great pride in its triumph over the ravages brought by the Civil War and in the city's progress toward its goal of being the premier 'New South City.' By 1880, the city's population had nearly doubled its wartime total to reach thirty-seven thousand."

A second way that E.C.D.S. researchers have brought history to life, *The Battle of Atlanta* mobile app allows users today to trace the steps of Civil War soldiers, learn about what happened, and gain an appreciation of the scope of the battle. Carey's "ritual view of

communication" applies to *The Battle of Atlanta* mobile app. Following the directions of this app resembles a "distinct cultural activity" (Christians 2002, 38) because users physically place themselves in post-bellum culture. Since people "live in a community in virtue of the things which they have in common; and communication is they way in which they come to possess things in common" (Dewey 2004, 5), simultaneous players of the app *could* form a community through their play of the same game, if they meet the other elements required for community formation.[4] The strength of, and interaction among, that community wax and wane with changes in its size as more or fewer users play. As with Cyclorama, the N.I.A.R. app extends society in time by having players retrace physical locales of the historical battle and acts as a "representation of shared beliefs" (Carey 2009, 15) by having players visit sites offline and online specifically chosen by E.C.D.S. to communicate what they valued as important to the story. Beliefs about the battle itself, about its effects on the residents of Atlanta over the centuries, and about the play of the app do not count as *religious*[5] beliefs for Carey, but they have them in common.

Application of Gordon Lynch's (2012, 47) "mediation of sacred forms" to *The Battle of Atlanta* app seems less clear. One has to dive deeply here to find the sacred and sacred forms. Lynch (92) observes, "The sacred is most commonly experienced in relation to the embodied experiences of real people, whether the death of public figures, forms of suffering that represent a breach of the sacred and that may evoke previous experiences of public trauma." The

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[4] MacQueen and others (2001) define "community as *a group of people with diverse characteristics who are linked by social ties, share common perspectives, and engage in joint action in geographical locations or settings*."

[5] James W. Carey does not define *religious* or *religion* in this text, *Communication as Culture*. G. Stuart Adam (Carey 2009, xxii) writes in the book's foreword, "Some have seen his Catholic beliefs as a major influence in his work…. That he was interested in religion is a fact. But he saw himself as 'a ritual' and an 'organizational' rather than a 'theological' Catholic."

casualties and destruction from General Sherman's siege and the responses of the "real people" of post-bellum Atlanta fit this observation; therefore, an app about this battle mediates the sacred forms. The mobile app, for example, stands in between the twenty-first-century player and the sacred form of the cemetery monument of Confederate Major General William H. T. Walker, which players visit on the tour's fifth stop.

Third, the technically-N.I.V.R. project *Virtual Rome* enables users, such as architectural students, to simultaneously step into two historical periods: the seventeenth-century of Faldo and the ancient days of Rome's construction. Both analytical frameworks apply to *Virtual Rome*. Regarding the "ritual view of communication," their project steps into the Rome of Faldo and thus into the culture of 17th-century Rome. By virtually building Rome, the designers show the importance of cultural considerations (Harding and Norberg 2005) of antiquity and of the 1600's. They longitudinally extend Roman society or societies from antiquity to the 17th-century of Faldo and to the 21st-century of E.C.D.S. The afforded comparisons and contrasts of the two Roman periods can teach students about historical construction and can encourage their critical thinking.

Lynch's "mediation of sacred forms" applies more to the referent subject of Rome than to the users of *Virtual Rome.* Physical Rome incorporates sacred sites; for example, ancient Rome touted the Colosseum and Circus Maximus, where Christians were martyred (Potter and Mattingly 1999, 227), and Italy of Faldo's day featured the Apostolic Palace for the Pope. The Vatican has utilized media, which Lynch (2012, 87) insists, "include images, sounds and material objects, spaces, institutional practices, and even the bodies of those who are taken, in some way, to embody or exemplify the sacred." McPhee (2013) intends for researchers, faculty,

and students of Italian architecture, art, and history to use *Virtual Rome*. Such a specialized group might not include individuals with interests in the sacred.

From these projects of E.C.D.S., the Church could glean the need for interactively communicating its history. With headquarters in Vatican City, the Roman Catholic Church could make its own version of *Virtual Rome* in order to teach Catholics and others about the Vatican and its history. The U.M.C. could construct I.V.E.'s of John Wesley's London, Bristol, Epworth, or Savannah, or the circuits of Francis Asbury and itinerant preachers of 19th-century America. Moreover, United Methodists could develop N.I.A.R. apps like *The Battle of Atlanta* for those historical sites in England and Georgia. In Nashville or New York City, where some General Boards of the denomination are headquartered, The U.M.C. could construct a U.M. version of Cyclorama. The Biblical Arts Center in Dallas used to display another massive painting entitled *The Miracle at Pentecost*; however, that 124-foot-long painting neither formed a cylinder in its permanent installation nor included rotating seating. All of these projects could educate people of all ages about church history and thus teach that the same God Who actively involved Himself in ages past is the same God Who inspires people today. The next section will show that, like these projects at the E.C.D.S., the University of Central Florida's New York State World's Fair Pavilion project and the related *ChronoLeap*™ educational game advance history into the 21st-century through digital preservation.

V. The Institute for Simulation and Training at the University of Central Florida

A. Research at I.S.T.

To physically approach the floor of the building housing the Synthetic Reality Laboratory (SREAL) researchers who created *ChronoLeap*™, one can enter through the lobbies of the

Institute for Simulation and Training (I.S.T.) at the University of Central Florida in Orlando. A physical virtual (P.V.) surrogate greets those who enter. The physical size of an adult, the P.V. surrogate stands still with its back to black hanging drapes. While the body resembles a store mannequin, designers constructed the face out of clear plastic, onto which a video image of a real face of a real person is projected; in other words, with a physical body and a virtual face, the hybrid P.V. surrogate likens itself to a P.V. avatar. Unlike the Wizard in the Land of Oz, the person "behind" the avatar sits, not behind the drapes, but in a room in the rest of the building. The person behind the avatar operates a video camera to see and a microphone to hear the people who walk into the lobby.

Speakers allow lobby guests to hear the person, who requests one person to stand next to the P.V. avatar in order for another person to take a photograph of them with the supplied camera. Those people in the lobby can see the realistic-looking facial expressions, such as the mouth opening when speaking and the eyes blinking, on the face and hear the person's voice through the speakers. Thus, the P.V. avatar seems to come alive and bridge the physical-virtual divide. Although a temporary installation, this interest-piquing P.V. avatar in the lobby acts as an appropriate greeter for the largest of the university labs visited for this investigation. I.S.T. partners with museums, academia, industry, healthcare, and the United States military for many projects.

SREAL researchers utilized 21st-century technology to digitally save heritage sites. Along with the CyArk—a nonprofit organization that digitally preserves cultural-heritage sites and is based in Oakland, California; FARO—a company that develops 3D laser scanners and is headquartered in nearby Lake Mary, Florida; and Langan Engineering and Environmental

Services—a geotechnical specialty firm that is headquartered in Parsippany, New Jersey; I.S.T. researchers made use of 3D laser scanners to precisely scan the New York State Pavilion. Built

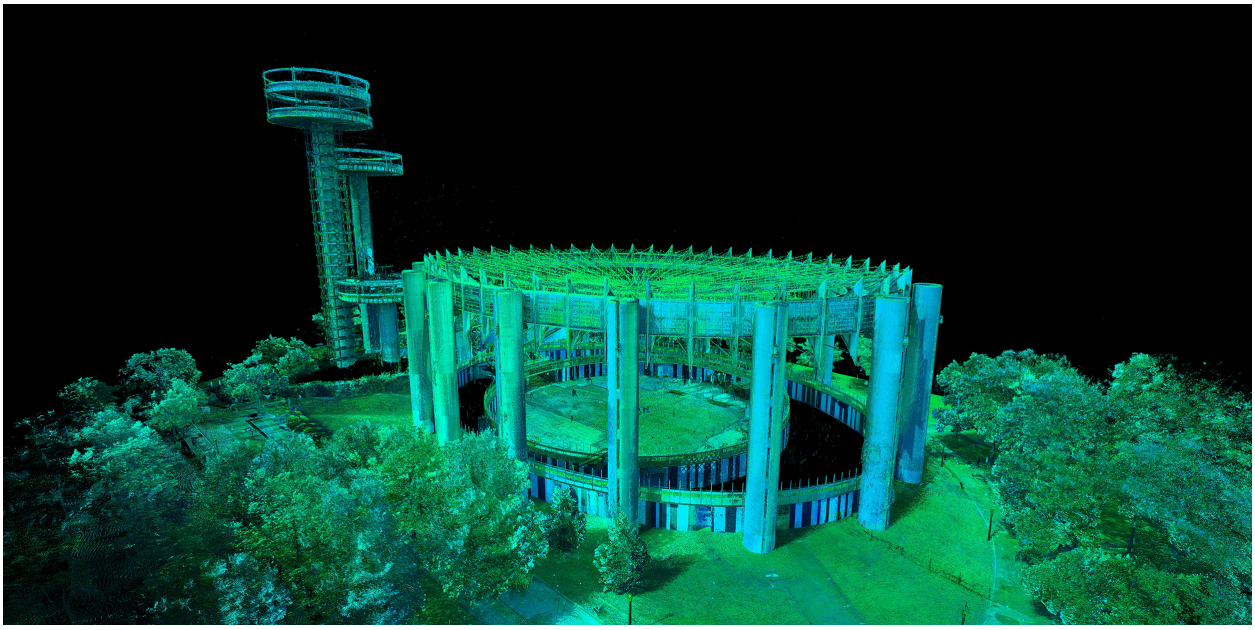

Figure 2.3. "New York State Pavilion." (Walters 2017). Used with permission.

for the 1964-1965 New York World's Fair, the pavilion remained as one of the fair's few surviving structures; however, the building was left unkept and has physically decayed.

In June, 2014, I.S.T. and CyArk researchers acted to digitally preserve the site by producing "a highly-detailed digital representation of the pavilion" (Walters 2014). They mounted FARO Focus 3D terrestrial scanners atop professional tripods and aimed them in order to scan the modern ruin. Figure 2.3 shows the resulting digital simulation of the pavilion. Walters (2014) declares, "The meticulously detailed and millimetrically accurate 3D data captured can be translated into 3D architectural drawings and models for the conservator to plan restoration efforts or the public to visually explore." Such 3D data could enable I.S.T. or other producers of V.R. simulators to create V.E.'s. These V.E.'s. could allow users to more clearly

explore the virtual pavilion and garner insights about the physical structure and its historical uses.

I.S.T. researchers expanded the pavilion project into *ChronoLeap*™*: The Great World's Fair Adventure!* They converted the 3D data from the scanned pavilion into a 3D model of how the structure looked in 1964. They added 3D models of the Bell Pavilion, the Chrysler Pavilion, the Japan Pavilion, the Swiss Sky Ride, and the Unisphere. They made these models in an open source engine called OGRE. They constructed the New York State Pavilion in Unity and made it available for a free download. They placed all of these models in the N.I.V.E. game *ChronoLeap*™ and uploaded the game to www.ChronoLeap.com for free download. The 3.2 GB game plays on computers loaded with Windows 7 or Windows 8.

The game takes place in two time-periods, one-hundred years apart from each other. The 1964-1965 New York State World's Fair serves as the virtual venue for the earlier time; however, players start in 2064, when the Queens Museum of Art in the borough of Queens, with which I.S.T. researchers partnered to make *ChronoLeap*™*,* will celebrate the centennial of the fair's opening. From the year 2064, players "then *ChronoLeap*™ back to 1964 to recover all the artifacts, stop the time anomaly and restore the proper progress of time" (I.S.T. 2015). Players begin at, and return to, the museum as they complete "time bubbles" related to themes of Science Technology Engineering and Math (S.T.E.M.). Walters et al. (2013) explain, "Within each bubble the user finds secondary quests or games that enhance their understanding of how technology influences society and its evolution."

Their Mixed Emerging Technology Integration Lab (M.E.T.I.L.) involves mobile devices, A.R., V.R., online games, and even card games. They made "Combat Medic" cards for

the Army in order to train field medics. One side of the stiff-paper card, which measures the side of a standard playing card, has a graphic and number, while the other side shows a graphic and number and gives care instructions. A mobile device app quizzes the medic over what he or she learned from the cards. The app asks the medic, "Rate how well you remembered the answer." Possible responses consist of a red thumb down, a yellow thumb down, a white circle, and a blue thumb up. Other serious games for medics in training include "Combat Lifesaver," Ebola cards, and "Disaster Response Mobile Care," for which they partnered with the University of Miami. These N.I.A.R. games help medic students to learn in a hybrid of interesting physical cards augmented with additional information on the mobile apps.

The United States Marines Corps (U.S.M.C.) and the Department of Homeland Security (D.H.S.) commissioned the M.E.T.I.L. to develop N.I.A.R. apps and software to teach situational recognition. The U.S.M.C. offers the Combat Hunter course, which "is a program designed to teach Marines how to track targets, good or bad, by noticing differences in the environment around them" (Bragg 2013). Marines conduct live Combat Hunter training exercises in the field for the purpose of improving situational recognition. Available as an app for mobile devices and software for computers, the Combat Hunter learning game augments reality by providing additional visual and auditory information for Marines in training. The D.H.S. had M.E.T.I.L. repurpose the Combat Hunter learning game as the D.H.S. Signs learning game to help their trainees improve their situational awareness.

The M.E.T.I.L. has created the Intelligent Home Intuitive Mirror in the Intelligent Home. This A.R. system showcases a vertically-oriented, high-resolution video monitor. Sensors can

identify the household member standing in front of the monitor, which also is full-length mirror. Biometric sensors can determine the blood pressure and weight of the person and even alert the

Figure 2.4. M.E.T.I.L.'s "Intelligent Home Intuitive Mirror." 2015. Photograph by author.

person if they sense that he or she is becoming ill. The system can contact a live nurse if necessary. The top of the screen displays these biometrics, including changes in them over time. Social media notifications appear on the lower left side of the screen, while calendar notifications show in the lower right corner. Houses in Orlando's new Lake Nora master-planned community include Intelligent Home Intuitive Mirrors in their bathrooms (Esteves 2015). The system serves as a dashboard for the whole house because technicians can link it to the rest of the Intelligent House and thus control, monitor, and automate physical security, safety systems, utilities, communication, and inventory.

Retailers have had the M.E.T.I.L. develop mixed reality technologies in order to train employees. Lowe's Home Improvement had them create a N.I.V.R. store. Associates study and interact with the virtual store in order to learn store layouts, management, customer service, and safety. Six mini-games and mobile apps also teach employees in interactive ways that are more interesting, creative, fun, and clear than are typical training methods, such as videos, Power Point slides, or pages in 4-inch-thick, three-ring binders. Avon Products, Inc., commissioned M.E.T.I.L. to make non-immersive games for tablets. These mobile learning games teach sales skills to Avon sales representatives.

M.E.T.I.L. researchers partner with U.C.F.'s College of Medicine for the M.R. projects of I.S.T.'s Simulation for Healthcare Education Learning Laboratory. After they use a 3D scanner to scan a human skull, for instance, they augment reality by digitally adding layers, such as for muscle and then for skin. Medical students can use the "3D mHealth Viewer" app on a tablet to view the virtual patient in his or her various layers. M.E.T.I.L. researchers can translate the 3D scans into plastic models by using 3D printers. They have incorporated content written by medical school professors into digital textbooks, which can include high-fidelity 3D images, 3D ultrasound of anatomy, narration, and interactive components.

A major project, the Veterans Health Administration's Virtual Medical Center (V.A.-V.M.C.) uses N.I.V.R. to enable veteran patients, providers, and staff to interact. Users may access this collaborative learning V.E. online, first by downloading the software to a desktop computer. I.S.T. is developing a mobile app. They recommend Internet download speeds of at least 10 megabits per second (M.b.p.s.), preferably 30 M.b.p.s., and the use of the Firefox

Internet browser. The system requires that users download also the latest version of Unity Web Player.

The V.A.-V.M.C. shows the V.E. of the V.M.C. Each user selects and customizes his or her avatar in order to visit parts of the virtual building. Users can interact with the V.E. through avatar movement and teleportation via the keyboard and mouse, voice chat, and text chat. Since the V.A.-V.M.C. offers users many opportunities for learning, users can attend virtual clinics in groups, where they will learn about specific diseases, their management, and their treatment. Avatars of providers can visit meeting rooms or amphitheaters in order to take training courses made anywhere in the V.A. system. "Cybraries" for patients are virtual libraries in which patients can research specific diseases and health topics. They can go to the Education Center to learn as well. "Cybraries" for providers offer professional journals for them to study, meeting space for group study, simulation tools, and serious games (V.A.-V.M.C. 2014).

Patients, providers, and staff can have dedicated virtual spaces for collaboration, one-on-one "eConsults," group appointments, and meetings; for example, via their avatars providers can meet and collaborate with one another in virtual conference rooms, in which they can view live-action video. Patients can make use of virtual clinical laboratories, where they can see sample testing results and patient information, and visit a fitness and nutrition center to help them manage diet and exercise. The "ePharmacy" can answer questions regarding the actual status of prescriptions and warn about potential side effects or adverse interactions among medications. A virtual medical advisor can answer frequently-asked questions and questions about medication, symptoms, and disease management. Patients can find links to sources outside the virtual space in order to navigate the offerings of the V.A. system (V.A.-V.M.C. 2014).

The V.A.-V.M.C. offers high resolution and high-tech V.R. to veterans, providers, and staff across the globe. Users may access it from anywhere and at any time. The educational and other resources of the V.A. are efficiently located under one virtual roof. The very professional appearance of the site, which cost millions of dollars to create and maintain, should appeal to younger veterans, who recently have used high technology in the military and who are more likely than older veterans to have played and enjoyed video games.

In one of their projects for the military, I.S.T. created 3D physical hemorrhage-control simulators in order to teach combat medics how to apply tourniquets to the arms of wounded soldiers. The Extremities-Multiple Application Trainer (E-M.A.T.) allows medics to practice on arms that simulate the inner and outer feel of real arms. Such realistic-looking-and-feeling arms pictured in Figure 2.5 represent an improvement over the simple wooden blocks on which medics have practiced applying tourniquets. Medics can physically experiment with the pressure that they need to exert on an arm in order to stop hemorrhaging. Computer chips within the arms allow medics to vary the blood pressure and the amount of bleeding. L.E.D. lights on the control panel located in the shoulder indicate the flow of bleeding. As with other simulators, whether virtual or physical, the E-M.A.T. allows users to practice in order to improve performance and to simulate various scenarios. Lazarus (et al. 2008) acknowledges that extended practice on the E-M.A.T. enables medics to develop the kinesthetic feel of applying tourniquets. Reliance on such muscle memory instead of on cognitive processes shortens the time that medics take to

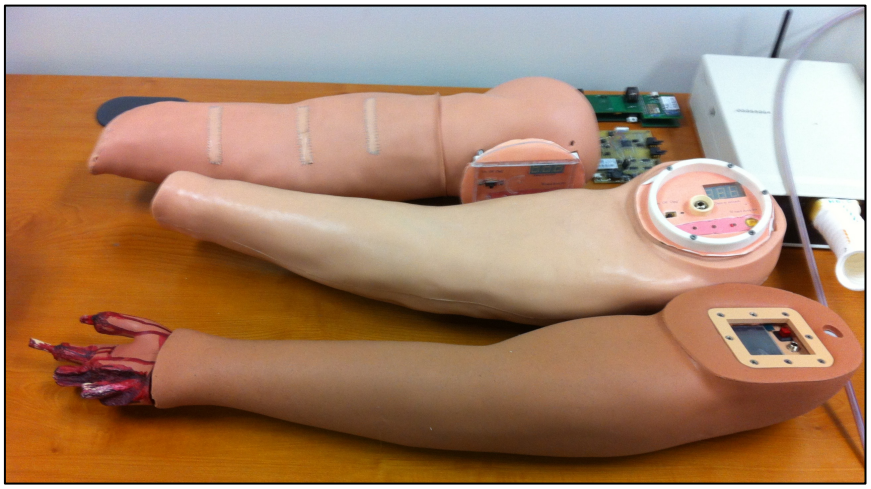

Figure 2.5. Examples of the Extremities-Multiple Application Trainer (E-M.A.T.) at I.S.T. 2015. Photograph by author.

achieve hemorrhage cessation and thus saves more lives than do medics using the solely-mental approach.

A possible question about the E-M.A.T. concerns how this physical trainer relates to V.E.'s. Specifically, why did Lazarus (et al. 2008) present their paper at a *V.R.* conference when this simulator seems to reside only in the physical realm? The answer lies with E-M.A.T.'s connectivity. This passive haptic device can standalone or be connected via Bluetooth technology to a personal computer. Lazarus (et al. 2008) gives the following explanation:

> This connection can be used for anything from a simple data logging application to a full virtual environment defining a scenario, allowing interaction as appropriate, and providing feedback such as time to apply the tourniquet, decision to apply a tourniquet, and tourniquet location. (272)

A medic practicing with E-M.A.T. when it is connected to a computer with a V.E., for example, can place the wounded arm and injured soldier in context, gain a more complete understanding, and thus produce a diagnosis that is more accurate than it would have been without the V.E.

Since the E-M.A.T. can combine the simulated physical arm and the V.E. on a P.C., this haptic-based medical trainer falls under the category of M.R.

B. I.S.T.: Summary and analysis

Working on the most V.R., A.R., and M.R. projects of all of the labs visited, researchers at I.S.T. at U.C.F. are developing projects for the military, health care, education, businesses, and residences. I.S.T.'s M.E.T.I.L. has made N.I.A.R. apps for the United States military. They have produced combat medic cards and an accompanying mobile app, which quizzes the field medics over what they learned from the playing cards. I.S.T.'s most extensive project in this research, the V.A.'s V.M.C. uses N.I.V.R. to provide patients with numerous services. Since patient avatars can visit "cybraries" and arrange "eConsults" with V.A. avatars, for example, patients can conduct their own medical research from the V.A.'s vast materials in their libraries and can consult with healthcare professionals. Another M.E.T.I.L. project, the Simulation for Healthcare Education Learning Laboratory teaches medical school students with an A.R. app for tablets, which includes digital textbooks written by their professors. Military medics can practice applying tourniquets on I.S.T.'s E-M.A.T. and then place their use of that physical passive haptic device into a V.E. scenario on a connected computer.

I.S.T. has developed V.E.'s for industry and consumers. They have constructed a N.I.V.R. simulation of Lowe's Home Improvement Centers in order to train Lowe's employees in a manner more interesting and interactive than the traditional reading of stacks of printed pages secured in three-ringed notebooks. M.E.T.I.L.'s Intelligent Home Intuitive Mirror combines home-systems control, security monitoring, biometrics, and social media to provide

owners of the Intelligent Home with the information and control they need to manage their homes, their lives, and their health.

Neither the "ritual view of communication' nor the "mediation of sacred forms" fully applies to these M.E.T.I.L. projects. Interestingly, the "transmission view of communication" as described by Carey (2009, 14) pertains to I.S.T.'s simulations for the military, healthcare, industry, and consumers because these senders of messages have wanted to control the recipients; for instance, the combat medic cards and E-M.A.T. seek to train medics so that when deployed around the world the medics will utilize the same procedures that they learned back in their American learning lab. Although M.E.T.I.L.'s Intelligent Home Intuitive Mirror has a slight social component with its connectivity to social media, the system's emphasis on control, such as for utilities, medical vitals, and household logistics, favors the "transmission view of communication." Neither of these M.E.T.I.L. projects, nor the SREAL designs, looks at sacred forms.

The "ritual view of communication," however, can serve as a framework for the SREAL projects. A socio-cultural analysis of *ChronoLeap*™ reveals that SREAL designed the game to teach students S.T.E.M., although the game might seem like they made it to teach *only* history or social studies because the V.E. represents a historical world's fair; however, according to I.S.T. (2015), the game "is not designed as a historical recreation – the Fairgrounds are a setting that permits the story of *ChronoLeap*™ to unfold." Walters (et al. 2013, 427) asserts that the educational game both promotes S.T.E.M. learning and allows students to "come to understand the impact arts and humanities had on this showcase of scientific and technological innovation." Students playing the V.E. game, designed with older-elementary children in mind, can learn

about S.T.E.M., history, art, architecture, character representation, literature, and music in the process.

The U.M.C. could tailor or modify some of I.S.T.'s projects. First, churches could place P.V.'s, such as of John Wesley or the founder of that particular congregation, at their entrances to greet people. They could put P.V.'s in the sanctuary or classrooms for educational purposes. The pastor or other teachers could have conversations with biblical characters or famous Methodists. Second, church historians could call for the digital preservation of cultural-heritage sites, that is, discontinued church buildings and sites. Once preserved digitally, these sites could become I.V.E.'s, which users could virtually enter and experience the place as if the church still met there. Third, teachers could use playing-size cards and a corresponding mobile app in order to effect scripture memorization with children and youth. Fourth, a church could tailor the Intelligent Intuitive Mirror and install it in a classroom or hallway. When a boy or girl would stand in front of it before Sunday School, the mirror communicate the faith to that student by encouraging him or her with displays of affirming Bible verses and theological truths, such as "God loves you" and "I can do all things through Him Who strengthens me" (Philippians 4:13). Also, a mirror could count that student as present, compile an attendance list, and send that list to the teacher's classroom computer or cell phone.

Fifth, churches with I.V.E.'s of themselves could add "cybraries" of religious books and curricula. Sixth, M.R. physical simulators connected to V.E.'s could show the relationship between the physical and spiritual realms. For example, instead of simulators of injured arms of soldiers, models of the first-century Temple in Jerusalem could connect to V.E.'s of heaven to show the relationship between earth and heaven and how they intersected at the Temple (Wright

2011). While I.S.T. has developed many M.R. projects through their M.E.T.I.L., the Institute for Creative Technologies at the University of Southern California features their Mixed Reality Lab, which has serviced Hollywood, the military, industry, and academia.

VI. The Mixed Reality Lab of the Institute for Creative Technologies at the University of Southern California

A. Research at the MxR Lab

Housed in an unmarked commercial building, the Mixed Reality (MxR) Lab of the Institute for Creative Technologies (I.C.T.) at U.S.C. features V.E.'s made for the military and the entertainment industry. They experimented with a tethered H.M.D. with a F.O.V. of 150 degrees known as the Fakespace Labs Wide5. This researcher witnessed a V.E. of an Army maneuver of Humvees driving in parallel on a surface similar to that of the Bonneville Salt Flats in northwestern Utah. The wide 150-degree D.F.O.V. of the H.M.D. enabled the seeing of the other Humvees at the periphery without turning the head and thus increased situational awareness, a crucial benefit for military drivers looking to not hitting other Humvees or to avoiding side attacks by enemies. Head mounted displays with wide D.F.O.V.'s come with a hefty price: MxR's version cost $50,000.

The Office of Naval Research Swampworks sponsors the Blueshark Environment in the MxR Lab. Shown on a vertically-oriented, ninety-inch, flat-screen video monitor, a V.E. of naval officer standing at attention greets guests to the Blueshark Environment portion of the MxR Lab, as shown in Figure 2.6. Such guests have included military officers and other dignitaries. The user dons a tethered H.M.D. and strapped plates for the hands, all of which have motion capture sensors attached to them, and sits in the captain's chair on a raised platform as if

sitting in the bridge of an aircraft carrier. I.C.T. researchers employed a 3D printer to construct the plates that are strapped to the back of the hands and secure the sensors. Eight PhaseSpace

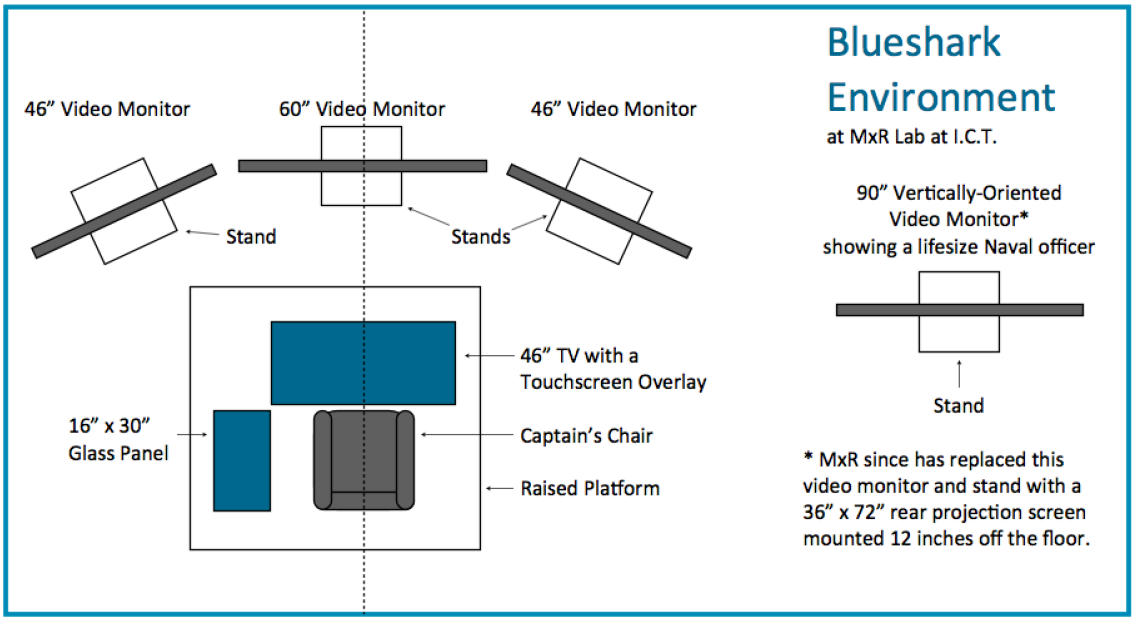

Figure 2.6. Floor plan of the Blueshark Environment at the MxR Lab of the Institute for Creative Technologies at the University of Southern California. 2014.

motion capture cameras sense the user's motion of standing, leaning forward, and looking down. Such movement shows the user in the H.M.D. a V.E. of his or her peering from the bridge multiple stories down to the flight deck. Each of the three video monitors displays the scene from a different vantage point. I.C.T.'s David Krum (March 10, 2016, e-mail message to author) explains: "The center screen showed your viewpoint, for the audience to get a sense of your experience [of wearing the H.M.D.]. The two side views show a view of the scene that includes your avatar, i.e. a view from behind your position in the scene." Pressing a button on the touchscreen or the pad to the left starts a virtual scenario. This investigator saw a small boat then

rapidly approach the carrier, whose sailors engaged the pirates. As the speed of the Navy vessel increased, the subwoofer under the raised platform became louder and vibrated the chair.

Upon completing the Blueshark demonstration, this researcher noticed that the panel to the left of the chair possessed no buttons. In fact, the panel consisted of simply a smooth panel of plain glass. While the V.E. had showed on the H.M.D. a panel of buttons similar to those on the touchscreen in front, fingers physically felt the panel of glass. As a result the user's brain thought that the fingers had touched a physical control panel. This mixture of physical and virtual dimensions illustrates the mission of the MxR, that is, "to improve the fluency of human-computer interactions and create visceral synthetic experiences" with projects that "push the boundaries of immersive experience design, through virtual reality and alternative controllers" (I.C.T. 2016). They replicated this Blueshark installation at the Navy's SPAWAR Center in San Diego.

I.C.T. researchers work with the zSpace V.R. platform. zSpace resembles a computer monitor measuring twenty-four inches diagonally and tilting thirty degrees from the top surface of the table or desk on which it sits. An integrated stand adjusts zSpace to other angles as well. Each of the two top corners curves upward and then toward the user in order to house a tracking camera. The user wears polarized passive 3D eyewear, rather than a H.M.D., and holds a stylus featuring an infrared L.E.D. The eyewear features a tracking point above the nose bridge. The screen shows a V.E. of an object, such as a butterfly, an elephant, a human heart, a geometric shape, or a laboratory frog—all made with a V.R design engine, such as Unity S.D.K. or C/C++. From the perspective of the user, the object appears to have three dimensions and to extend beyond the screen and into the room. The operator may use the stylus to pick up the virtual

object and dissect it. This researcher witnessed a V.E. of a human forearm, which looked as if it were floating two inches above the screen. Walking around the stationary zSpace revealed the front, top, bottom, and far side of the arm.

Although zSpace at first seems like A.R. because 3D images arise from the screen, zSpace actually falls under the category of V.R. zSpace does not augment, or add to, physical reality. The user must wear the special eyewear and look at the screen to see the 3D or holographic effect. The cameras on the corner of the zSpace continuously track the eyewear and thus the viewing angle of the user.

Other people cannot clearly observe the V.R. that the primary user sees because their viewing angle differs from that of the user and because they might not be wearing the glasses; however, "zView" offers a way for other viewers to collaborate in the usage of zSpace. An attached gooseneck extends from behind the zSpace to 18-to-24 inches above and to the side of the screen. The other end of the gooseneck holds a webcam pointed at the screen. According to Jocelyn at zSpace (2014), "zView is a combination of two images: what the user sees and what the webcam sees. The trick is that zView re-renders what the user sees from the perspective of the webcam," the video from which appears on a separate video monitor. This arrangement enables others to collaborate by clearly seeing on the monitor what the primary user observes by wearing the eyewear and looking at the zSpace screen; otherwise, the observer without the eyewear has a viewing experience similar to that of a theatergoer watching a 3D film without wearing the 3D glasses. The film's image appears blurry to such a moviegoer because the colors do not register or align.

U.S.C's Perry Hoberman designed the stereoscopic software for a low-cost immersive

V.R. platform that works on a smartphone or tablet. The FOV2GO snaps over the horizontally-oriented smartphone or the top third of the screen of a vertically-oriented tablet the size of an iPad. Hoberman presented his model back in 2012 at the **S**pecial **I**nterest **G**roup on **GRAPH**ics and Interactive Techniques (SIGGRAPH), which is the name of a yearly conference on computer graphics. That year, I.C.T.'s Director for Mixed Reality Research, Mark Bolas predicted, "Technology has progressed so far in the past year, that it is truly possible to put VR into everyone's hands" (I.C.T. 2012). Other manufacturers since have developed similar low-cost products, such as the $99 Gear V.R. headset for select Samsung cell phones; but Hoberman's design came first. Users of the FOV2GO look through an eyepiece for each eye to see the V.R. image on the screen of the mobile device. David Krum notes that I.C.T. developed the version for the tablet, called the InVRse Viewer:

> for casual immersion while providing a large 2D interaction surface. It was used on a DARPA project called XDATA and also in a number of educational demos, games, and demonstrations. We have a patent covering it and are working on commercialization." (March 7, 2016, e-mail message to author)

One of the reasons why I.C.T. does not broadcast the location of the MxR Lab relates to the fact that Hollywood stars occasionally visit the facility to enter the light stage. Celebrities might not want the attention of fans and paparazzi while trying to work. The making of major motion pictures sometimes necessitates a melding of live-action with computer-generated images (C.G.I.) of characters, whose movement and appearance is based on those of the real-life actors or actresses. Producing realistic-looking computer-generated images of characters requires not only the motion capture of the actors or actresses in action, but also, the appropriate lighting that will fall upon them in the film. For example, a computer-generated version of the title character of the *Spider Man* movies as he swings at night among downtown buildings will look out of

place and unrealistic if the artists draws the superhero with the top-down lighting of noonday. Under the direction of the I.C.T. Graphic Lab, the light stage helps to correct that problem by casting on the live actor the appropriate intensity and angles of light that each second of the scene requires.

The fifth iteration of the light stage resembles a geodesic dome constructed of open triangles of black pipe. The actor or actress sits or stands in the middle of the dome. With high-speed digital cameras taking photographs, operators select which of the 156 white light-emitting diodes to turn on and how brightly to adjust them in order to properly illuminate the subject. Flashing the lights helps with portraying how human skin reflects light (Debevec 2012). Computer artists later light the digital characters they draw based on the lighting results from the sessions in the light stage.

B. MxR Lab: Summary and analysis

The hidden MxR Lab at U.S.C.'s I.C.T. focuses their research on M.R. The Blueshark project for the U.S. Navy mixes V.R. with a physical simulator, complete with audio, vibrations, and haptic wrist plates. Their work with the Fakespace H.M.D. with a D.F.O.V. of 150 degrees allows U.S. Army HUMVEE drivers to practice in V.R. and become more aware of what is happening in the periphery of their F.O.V. The zSpace and zView utilize an angled or flat computer video monitor to produce a V.R. image for the user wearing their glasses and for the person viewing the user and what the user sees. This arrangement makes personal collaboration possible. MxR researchers wrote the stereoscopic software for a low-cost I.V.R. platform that works on a smartphone or tablet and are preparing the InVRse Viewer for commercialization.

Unlike any of the other labs visited, MxR works with Hollywood filmmakers to provide a light stage for actors so that lighting directors and C.G.I. professionals know how to realistically light computer-generated figures in various lighting scenarios in the films. MxR's mission to "create visceral synthetic experiences" points out that V.E. projects can appeal to more than only the cerebral.

Similar to M.E.T.I.L., MxR works on research to which the "ritual view" and "mediation of sacred forms" frameworks do not fully apply. The "transmission view," on the other hand, pertains in limited measure to some of the military projects. For example, Blueshark trains sailors in the lab how to operate Navy ships deployed to sea, while the V.R. simulation with Fakespace H.M.D.'s trains soldiers in the lab how to identify "friend or foe" driving in the field. Like the projects of M.E.T.I.L., both training simulations illustrate the transmission view's emphasis on command and control through communication technologies. Also, the use of zSpace and zView could have a limited social component through personal collaboration. The use of the lighting stage improves the appearance of C.G.I. characters in Hollywood films but does not lend itself to socio-cultural analysis. Although a Hollywood movie, such as *The Passion of the Christ, Heaven is for Real,* and *War Room,* could have a sacred theme, none of MxR's research studies sacred forms.

While a church might not need a Blueshark Environment or a professional light stage for actors,[6] a church could build a multimedia platform for I.V.R. People could sit in chairs mounted on a platform, don H.M.D.'s, and look out at V.E.'s of biblical scenes. Vibrating

[6]A light stage could effectively light up the actor playing Jesus when He took three disciples up the mountain, "And He was transfigured before them, and His face shone like the sun, and His clothes became dazzling white" (Matthew 17:2).

sounds could add movement and realism. Imagine a V.E. of the disciples with Jesus on a boat during a windstorm on the Sea of Galilee. The user could see the waves, hear the wind, and feel the rocking of the boat. Video monitors like those of the Blueshark Environment could enable an audience to see at what the V.E. users are looking through their H.M.D.'s.

A zSpace unit in a classroom could project a V.E. of particular objects of the faith. For example, imagine a projected V.E. of the Tabernacle. Students could disassemble the virtual version of this portable tent and peer into the Holy Place. Like a virtual high priest on *Yom Kippur,* the Day of Atonement, the student could view the Holy of Holies and see the Ark of the Covenant. Students could safely open[7] the Ark's lid and inspect the two stone tablets of the Ten Commandments and possibly a golden pot for manna and Aaron's rod. Such sights and interactions could increase mental retention of students of all ages.

VII. The University of California at Santa Barbara

A. Research at U.C.S.B.

One-hundred-and-four miles up the Pacific Coast from I.C.T., the University of California at Santa Barbara (U.C.S.B.) features the Department of Psychological and Brain Sciences, where researchers consider the cerebral and behavioral aspects of V.E.'s. Specifically, researchers in their rooms in the basement of the Psychology East Building look at V.E.'s for behavioral research. Distinguished Professor Jim Blascovich directs the Research Center for Virtual Environments (ReCVEB) in U.C.S.B.'s Department of Psychological and Brain

[7] Unlike the Nazi's in *Raiders of the Lost Ark,* zSpace users could safely open the virtual Ark. Compare Hebrews 9:4 and First Kings 8:9 to learn the supposed contents of the Ark of the Covenant.

Sciences. Lab personnel research how they might apply V.E.'s to psychology and brain sciences.

Some medical patients, for example, have a psychological fear of magnetic resonance imaging (M.R.I.) machines. They respond to the scanner's close quarters with claustrophobia. The loud noises, confinement, prevention of movement, length of time until completion, and seriousness of their possible medical condition all contribute to their fears. U.C.S.B. researchers developed a V.R. application in order to reduce such fears. A subject, lying on his or her back on a simple table simulating the patient table of the M.R.I. scanner, dons a wired H.M.D. and headphones. The subject sees and hears a V.E. of the M.R.I. testing experience. The operator can speak to the subject via the headphones to explain what is happening and to try to calm down the subject. Unlike the expensive and highly-utilized M.R.I. scanners,[8] the virtual M.R.I. allows the subject to repeat the testing experience. The goal of such simulation of repeated tests remains to have the subject become more familiar and more comfortable with the virtual experience and thus less fearful of the actual event.

This researcher experienced another I.V.E. designed to allay psychological fears of heights and of falling. Researchers use a V.E. of a plank across a deep well as seen in the large, tethered H.M.D. made by the NVIS Company. More-recent NVIS H.M.D.'s weigh much less than and are smaller than the cumbersome unit shown in Figure 2.7. The "Walk the Plank" simulation requires that the user remain calm and maintain physical balance, an act made more difficult by the wearing of the large H.M.D. and its accompanying back pack. The manufacturer

[8] The University of Arkansas for Medical Sciences in Little Rock, which this researcher has visited, operates their million-dollar M.R.I. scanners late into the night, hours after the clinics have closed, in order to gain the most financial efficiency for the hospital.

of this “Walk the Plank” game that ReCVEB uses, WorldViz, differentiates among “seated VR, standing VR, walking VR, and projection VR” (WorldViz 2016).

Figure 2.7. Tethered H.M.D. by NVIS in the ReCVEB in U.C.S.B.’s Department of Psychological and Brain Sciences. 2014. Photograph by author.

Seated V.R. costs the least of the four of WorldViz’ offerings. Suited for “design visualization and consumer research analysis in a typical office setting where space may be limited” (WorldViz 2016), the system includes their own computer designed for rendering of V.R. applications, a monitor, a keyboard, a gamepad controller, a V.R. headset, and a V.R. development platform. Their “standing VR” system replaces the controller with a mouse and adds tripods, two motion-capture cameras, and sensors. This motion capture equipment “allows for six degrees of freedom (6DoF) and movement at a 1:1 scale in the virtual world” (WorldViz

2016). The operator may stand or sit while interacting with the V.E. through the controller or wand.

"Walk the Plank," in how this researcher found the application at U.C.S.B., exemplifies "walking VR." Compared to the standing V.R., this more-expensive system allows the operator to walk around a physical room and thus traverse the V.E. The user wears a H.M.D and motion capture sensors on the hands, feet, head, and wand as he or she navigates the physical room, one with motion capture cameras and sensors. Since the system virtually mimics physical movement in the V.E., walking V.R. makes possible the testing of real world dimensions, provided that the V.E. fits one-to-one within the physical space or is scaled to fit. This investigator experienced a virtual apartment that allowed for walking from room to room and turning the head 360-degrees in order to see different perspectives, such as down the hall or out the window. WorldViz (2015) claims that larger physical spaces afford more degrees of freedom within the V.E. and more opportunities for interaction. Other local or remote users may collaborate with the user by their avatar's appearance within the V.E.

WorldViz' "projected VR" resembles CAVE™ technology in that video projectors place images on the walls, users don glasses, and multiple users may simultaneously occupy the physical space. Those glasses may or may not have motion capture sensors on them. Cameras mounted at the top of the walls capture their movement and the movement of wands. Users may use the wands to interact with the V.E. by moving objects within the V.E. For example, the user could pick up a surgical instrument or move a chair to a different location in the V.E. Unlike the CAVE™, the room does not have to adhere to the shape of a cube: two connecting vertical surfaces (i.e., walls) suffice. In other words, projection V.R. needs a corner of a room and not

the other four or six surfaces of a CAVE™. Projection V.R. accommodates the largest number of simultaneously-present physical users.

V.R. allows for the testing and review of designs. V.R. enables designers to interact with products or places before proceeding to full production. V.R. permits focus groups of potential consumers to interact with the design while researchers study their behavior. Compared to tests on physical objects, these tests in the virtual world can thus lower research and development costs, speed the process to market, enable multiple iterations, and produce the desired product in the end.

U.C.S.B. approaches V.E. research from more disciplines than only psychology and brain sciences. Located only hundreds of yards from the beach, the California Nanosystems Institute building houses U.C.S.B.'s Media Arts and Technology (M.A.T.) program, in which graduate students learn and research subjects similar to those of the School of Arts, Technology, and Emerging Communication (A.T.E.C.) at U.T.D. The M.A.T. program showcases the AlloSphere. According to Amatriain, Kuchera-Morin, Hollerer, and Pope (2009, 64), "The AlloSphere is a spherical space in which immersive, virtual environments allow users to explore large-scale data sets through multimodal, interactive media." The name's prefix comes from the Greek *állos*, meaning "other" or "the other" (Bromiley 1985, 43). This three-story sphere provides researchers with *another* medium for displaying big data. Fabricio F. Costa (2014, 434) states, "Big data describe a new generation of technologies and architectures, designed to extract value from large volumes of a wide variety of data by enabling high-velocity capture, discovery and analysis." The goal of such visualization involves the gleaning of new understandings of big data sets.

Curved screens form a sphere, which show projected images. People walk into the sphere from the second story. A seven-foot-wide walkway, reminiscent of the footbridge in the Death Star in *Star Wars,* in *The Incredibles,* and in *Toy Story 2*, extends ten meters from one side of the sphere to the other. The designers' placement of the sphere in the room at a 49-degree angle (that is, 49 degrees horizontally from the north wall to the centerline of the footbridge) maximizes the possible length of the footbridge, which extends from one corner of the room to another. Since the walkway bisects the sphere, viewers can lean over the railing to look down at the lower hemisphere or stand to see the upper hemisphere. The sphere fills the three-story cube of a room.

Designers of the AlloSphere considered acoustical as well as visual fidelity. Sound-absorbing materials line the walls and ceiling in order to create "one of the largest near-to-anechoic[9] chambers in the world" (Amatriain et al. 2009). Sound can emanate from speakers hung behind the sphere's perforated aluminum panels. Capable of producing a maximum of 3,000 lumens each, fourteen high-resolution video projectors mounted underneath the bridge and along the longitude that bisects the bridge display the images on the spherical screen.

This investigator witnessed a doctoral student from the physics department display the birth of a galaxy. Concentric white, yellow, and light-green ovals shined on the AlloSphere's equator. He stood in the middle of the room's walkway and held a Logitech video game controller connected via a wire to a desktop Windows personal computer, also located on a table on the footbridge. When he pushed the joystick, the concentric ovals remained intact as they shot up to the sphere's north pole. The major diameter of the largest oval measured

[9] Anechoic means free of echo and reverberation (Bai et al. 1999).

approximately fifteen feet. This gym-sized spherical canvas enabled him to graphically visualize a big data set.

The AlloSphere not only can project audio and video and produce output media mapping, but also, can receive sensory input. The integrated multimedia and multimodal design includes microphones, real-time audio tracking, audio capture subsystems, cameras, real-time video tracking, video capture subsystems, touch sensors along the footbridge's railings, and other wireless sensors. Specifically, the AlloSphere can serve as a motion-capture lab and thus can accommodate V.R. applications. Rooms off the AlloSphere house the networked computers necessary to control the components. The system's output media-mapping abilities include both visualization and sonification. For example, Kuchera-Morin served as the artistic director of an interactive project that involved mathematical calculations in the process of visually mapping the bonds of atoms of alternative fuel sources. For the sonification of the project, the team transposed the spectrum of the emission of atoms into the audio spectrum. "The piece we created," write Amatriain and others (2009, 73), "allows users to fly through a 2,000-atom lattice and navigate through the sonification of atomic emission spectrums."

B. U.C.S.B.: Summary and analysis

I.V.E. technologies constitute the V.E.'s of the labs visited at the U.C.S.B. The three-story-tall AlloSphere of the M.A.T. graduate program serves as an I.V.E. for the visualization of big data, the goal of which comprises the gleaning of new understandings of data sets. The AlloSphere not only can display visuals and project audio, but also, can act as a video and audio recording studio and a motion-capture lab for I.V.R. applications. Since the M.A.T. program runs the AlloSphere, researchers take into consideration the visual and aural aesthetics of their

projects. Researchers in the ReCVEB in the Department of Psychology and Brain Sciences utilize I.V.R. to lessen patients' fears of M.R.I. machines and people's fears of heights and falling. ReCVEB researchers operate the V.R. systems of WorldViz, the manufacturers of seated V.R., standing V.R., walking V.R., and projection V.R.

While Lynch's framework does not apply because the visited researchers do not study sacred forms, Carey's "ritual view of communication" pertains to some of these projects, i.e., those of ReCVEB. Their V.R. simulator to reduce patient fears about using M.R.I. machines employs a mixed-reality approach by having users lie on a table to mimic the machine's patient table. Certainly, the use of this simulator addresses psychological concerns; however, socio-cultural analysis also applies. If the use of this V.R. simulator alters patient fears, then the use could affect the doctor-patient relationship, which in turn could have an impact on the course of treatment because a physician might not order an M.R.I. scan for a patient with exaggerated fears of the test. On the other hand, if patients respond to the use of the simulator by allaying their fears of actual M.R.I. machines, then they probably will increase their trust in their physicians in ordering the scans (Joseph-Williams, Elwyn and Edwards 2014, 15). An improved doctor-patient relationship and better physical health could result for that patient. When more and more patients benefit from the lowering of their fears about having M.R.I. tests, people's perception about taking the tests could improve within the culture. Improved cultural perception could lead to greater patient-willingness to having M.R.I. tests when physicians order them.

The above analysis refers to the "ritual view," but the "transmission view" applies to a lesser extent. Calnan (1984, 78) observes, "Many studies have confirmed Strong's findings that the doctor-patient relationship is characterized by tight medical control." The sending doctors

have controlled their precise communication to the receiving patient and have sought to control their patient, as the "transmission view" looks at communication. In the decades since Calnan's longstanding observations, the rise of Web 1.0 as a source of medical knowledge and Web 2.0 as a facilitator of question asking and answering has given the patients more power in the doctor-patient relationship, but physicians still hold the advantage in the amount of medical control over the patient because "knowledge does not equal power" in this regard (Joseph-Williams, Elwyn and Edwards 2014, 17). Therefore, a V.R. simulation that reduces scanning fears among patients would psychologically strengthen them and sociologically bolster them in their interpersonal dealings with their doctors. In other words, the patient would tell himself or herself, "I can handle an M.R.I. test with no sweat"; his or her physician, "Doctor, I know about magnetic resonance imaging tests and other scans. I can decide whether or not I will agree to your recommendation about having them."

Analysts could apply the "ritual view" framework to projection V.R. of WorldViz, who makes some of ReCVEB's V.R. equipment. Small groups of people may simultaneously occupy the same physical space with projection V.R. and thus may personally collaborate with each other. Since people "live in a community in virtue of the things, which they have in common; and communication is the way in which they come to possess things in common" (Dewey 2004, 5), these collaborators experiencing projection V.R. possibly could form a community if they otherwise meet the definition of MacQueen and others (2001), who declare, "The results of our analysis point to a core definition of community as *a group of people with diverse characteristics who are linked by social ties, share common perspectives, and engage in joint action in geographical locations or settings*." The AlloSphere, however, affords little socio-cultural

analysis, other than for possible group utilization of the sphere, because designers made it primarily for the analysis of big-data sets.

Churches could work with developers and mental-health professionals to create I.V.E.'s for fear reduction. Since the biblical witness (I John 4:18) declares "There is no fear in love, but perfect love casts out fear," helping allay people's fears remains part of the Church's message and demonstrates Christian caring. Such an I.V.E. could treat people's fears and give them insights of the faith on this topic.

While churches might pass on the U.C.S.B.-specific AlloSphere as a way to communicate the faith, churches could utilize the WorldViz projection V.R. for I.V.E.'s, especially for group presentations. Small classes or groups could enter the space for I.V.E.'s of biblical stories and places, Christian sites, and historical events. The people in those groups could communicate with one another as they walk around and inspect the shared space. The WorldViz projection V.R. resembles the CAVE™ technology experienced at the Louisiana Immersive Technologies Enterprise.

VIII. The Louisiana Immersive Technologies Enterprise at the University of Louisiana at Lafayette

A. Research at L.I.T.E.

The Louisiana Immersive Technologies Enterprise (L.I.T.E.) offers I.V.R. and N.I.V.R. Located in an office building across the street from the Cajundome of the University of Louisiana at Lafayette (U.L.L.), L.I.T.E. is a partnership between the state and business. They (L.I.T.E. 2015) claim that they built "the world's first and only data visualization facility created as a public/private partnership." Sixty miles north of the Gulf of Mexico, Lafayette boasts offices

of offshore oil and natural-gas exploration companies and related firms, whose helicopters fly out to the oilrigs. Businesses such as the oil services company Frank's International hire them to construct V.E.'s, especially for safety training purposes. L.I.T.E.'s team designs and makes custom V.E.'s.

Lauren Bostic, Business Development Manager at L.I.T.E.,[10] demonstrated N.I.V.E. technologies in a conference room, which has a capacity for thirty people. Seated behind the conference table and facing the front wall, she operated a desktop computer. A projector showed the computer screen's image on the nine-foot-by-four-foot, wall-mounted screen, which has a resolution of 5760-by-1200 pixels. She demonstrated a N.I.V.E. of a training simulator on which recently-hired or newly-assigned employees of an oil-exploration company could be trained on how to safely work both in a yard and on an offshore oil platform. The employees could use the simulator on a laptop or desktop computer. She operated the desktop computer connected to the video-projection system in order to demonstrate what the employees use.

These simulators exhibit numerous affordances. Unlike video recordings used for training—even ones shot from a subjective camera angle, the N.I.V.E. simulators offer interaction and testing via gamification and allow the employees to virtually look in any direction. Similar to other N.I.V.E. simulators, this one of L.I.T.E. allows employees to train for many hours; to train at home, in the office, at sea, or in the field; to repeatedly take practice tests; to safely and virtually navigate dangerous workplaces; to experience a variety of working conditions and situations; to not monopolize the time of training personnel; and to have more

[10] Lauren Bostic (August 3, 2015, e-mail message to author) states, "We also have a record of working with the transportation industry, the state and federal governments, local non-profits and museums, the manufacturing industry, the medical industry, and a few universities both locally and nationally."

enjoyment than they would with other training and testing methods. The companies receive savings from the low marginal costs of the simulations and the benefits of the resulting financial leverage.

Employees can learn safety protocols and receive assessments by using simulators. For example, many potential hazards await workers in the yard. As the employee drives a virtual forklift through the virtual yard from a first-person perspective, the serious game requires that the employee identify that the eight-foot metal pipes carried by the forklift could roll off the blades or crash into piles of materials. Serious personal and/or property damage could result from such accidents in the physical world. In the training mode, the employee uses the mouse or touchpad to click on the potential hazards. The program presents on-screen boxes with written responses as to whether the employee chose correctly or incorrectly and explains why the potential hazards pose safety concerns. In the testing mode, the program keeps score of the employee's accuracy of identification. Such N.I.V.E. technology could become technically immersive if designed to accommodate H.M.D.'s.

L.I.T.E. showcases the I.V.E.T. known as a CAVE™. L.I.T.E. (2015) calls their CAVE™ "the Total Immersion Space" (T.I.S.), but the T.I.S. includes the CAVE™ and the superstructure around it. Figure 2.8 shows that the CAVE™ sits on the second floor of their building. The part of the room containing the CAVE™ protrudes past the exterior brick wall in a three-story structure resembling-from-the-street a vertically-oriented, opaque-glass egg. One enters the darkened room called the T.I.S. Viewing Room. The twenty-feet-long by ten-feet-wide room houses both the Windows and Linux desktop computers that power the CAVE™. Christie Digital Systems makes and trademarks the CAVE™. Guests to L.I.T.E. may stand and wait to

use or observe the CAVE™ in operation because the Viewing Room faces the open side of the V.E. Each of the twelve edges of the cube measures ten feet. Five of the six square faces of the cube are made out of transparent fabric. The floor is made out of a transparent "hard projector

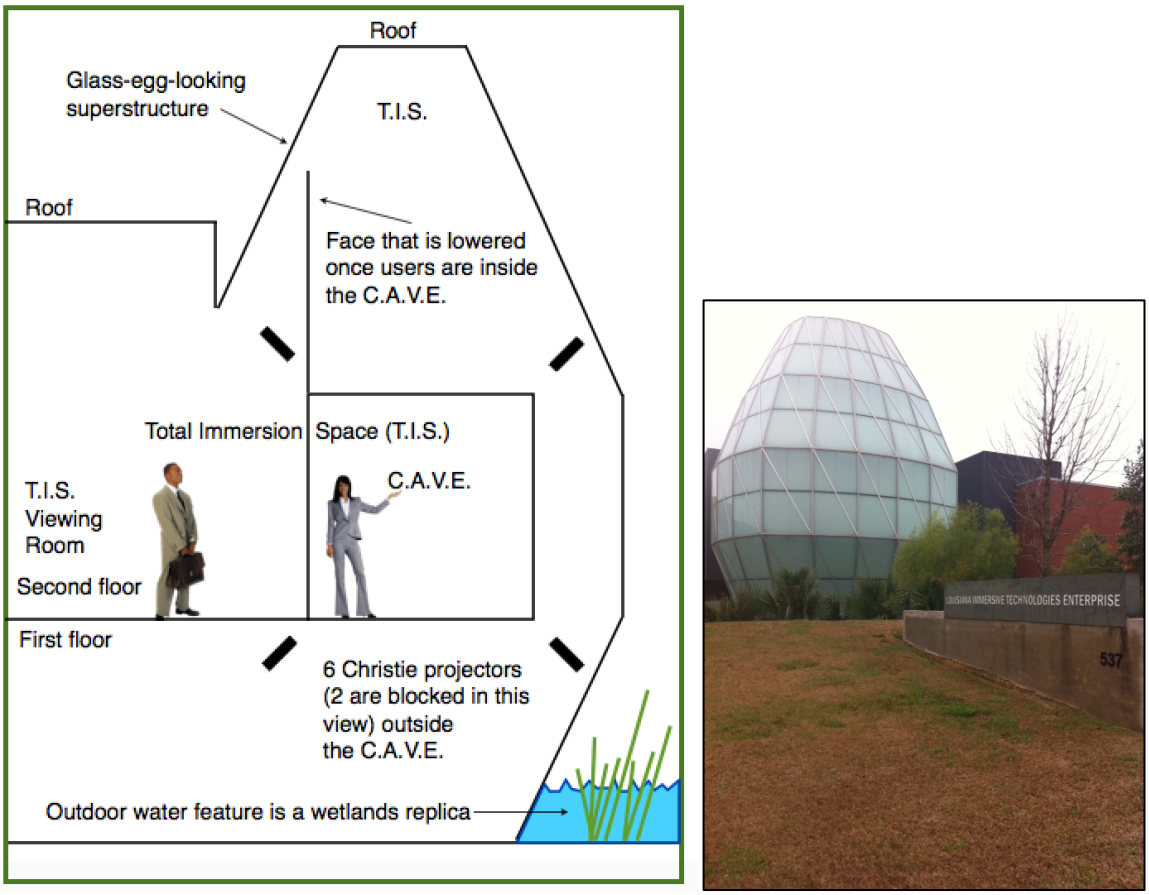

Figure 2.8. Left: Cross section of the Total Immersion Space at the Louisiana Immersive Technologies Enterprise. Right: Photograph of the exterior of the glass-egg-looking structure. 2014. Drawing and photograph by author.

screen material" (Lauren Bostic, July 21, 2015, e-mail message to author). The CAVE™'s location on the second-floor of the three-story egg allows room for the placement of video projectors above and below the V.E. Six rear-projection Christie projectors cast images on the six faces of the cube.

The user prepares in the T.I.S. Viewing Room to enter the CAVE™. He or she takes off his or her shoes and puts supplied cloth slippers on the feet in order to protect the floor, which as one of the cube's six faces acts as a rear-projection screen. The user dons a pair of Active 3D glasses supplied by Christie and handles "a generic game pad similar to that of an Xbox 360" (Bostic, July 21, 2015, e-mail message to author). The user enters the CAVE™ when the entire face closest to the T.I.S. Viewing Room opens. Similar to how a single-section grand drape on a theater stage is dropped and raised behind the "proscenium opening" (Theater 2009), the front face of the CAVE™ is lowered and raised. Once the user walks into the CAVE™, the front face is lowered. Images are projected on all six services. The external operator of the computers can see through transparent fabric, but the user cannot see out of the cube. The T.I.S. Viewing Room serves as more than an anteroom or viewing room: that room serves as the location where L.I.T.E. personnel demonstrate the Oculus Rift H.M.D. and compare it to the CAVE™. Both technologies are I.V.E.T.'s. While the Oculus Rift encloses the user's F.O.V., the CAVE™ encloses the user's entire body. The CAVE™ and its projectors employ "a motion-tracking system that integrates with our data development" (Bostic 2015).

Bostic demonstrated a virtual underwater scene simulating a damaged oilrig. The user stood on the floor of the Gulf of Mexico and could inspect the damage from that vantage point. Figure 2.9 shows a user in the CAVE™, but the image that the user sees is more lifelike and less cartoonish than how it appears in this third-person photograph. When the user wearing the Active 3D glasses physically walks around the room and/or turns the head, the vantage point changes and the virtual objects can be viewed from different angles. For instance, the user may walk among the pillars of the virtual oil platform. If a physical ladder were introduced to the

CAVE™, the user could move vertically and not only horizontally through both the physical and virtual space.

Although the primary clients of L.I.T.E.'s CAVE™ come from the offshore oil and gas exploration industry, they rent out their venue and offer tours. Bostic (2015) said that between six-hundred and seven-hundred guests visit L.I.T.E.'s facilities every year. For example, they invite school children and youth from the Lafayette to experience the CAVE™. This I.V.E.T. can teach students a variety of subjects by showing them historical, scientific, technological,

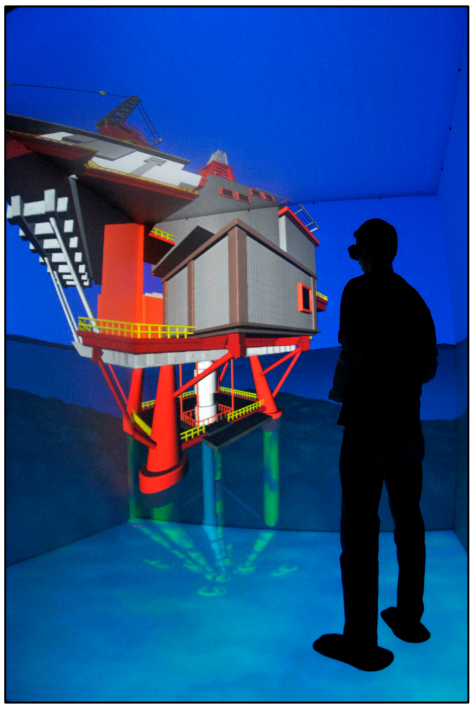

Figure 2.9. The inside of the CAVE™ while virtually representing an offshore oil-rig from the perspective of the seafloor. (L.I.T.E. 2015).

mathematical, and artistic representations in ways they have never seen. They have shown them 3D representations of objects not completely visible to the human eye, such as from as small as a molecule to as large as the solar system. A local scientist designed the representation of the

molecule. L.I.T.E. worked with the City of Lafayette in 2009 to develop an animated 3D rendering of downtown to depict how the central business district might look five-or-more years later. The feature of animation enabled viewers to see the city in motion rather than view an only-static presentation. Since CAVE™ technology allows the users to physically navigate a space, animation provides the additional benefit of allowing movement of both the physical users and the virtual subjects.

B. L.I.T.E.: Summary and analysis

In a state/private/university partnership, the L.I.T.E. offers CAVE™ technology to industry, higher education, local schools, and the community. Their version of the CAVE™, the T.I.S., provides a cube of I.V.R. Users may walk around a 3D physical space the size of a small bedroom. While V.R. systems with H.M.D.'s cover the user's F.O.V., the T.I.S. surrounds the user's entire body. For tours L.I.T.E. opens their facility to the community groups, such as Lafayette schools. The impressive technology not only can inspire children, but also, can teach them in ways that other technologies cannot.

As with ReCVEB, Lynch's "mediation of sacred forms" does not pertain to L.I.T.E., while Carey's two views of communication do. Lynch's framework remains inappropriate because L.I.T.E. does not research sacred forms. Since they make V.R. scenarios for training employees, the "transmission view" shows that the communication from employer to employee takes the form of control, that is, that the companies demand that their workers follow strict safety rules. That control extends over long distances when the employees experience the V.E.'s on oilrigs miles from the inland corporate headquarters.

Carey's other view of communication, the "ritual view," could explain the use of the T.I.S. when groups of students or other people enter the cube. Inside, they occupy the same physical space, they view the same images, and they experience the same communication technology, but they do not necessarily constitute a community. Unless the simultaneous users of the T.I.S. already knew each other and had formed a community, their group use of this V.E. does not de facto make them into a community. However, they later could become a community as defined by MacQueen and others (2001), in which case Dewey's (2004, 5) already-described relationship between *community* and *communication* would apply.

The "ritual view" also could depict what happens to the users, particularly school-aged students, when the T.I.S. presentations teach academic subjects. The boys and girls collectively learn through this unique communication technology. Hopefully, the excitement regarding what they learned during their immersive session will accompany the students when they return to their schools and their homes, where they can share what they discovered and whet the appetite of others to both personally experience the T.I.S. and conduct their own research.

The Church might have a superior I.V.E.T. with the T.I.S. U.C.S.B. operates equipment of WorldViz, whose projection V.R. affords V.E.'s of biblical stories and other Christian narratives. The T.I.S. surpasses the WorldViz projection system in that the T.I.S. shows projected images on six panels, which totally surround the users. With such technical immersion, the T.I.S. can surround the user with imagery. Users would experience a high amount of presence in an I.V.E. showing the narrative of Maundy Thursday, when Jesus gathered the disciples for what would become His Last Supper. Users could walk around room. Small groups of users could speak with one another during their time together. Similar to how

the T.I.S. uniquely teaches schoolchildren, a T.I.S. for church use could present biblical narratives in an all-encompassing manner that students soon will not forget.

IX. The University of Texas at San Antonio's Virtual Environments Lab

A. The S.A.V.E. Lab

While the Louisiana Immersive Technologies Enterprise seeks to help school children and the local municipality by sharing their Total Immersion Space with them, Dr. John Quarles of the San Antonio Virtual Environments (S.A.V.E.) lab leads his researchers in the development of V.E. technologies to assist people with disabilities or impairments. A multiple sclerosis[11] patient, Quarles (2015) wants to make V.R. more accessible for them, to make rehabilitation more effective and fun, and to raise awareness about people with disabilities. For example, he created a cane game as an assistive technology. What looks like a standard walking cane from a distance has sensors and buttons that enable the cane to serve as an input device for Unity-based videogames.

Quarles and his team are designing a N.I.V.E. to accompany the M.S. Walk fundraiser in San Antonio. The desktop V.E. shows the outside of the AT&T Center, where the San Antonio Spurs play basketball inside and around which the physical M.S. Walk takes place in the spring. Users may access the synchronous virtual walk online. As with other fundraisers for medical causes, physical walkers raise funds from donors based on how far they walk; but virtual participants also may raise funds based on how far their avatars travel in the virtual M.S. Walk.

[11] Goldenberg (2012, 175) writes, "Multiple sclerosis (MS) is a chronic autoimmune, inflammatory neurological disease of the central nervous system (CNS). MS attacks the myelinated axons in the CNS, destroying the myelin and the axons to varying degrees." Symptoms of this currently-incurable disease include difficulty walking, such as a disruption of the patient's gait.

This researcher found avatars of individuals in wheelchairs. At the 2015 event, they tested having online participants wearing audio headsets speak to physical participants wearing audio headsets as they walked; however, the ambient noise of the physical walk made it difficult for them to hear each other. Quarles said that they plan to improve the audio performance in time for the 2016 event.

The virtual M.S. Walk allows users to participate in the physical M.S. Walk. Online participants, many of whom are M.S. patients with limited mobility, have the opportunity to raise funds for M.S. research. Once technicians improve the audio communication, participants will be able to communicate with physical walkers and hear the sounds of the day, such as the breaths of the walkers, the cheers of the crowd, and the ambient noise of the event. Unlike video, audio allows the walkers to safely talk and listen while they walk. The physical walkers can hear from specific M.S. patients, who ultimately benefit from the research dollars raised. Relationships can develop during the event and can continue afterwards.

S.A.V.E. researchers are creating a N.I.V.E. to assist autism patients. In order to understand attention differences among people, especially young people, with autism, researchers are creating a customizable virtual teacher. The laptop-based program utilizes the recently-released Tobii EyeX Controller, a device that spans the width of the laptop and measures less than one-inch high. Resting between the keyboard and the laptop's fifteen-inch screen, the EyeX has three equally-spaced, nickel-sized, eye-tracking sensors. Use of the technology requires that the user first follow the spoken directions regarding where to look on the screen for calibration purposes. The V.E. made in Unity depicts a person sitting behind a drum set. The virtual teacher, the drummer asks the user to look at a specific drum, a drumstick,

or other parts of the screen. If the sensors do not detect that the user's eyes are looking at the requested target, the game pauses and eventually times out. Researcher Chao Mei (November 5, 2015, e-mail message to author) said that the lab has created other virtual teachers and plans to test them on students with autism. He hopes to integrate the eye-tracking technology into a game for autism students.

Tobii's primary intended use of the EyeX is as a controller for videogames, such as *Assassin's Creed Rogue*. Tobii's (2015) publicity materials contend that the EyeX immerses the player in the game because the user may control the game by simply focusing his or her eyes on different parts of the screen. Where the gamer looks brings that visual subject into focus and increases the volume emanating from that subject. Tobii leans on a psychological definition of immersion to claim an immersive experience for the gamer. Without an accompanying H.M.D., the EyeX remains a non-immersive technology according to the technical definition of immersion. The customizable virtual teacher also features a smart watch, to which S.A.V.E. researchers pair a mobile phone and the game itself. When the user touches the asked-for object with his or her virtual hand, the smart watch vibrates or buzzes to indicate that the user has touched the correct object.

S.A.V.E. researchers are employing I.V.R. to study the effects of latency and presence on people with mobility impairments. Occupying half of the physical space of the S.A.V.E. lab, the motion capture studio consists of a ten-foot-by three-foot floor mat, multiple infrared cameras suspended from "T"-shaped light-stands at the corners of the room, and a ViewSonic PJD8653WS short-throw projector. The floor mat, the *GAITRite*® Portable Walkway, comes with software for the "temporospatial measures of gait" (CIR Systems 2015). The user wears a

head cap, gloves, and sandals, all of which have infrared markers, and dons a tethered H.M.D. He or she stands on the floor mat and faces the wall where the eleven-foot diagonal image will be projected. Through the H.M.D. the user sees a mirrored avatar of himself or herself in a virtual replica of the motion capture studio. When the user raises the right leg, for instance, the avatar's right leg rises. Researchers can add lag time between when the avatar's leg rises and when the user's leg rises so that they do not happen simultaneously.

Quarles and his team are studying how healthy users and M.S. patients with impaired mobility experience presence and how they react to the effects of latency on their gait. Quarles (2015) notes that all V.R. has some latency, which he defines as "the time delay between a user's performing an action and the system's response." Researcher Gayani Samaraweera (October 20, 2015, e-mail message to author) wants "to understand how we can use latency to manipulate walking patterns of a person that suffers from asymmetric gait and to possibly use it as a gait rehabilitation technique for asymmetric gait."

S.A.V.E. researchers are developing an I.V.R. simulator of an open-heart surgery for medical students. Rather than teach them how to perform open-heart surgery, researcher Serge Zamarripa gives the following explanation:

> We are assuming that people who use the training simulator already know how to perform routine heart surgery. What we are trying to do is teach them the correct remedial algorithm in an emergent scenario, and hopefully increase their decision making skills. (Serge Zamarripa, October 27, 2015, e-mail message to author)

These skills become critical for a physician's making life-or-death decisions. The user puts an Oculus Rift H.M.D. on the head and grabs a Razer Hydra Controller in each hand. The V.E. simulates an operating room with the man's chest open and prepped for heart surgery. The user can physically turn 180 degrees and see the other side of the operating room. The first-person

perspective allows the user to see each hand, which can reach for forceps, clamps, and other surgical instruments. The user selects the instruments by saying voice commands to the Microsoft Kinect Sensor. The user needs to place his or her hands in the proper location near the body in order to receive the instruments for which the user calls. The scene demonstrated requires the user (i.e., the surgeon) to apply clamps and turn on a heart pump.

Finally, S.A.V.E. researchers are using an I.V.R. game to study cyber-sickness. The user sits in a chair in front of a desktop computer, puts an Oculus Rift H.M.D. on the head, and places hands in gloves that measure galvanic skin response. The user of this V.E. of an automobile-racing course assumes a first-person perspective of sitting as a passenger in a Lamborghini convertible. As the agent drives the car around the twists and turns of the racetrack, various superheroes appear in the roadway as an attempt to scare the user. Researchers want to determine if the user suffers from cyber-sickness, as determined by recording galvanic skin response and asking the users if they feel dizzy, nauseated, or uncomfortable. S.A.V.E. researchers plan to compare results of users with M.S. with users without M.S.

B. The S.A.V.E. Lab: Summary and analysis

The S.A.V.E. Lab researchers are developing V.E.'s to assist the physically handicapped. The cane with built-in controls serves as an inconspicuous way for those needing a cane to bring a game controller with them. The virtual teacher and the accompanying eye controller help autism patients but could help patients with other conditions, such as those patients for whom the eyes act as the most-reliable, or possibly the only-available, controller. The S.A.V.E. researchers exploring I.V.R. programs examine gait latency, attempt to improve decision-making skills for heart surgeons, and study cyber-sickness. Their V.R.-based Virtual M.S. Walk enables people

with mobility-reducing conditions to participate in the event at home and financially support multiple-sclerosis research and patient assistance.

The "ritual view of communication" fits as an appropriate framework for the projects of the S.A.V.E. Lab because many of them involve human interaction and possess cultural significance. In a statement that supports Carey's "ritual view," evolutionary anthropologist Michael Tomasello (2008, 6) argues, "Human communication is thus a fundamentally cooperative enterprise, operating most naturally and smoothly within the context of (1) mutually assumed common conceptual ground, and (2) mutually assumed cooperative communicative motives." For example, the virtual M.S. Walk seeks the cooperation of the players at home, the benefactors, the walkers on the track, and the technical support personnel. They mentally buy into the "common conceptual ground" that physical walkers circumambulate the AT&T Center in San Antonio and that people at home participate in an online V.E. simulating that same walk. They demonstrate "cooperative communicative motives": they want the people participating via V.R. to develop a sense of presence, they want the online users and the physical walkers to hear each other and thus respectively feel included in the event and feel appreciated for their walking, and they want to raise research funds to ultimately cure this debilitating disease.

In addition to creating the virtual M.S. Walk, Dr. Quarles leads the S.A.V.E. Lab, where they develop V.E.'s to help people dealing with other disabilities and diseases. Lab investigators have created a cane game for V.R. players who grab an assistive cane to walk, I.V.R. for testing latency and presence on people with mobility impairments, a customizable virtual teacher to assist autism patients, a V.R. game to study cyber-sickness, and I.V.R. of a surgeon's performing

open-heart surgery. All of these communication technologies could benefit people in society who battle these disabilities and conditions.

The societal benefits *of all of these projects created in a V.E. lab whose principal investigator (P.I.) has a self-acknowledged debilitating disease* prompt the question as to why Dr. Quarles chose to design V.E.'s to help other people who deal with these conditions. This dissertation has shown that labs make V.E.'s to address numerous subjects; therefore, a positive relationship seems to exist between the P.I. with a serious disease and his selection of V.E.'s that could benefit people with his and other handicapping conditions. Henri Nouwen (1979) contends that many times people who enter the ministry, one of the helping professions, had suffered their own physical, vocational, emotional, relational, or other wounds. Nouwen (87) writes, "For a deep understanding of his own pain makes it possible for him to convert his weakness into strength and to offer his own experience as a source of healing" to others who are wounded. This researcher commends Dr. Quarles for putting his gifts, graces, intellect, abilities, and talents to work for the betterment of others who suffer.

The Church could glean from projects of the S.A.V.E. Lab. First, as with labs of the other universities, the Church could have I.V.E.'s of biblical stories made for their use; but if those stories include a character with a staff or rod, such as the narratives of David the shepherd boy with his staff or of Moses with his rod, then a modified staff or rod could act as a motion controller, a la Dr. Quarles cane for his cane game. Second, from the virtual M.S. Walk, the Church could learn the value of creating an I.V.E. of what's occurring at one location so that homebound people could participate virtually. These online users of the I.V.E. not only feel connected, but also, are connected and are participating. Third, the M.S. Walk shows churches

how I.V.E.'s can help raise funds for worthwhile causes. Fourth, the Church could further practice ministries of congregational care by supporting and using I.V.E.'s that help wounded people, as do the projects of the S.A.V.E. Lab.

X. The University of the Incarnate Word's Computer Graphic Arts Program

A. Research of the U.I.W.C.G.A.P.

Instead of employing a V.R. program to grant virtual participation in a physical walk as S.A.V.E. researchers created, researchers in the University of the Incarnate Word's Computer Graphic Arts Program (U.I.W.C.G.A.P.) developed N.I.A.R. technology to allow museum patrons to walk around the McNay Art Museum and have a guided tour and an A.R. game. Located on the McNay estate in the heart of San Antonio, the museum displays original paintings by such well-known painters as Dali, El Greco, Gauguin, Hopper, Manet, Monet, O'Keeffe, Picasso, Renoir, Toulouse-Lautrec, and van Gogh, and 3D pieces by such artists as Calder. In cooperation with Adam Watkins (2015) and Denny Fagin of San Antonio's nearby U.I.W., the museum developed an A.R. iPad application called *Reality Check* for a 2013 exhibit about surrealism art from the Whitney Museum of American Art in New York City.

From the front desk of the McNay, museum patrons borrowed iPad's equipped with the *Reality Check* software. The screen showed nine silhouettes from paintings in the *Real/ Surreal* exhibit. Users would have to physically traverse the exhibit in order to find the silhouettes. Once the users found the pieces matching the silhouettes, they were to point the iPad at the artwork and take a photograph. This game then asked the players to vote if the art pieces that they were viewing were real or surreal. Players could augment reality by pressing buttons to hear or read

more information, hear sounds accompanying the piece, such as ambient sounds of the subway, or watch videos.

Moreover, the McNay's permanent collection offers a telephone number that museum visitors can call and enter the number of the art piece in front of them in order to hear an audio recording of a docent[12] giving descriptions and background information. The *Reality Check* game and the docent-over-the-phone system provide ways for the McNay to increase interactivity between patrons and the art displayed.

B. The U.I.W.C.G.A.P.: Summary and analysis

Carey's "ritual view of communication" and Lynch's "mediation of sacred forms" both apply here. Touring an art museum and gazing at artwork can become a solitary experience. The *Reality Check* game, on the other hand, encourages visitors to play with other patrons via the N.I.A.R. game and thus turn the museum visit into a social experience. Also, art museums teem with culture; therefore, visits to them count as cultural activities. A museum's art collection extends "society in time" by continually displaying works to new generations and acts as "the representation of shared beliefs" (Carey 2009, 15) because the collection demonstrates what the museum values. The communication technology of this N.I.A.R. game thus serves as "a distinct cultural activity" (Christians 2002, 38).

The "mediation of sacred forms" also pertains to the McNay and *Reality Check*. The museum contains artwork from the southwest, from the rest of the United States, and from Europe. Some pieces qualify as "sacred forms": El Greco's *Christ* painting from 1585, Hakendover's *Entombment of Christ* oak altarpiece from the 1420's, Sam Coronado's *Mestiza*

[12] A docent is a museum tour guide.

Virgin screen-print from 2000, and José Benito Ortega's *Nuestra Señora del Carmen* wooden sculpture, circa 1885 to 1907. Painting, screen-print, sculpture, and now electronic tablets serve as the media, which Lynch (2012, 87) contends "enable communication about, and interaction with, those forms."

Churches could have N.I.A.R.-equipped electronic tablets as part of educational games. Students and other players could traverse the church building in scavenger hunts. When they find the requested items, the N.I.A.R. app could augment their reality by teaching them about the found objects, such as a depiction of the *Angus Dei*[13] in a stained glass window or a triquetra[14] carved into the end of a pew. Users could play with others in fun competition and learn about the faith in the process.

XI. The Georgia Institute of Technology

A. Research at Georgia Tech

Visitors wanting to enter the McNay Art Museum can either walk up the steps with three landings or travel up the ramps through the sculpture garden. That second, handicapped-accessible route provides what Laura Hollengreen (2015) of Georgia Tech's College of Architecture refers to as a deeper outdoor threshold. Hollengreen relates donning a H.M.D. for V.R. to donning a threshold in a structure. Building on the work of French ethnographer Arnold van Gennep (1960), anthropologist Victor Turner (1985) sees the threshold as more than a board, plate, stone, or line that a person crosses to enter a building or room: Turner (1985, 206)

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[13] Drawings of the *Angus Dei*, meaning Lamb of God, usually show a lamb with a Christian flag in his mouth. John the Baptist "saw Jesus coming towards him and declared, 'Here is the Lamb of God who takes away the sin of the world!'" (John 1:29).

[14] The triquetra is a symbol representing the Holy Trinity. Three ovals overlap to illustrate that the Father, Son, and Holy Spirit are separate Persons but together make up the one God.

perceives thresholds as "space-time transitions." Van Gennep (1960, 20) asserts, "to cross a threshold is to unite oneself with a new world." Hollengreen appreciates Turner's argument for a "deep threshold," such as a cathedral's large narthex.[15] Traversing a deep threshold extends the person's entrance both in physical distance and in time, helps the person prepare to enter the space of the nave, and gives him or her more time to decide whether or not to enter. The user of an H.M.D. does not instantaneously move into seeing virtually; rather, the process of grabbing the H.M.D., placing it over the eyes and head, adjusting the headband, and verifying that the process worked correctly takes time and thus deepens the threshold of entering the virtual world.

Rather than offering one A.R. app as U.I.W. researchers made in conjunction with the McNay Art Museum, Blair MacIntyre, Jay David Bolter, and their Augmented Environments Lab (A.E.L.) at Georgia Tech's Graphics, Visualization and Usability (G.V.U.) Center focus their research on A.R. technology. Along with Richard Grusin (2000, 272-273), Bolter wrote the seminal text *Remediation: Understanding New Media,* in which they coined the terms "hypermedia" and "immediacy" and redefined "remediation" as "the formal logic by which new media refashion prior media forms." A "hypermediated" television network such as the Financial News Network calls attention to the screen by filling its periphery with text and graphics. High-fidelity speakers demonstrate its opposite "immediacy" by encouraging the listener to hear, not the speakers themselves, but the music they play with accuracy, or Ultra HD televisions exhibit "immediacy" by encouraging the viewer to see, not the TV itself, but the movie scenes they display in vivid color and with stunning clarity. These terms of Bolter and Grusin (2000, 273) comprise "the three traits of our genealogy of new media."

[15]A narthex is a church building's foyer or vestibule, especially leading from the outside into the sanctuary or nave.

Along with other labs at the G.V.U. Center, the A.E.L. of Bolter and MacIntyre employs N.I.A.R. in the "Sweet Auburn Digital Media Initiative." The name "Sweet Auburn" identifies a predominately-African-American historical neighborhood located on Auburn Avenue southeast of Georgia Tech. Under the faculty leadership of Jay David Bolter and Nassim Jafarinaimi, researchers on the "Sweet Auburn Digital Media Initiative" project seek to meet the following objectives:

> To explore the usage of locative media forms for their potential to increase civic engagement among visitors and residents. To make the rich cultural heritage and history of Auburn accessible to people by integrating new and old representational media. (G.V.U. Center 2016, "Sweet")

"Locative media forms" include "Augmented and Mixed Reality, web applications, and social networking" (*Ibid*). Bolter (2015) demonstrated an A.R. iPad application that augmented the

Figure 2.10. An A.R. app from the "Sweet Auburn Digital Media Initiative." (G.V.U. Center 2016, "Sweet"). Used with permission.

view of the 200-block of Auburn Avenue, where the Herndon Office Building once stood, as shown in Figure 2.10. An African-American businessman, Alonzo Herndon founded the Atlanta

Life Insurance Company and had the Herndon Office Building constructed in 1924. The building housed various businesses through the 1970's (Hamilton 2002). Once empty, the building displayed boarded windows for years until its demolition. The A.R. app allows the pointing of the camera of the iPad or other mobile device at the parking lot in the 200-block of Auburn Avenue and the viewing on the screen of the Herndon Office Building as it looked in its heyday.

The A.E.L. has developed and commercialized an A.R. web browser for mobile phones and tablets that allows A.R. apps to incorporate web content. Developers can program the Argon browser in html5, css3, and javascript and add video, still images, and audio. Argon includes 3D graphics by three.js graphics, panoramic and video background graphics, precision GPS, and "computer-vision tracking using Qualcomm's Vuforia library" (Argon 2015). The latest version, Argon 4 utilizes the argon.js framework and NativeScript, which allows Argon to run on Android and eventually Windows in addition to iOS (Blair MacIntyre, e-mail message to author, March 23, 2016). The website of the A.E.L. (2016) claims, "The development of Argon and its applications (as an AR research platform as well as for commercial uses, tours and cultural heritage, dramatic experiences, and personal expression) has been a major focus of the AEL since 2009."

Another lab in the G.V.U. Center, the Synaesthethic Media Lab (S.M.L.) has created multisensory prayer nuts. Christians made use of wooden prayer nuts during the fifteenth and sixteenth centuries in the Low Countries of Europe. Comparable in size to a golf ball, the hinged prayer nuts opened to reveal hemispheres containing intricate carvings depicting biblical scenes. Figure 2.11 displays a prayer nut, which is labeled "Flemish – Rosary Bead with Scene of Christ

Carrying the Cross" (Walters Art Museum 2012). As they have done with rosary beads, Christians could integrate the prayer nuts into their acts of personal piety and have tangible tools with which to express their devotion. Artisans known as paternosters crafted both rosaries

Figure 2.11. "Flemish – Rosary Bead with Scene of Christ Carrying the Cross." (Walters Art Museum 2012).

and prayer nuts, some of which they attached to the strings of the rosary beads; however, the intricacies of craftsmanship meant that only the wealthy could afford the prayer nuts. Scholten and Falkenburg (1999) note that the prayer nut's "miniature format nicely reflects the personal and intimate character of 15th century religious life" (Reischig et al. 2009, 310) and describe this period as a time when laypeople developed personal religious experiences that included a "dependence of spirituality on material objects" (Kwan et al. 2016, 484). Scholten (2011, 447) estimates that fifty prayer nuts exist today and proposes, "Unlike larger devotional works of art in the Netherlands, many of these micro-carvings survived the sixteenth-century outbreaks of iconoclasm and have remained well preserved, probably because of their diminutive size."

The S.M.L.'s interest in prayer nuts concerns their installations in museums. While medieval Christians could hold prayer nuts and carry them with them, museums have had to securely place them behind glass in order to protect the delicate 500-year-old objects. The

S.M.L., under the faculty direction of Ali Mazalek, replicated the prayer nuts at 1:1 scale using a uPrint SE 3D printer. The creation of prototypes in ABS plastic enables museum visitors to hold and open a reproduction, albeit plastic, of a prayer nut.

The S.M.L. embellished the museum-visitor's experience with the prayer nuts by making the exhibit multisensory. In order for the museum guest to "experienc[e] spirituality," namely "the contemplative quality of 16th century religious practices," the visitor who approaches the exhibit sees a projected image on the wall (G.V.U. Center 2016, "Multisensory"). The projection shows a third-person view of a Medieval Christian walking the streets of the Low Countries and carrying a prayer nut. A voice amplified through the wall speaker prompts the guest to hold the *tangible*, that is, the lab's name for the prototype. This N.I.V.E. switches to a first-person view as the guest handles the object, that is, the projected scene crosses what film, television, and video directors call the "Z-axis" (Zettl 2013, 161) and changes to hands holding the prayer nut as if the hands were those of the museum guest. Such a switch helps the visitor to place himself or herself in the scene and thus promotes the empathy of the guest with the Medieval Christian who incorporated prayer nuts into his or her private devotional practices.

The name *tangible* indicates that visitors may handle and feel them. Kwan and others (2016, 484) observe, "Opening and closing the prayer-nuts, or touching their outer and inner carvings were integral for achieving an intimate, and definitively, 'tangible' connection with the sacred" and might have reminded the Medieval user of opening and closing a prayer book. A visitor's opening of a tangible activates sensors that trigger on the museum wall a visual projection of enlarged images of the carved scenes inside of the nut so that the museum visitor may more clearly see the intricate details. Capacitive sensors inside each hemisphere trigger

both the projected image's enlargement of the touched part of the tangible's scene and the addition on the projected image of words identifying the parts and explaining their importance. The "Experiencing Spirituality" aspect of the exhibit entails the following activities:

> Text and aural cues encourage visitors to relax their breathing while holding the tangible object. The interaction is completed when the scene of the marketplace transitions into a scene of a cathedral, providing text about the use of prayer-nuts in daily life. The ambient everyday sounds of the marketplace gently transition to sacred music written in the early 16th century. (Kwan et al. 2016, 485)

The multisensory prayer nuts appeal also to the sense of smell. The aromas of the original prayer nuts came from the boxwood or other wood from which the paternoster carved them and from additive vinegar, herbs, and spices. Reischig and others (2009, 312) declare, "The presence of these odiferous substances would literally increase the spiritual experience of the worshipper during prayer." Many Medieval owners of prayer nuts believed that the fragrances could ward off evil spirits and disease (Kwan et al. 2016).

The S.M.L. researchers brought aromas into the exhibit by securing two different prototypes to a table in the darkened room of the museum. When guests open the first nut, the flex sensor activates the projection of video and the emanation of a recorded speech explaining the aromatic contents and their historical significance. When the visitor opens the second nut while the first nut remains open, "an animation appears that connects the objects with a blending of the visuals, denoting the blending of aromas into a fragrant composition" (485). Museum guests can smell the "nutmeg, cinnamon, clove, frankincense and a touch of rose" along with "sandalwood and cedarwood essential oils" (486) by leaning over the tangible and sniffing the scents that researchers created to emulate the sweet-smelling aromas of the historical prayer nuts.

The Arduino computer program runs the exhibit. The program receives input from the sensors on the three tangibles via wires and "sends select information to a Processing sketch to display graphics, visuals and animations according to the user's interaction" (485). The system draws from the Minim library to produce audio feedback for interactions with the user.

B. Georgia Tech: Summary and analysis

Georgia Tech's G.V.U. Center's researchers develop projects pertinent to this research. The Sweet Auburn Digital Initiative includes N.I.A.R. technology from the A.E.L. that enables users to point their A.R. equipped mobile device at a historical downtown site and see on the screen buildings that once stood in that location in their prime condition. Such affordances, especially when combined with social media, work to make the history and cultural heritage of Sweet Auburn accessible to today's students. A.E.L. developed also an A.R. web browser for mobile devices that incorporates web content, audio, still images, and video, such as 3D animation. In a M.R. project, the G.V.U. Center's S.M.L. created multisensory medieval prayer nuts for a museum exhibition, in which patrons could hold and open prayer nuts made from a 3D printer, smell the aroma of cedarwood and other historical scents, hear narration and instructions, see the nuts in their hands, and watch a projected N.I.V.R. first-person scene of their carrying the devotional object through a sixteenth-century Dutch village.

As with the U.I.W.C.G.A.P. and the McNay Art Museum, both frameworks pertain to these projects of Georgia Tech. Regarding the "ritual view of communication," the Sweet Auburn Digital Initiative shows the importance of cultural considerations (Harding and Norberg 2005). The corresponding N.I.A.R. app exemplifies Carey's "extension of society in time" because a person can point an equipped tablet or smartphone at places in the historical

neighborhood on Auburn Avenue, take a photograph, and see what it looked like during the 1920's. The camera becomes a lens through time.

Perhaps surprisingly to some people, Lynch's "mediation of sacred forms" applies to this secular project. Sacred forms can include events and even ideas. The sacred itself, warns Lynch (114), "has a shadow side. While sacred forms symbolize and perpetuate deep moral and existential commitments, they equally have the capacity to legitimate oppressive social orders, violence, and the breach of basic human rights of freedom and well-being." For instance, the Sweet Auburn section, as well as other parts, of Atlanta endured such atrocities as the lynching of some of its African-American residents, the race riots of 1906, and the violence surrounding Jim Crow laws (Hamilton 2002). These horrific events symbolize sacred forms such as Southern oppression of African-Americans or Southern "democracy." This app then can mediate these sacred forms by becoming a lens through which a person today can see the way that Sweet Auburn used to look and know that the neighborhood did not taste sweet to its residents. By visually bringing history to life, the app could communicate the message that such violence also could come back to life in the 21st-century if American society does not take preventative steps, such as through education. Lynch (132) offers some hope: "Perhaps the most important legacy of Durkheim's work will be his example of the pursuit of a humane society through academic reflection on the place of the sacred in social life."

The M.R. prayer-nuts exhibit extends "society in time" by allowing patrons to literally hold a tangible of a piece of history and watching a video with a first-person perspective of a 16th-century villager's carrying an original engraved cedarwood prayer-nut. The tangible, its ability to open, the video, the audio recording, and the scents work together "to represent an

underlying order of things" (Carey 2009, 15), that is, the life of piety of a Dutch Christian in 1500's. That order also fits Lynch's (2012, 41) framework, in which he follows Émile Durkheim in describing religion as "a unified system of beliefs and practices relative to sacred things." The multisensory prayer-nuts epitomize Lynch's "sacred forms" because the prayer-nuts survive as "specific, historically contingent, instances of the sacred" (29). S.M.L.'s exhibit employs multimedia, which Lynch (87) says, "enable communication about, and interaction with, those forms."

Churches could apply what they learn from these projects at Georgia Tech. N.I.A.R. apps can enliven history and even promote a deeper appreciation of history; however, the Sweet Auburn Digital Initiative confirms that that history can have a dark side. Chapters of church history also reveal times when the Church's actions and beliefs did not square with Christ's teachings, times many Christians would prefer not to remember. As a result, any N.I.A.R. apps designed to bring Christian history to life need to acknowledge the unpleasant or even horrific chapters, show how not to repeat those mistakes, and then presenting a vision of a preferred future of hope. In other words, the Church can change directions in this regard: the images of a hopeful future and not just of a painful past can appear on the N.I.A.R. screen.

The multisensory prayer-nuts exhibit illustrates the value of appealing to the senses of sight, sound, touch, and smell. Even though the Middle Ages saw the devaluing of touch (Classen 2012, 148) and the Protestant Reformation led to the privileging of sight and sound with the new emphasis on the read/heard Word, many 21st-century United Methodists and other Christians appreciate multisensory Holy Communion services. Students favoring kinesthetic learning styles like to physically move and touch by reaching for the elements of communion,

bringing their fingers to their mouths, and eating the bread and drinking from the cup. If any church therefore wanted to represent their worship service with a V.E., M.R. might provide the most appropriate approach to take among M.R., V.R., and A.R. because M.R. includes the physical and the virtual.

XII. Possible framework directions

The end of the deep descriptions of the latest V.E. developments and their detailed Summary and analysis serves as an opportune time to briefly track the upcoming direction of the possible theoretical frameworks. While this research utilized Carey's "ritual view" and Lynch's "mediation of sacred forms," which other frameworks, if any, could this study apply as it moves forward? Since this research looks at The U.M.C., particularly-Wesleyan scaffolds, namely Outler's (1991) "Wesleyan Quadrilateral," could apply. Chapter 6 will lay the ancient four-part structure of the worship service over the presentation of recommendations because the applications involve worship and because the project wants to raise the importance of the physical in the discussion of V.E.'s. United Methodists and other Christians worship a God Who became incarnate, that is, Who took on physicality. A framework that balances virtuality with physicality, therefore, will well serve the analysis of V.E.'s as communication technologies of faith, especially for a worship service.

XII. Theology and philosophy of virtual environments

A. Perception, Phenomenology, and Epistemology

The critical subjects of perception, phenomenology, and epistemology are intricately interwoven; for instance, scholars who write on one of these subjects often include the other two.

Before a communication technology can represent *a thing, an event, a person, a concept, or even God,* the user—let alone the designer—must perceive that object, that person, that event, that concept, or even God. Philosophy Professor Diogenes Angeles (1981, 206) defines perception as "The bringing of things into awareness by the use of our senses and especially thereby being able to name them and/or identify them as objects in the external world. In general, perception is regarded as an interpreting and synthesizing of sensations," but we humans, especially in regards to perception of God, may become aware through more than only sense perception. Theology, philosophy, and virtual environments, therefore, converge with the critical study of perception.

1. Perception

Philosophers since the times of ancient Greece and theologians since the times of the early church have known that their epistemological studies need to include examinations of perception. Plato wants to perceive the ideal rather than the specific concrete, which people can perceive through their senses. "We shall conclude then," Socrates tells Glaucon in *The Republic* (Plato 1985, 479e), "that those who behold [namely by seeing] many beautiful things but cannot see beauty itself…, such men have opinions about everything but know nothing of what they profess to believe." Since what one perceives by the senses varies from person to person, the beholders possess only fleeting opinions. Perception by the senses, in other words, leads to the possession of opinions rather than to gaining the preferred, ideal wisdom. As a result we cannot trust our illusory senses for perception, according to Plato.

Plato's student Aristotle takes the opposite tack regarding perception. As an early philosopher to develop categories and then place things in them, Aristotle ranks the senses by their importance to perception. He places sight at the top of the list of the five senses, which

receive sensations. Designers of V.E.'s have concurred. Removing the visual from most V.E.'s would make them unusable. Touch resides at the bottom for Aristotle. Ironically, Aristotle considers touch the most base of the five senses, and yet, touch "as prior to the other sensory modalities … is also the most necessary" (Paterson 2007, 17).

Each sense organ has a unique task in perception: the eyes see, the ears hear, the nose smells, the tongue tastes, and the skin feels. In *De Anima (On the Soul)*, Aristotle (1985) classifies sight, hearing, and smell as remote senses because a medium, usually air, separates the sense organ from the sense object. He classifies taste and touch as "contact senses" because the sense organ contacts the sense object (423b). Interestingly, perceptions not detected by these specialized senses—"common objects" of "movement, rest, number, shape, and size" (418a) — "are incidentally perceived" (189) by *aesthesis koine* (common sense), which is "not special to any one sense but common to all" (418a).

Aristotle differentiates sound from voice. Not every sound, such as a cough, that emanates from a living creature is its voice. Aristotle's statement "Now voice is a kind of sound of an ensouled thing" resembles the last verse of the Psalter: "Let everything that breathes praise the LORD" with sound (Psalm 150:6). Regarding hearing and voice, Aristotle notes, "the characteristics of the sound-sources are revealed in the actualized sound" (420a). Diogenes Allen (1985, 130) explains, "The eye or ear is unlike its object, but it is potentially like it, and actually becomes like it by receiving the form of the perceived object." For example, Aristotle (1985, 423b) observes, "The sense-organ of touch … is that part which is potentially like" the hot/cold or wet/dry elements that it perceives. Mark Paterson (2007, 17) discerns that for

Aristotle touch differs from the other senses because "flesh is the *medium*, rather than the organ, of touch. Indeed, if the sense of touch corresponds to any particular organ it would be the heart, as he claims in *De Sensu*."

Decades after the Fourth Lateran Council of 1215 (González 1984a, 272) introduced the idea of transubstantiation, theologian St. Thomas Aquinas appealed to this philosophy of Aristotle by "inventing" the Thomistic doctrine of transubstantiation, that is, the consecrated Eucharistic bread and wine change substance and actually become the Body and Blood of Christ while keeping the forms and accidents of bread and wine (Tkachenko 2016, 63). Like Aristotle with his theory of sense perception, the third-century Greek philosopher Plotinus believes that "a sense organ is *potentially* like its object of perception…. By receiving the [object's] form, the sense organ becomes like the object of perception" (Allen 1985, 75).

A leading scholar on perception, Maurice Merleau-Ponty (1964) addresses some of Aristotle's Hylomorphic concerns and presents a foundational understanding of perception. He writes that although the matter and form distinctions of Aristotle and other Greeks and scholastics do not evenly apply to perception, "Matter is 'pregnant' with its form, which is to say that in the final analysis every perception takes place with a certain horizon and ultimately in the 'world'" (12). He develops the following argument:

> The perceiving mind is an incarnated mind…. As Descartes once said profoundly, the soul is not merely in the body like a pilot in his ship; it is wholly intermingled with the body. The body, in turn, is wholly animated, and all its functions contribute to the perception of objects—an activity long considered by philosophy to be pure knowledge. (Merleau-Ponty 1964, 3-5)

In other words, "it is our point of view on the world" (5). V.R. attends to this understanding because users of V.R. place themselves in the V.E. and experience the V.E. from a dynamic first-

person perspective.

Merleau-Ponty advances a Judeo-Christian understanding of time as linear. "Perceptual experience," he writes, "gives us the passage from one moment to the next and thus realizes the unity of time. In this sense all consciousness [a word of interest to Husserl (2012)] is perceptual, even consciousness of ourselves" (13). Perceptual experience *leads to*, rather than *follows*, the acquiring of knowledge. As perception serves as primary for Merleau-Ponty, scripture for John Wesley (Outler 1991) will serve as the primary source for religious epistemology.

For the Jesus of the Gospel according to Matthew, sense perception does not guarantee mental understanding. Jesus answers the disciples' question as to why He does not speak to the crowd in direct statements: "The reason I speak to them in parables is that 'seeing they do not perceive, and hearing they do not listen, nor do they understand'" (Matthew 13:13). Matthew tailors the quotation of Isaiah 6:9-10 for Jesus' purpose of acknowledging that the crowd (Brown 1997, 186), unlike the disciples, neither perceives nor understands "the secrets of the kingdom of heaven" (Matthew 13:11). As a result the fact that someone physically *hears* and *sees*—and probably *feels, smells,* and *tastes*—does not necessarily mean that he or she perceives or understands the meaning of the communication. Jesus concludes with words of encouragement to the disciples: "But blessed are your eyes, for they see, and your ears, for they hear" (Matthew 13:16). Directing the scholar's attention to possible differences between sense perception and understanding in V.E.'s could lead to deeper understandings of the intended subject of the virtual communication.

2. Phenomenology

The study of human perception involves epistemology and phenomenology. For us humans to perceive necessitates "an object of perception" (Angeles 1981, 206), including experiences, such as those of the senses or those of a religious nature. Phenomenologists, namely Edmund Husserl, intentionally make themselves aware of all of the experiences of life. "Phenomenology examines the same things as other disciplines," contends Diogenes Allen (1985, 256), "but by considering them in a particular way, enables us to intuit what is essential, not merely what is contingent or empirical." Maurice Natanson (1973) provides the following distinctions among phenomena, objects, and phenomenology as posited by Husserl:

> Phenomena are objects of intentional acts. 'Objects' here are not taken as real entities or events; they are whatever present [*sic*] themselves by way of the acts of perception…. Phenomena are *meant*, not simply acknowledged in perception. In its most obvious sense, then, phenomenology is the science or discipline of phenomena as 'meant' entities—meanings ordered and, indeed, constituted by the appropriate acts of consciousness. (13)

Husserl views this consciousness through the lens not only of psychology, but especially, of philosophy. V.R. pioneer Jaron Lanier proposes that V.R. "doesn't have anything to do directly with what's going on inside your brain" (Kelly, Heilbrun, and Stacks 1989). As V.R. for Lanier does not directly involve psychology, for Husserl consciousness also does not refer to what happens in the brain; instead, consciousness for Husserl involves awareness. That awareness or consciousness requires an object. Consciousness without an object, in other words, does not exist.

Husserl and Heidegger explain key phenomenological terms. In his *Ideas* text, Hussell (2012, 1) repeats his brief definition of phenomenology: "a science of Essential Being of things." *Essential* here technically means, not *most important*, but *related to Essences* (*Eidos*).

He proposes, "Pure Phenomenology … as the most fundamental region of philosophy, is an essentially new science … a science of 'phenomena'" or "appearances" (1). Scientists study their respective phenomena. Husserl contrasts psychological phenomenology and pure or transcendental phenomenology. The former includes psychology as a science of experience, facts, and realities. He explains, "The 'phenomena' which it handles as psychological 'phenomenology' are real events which as such, in so far as they have real existence (*Dasein*), take their place with the real Subjects to which they belong in the one spatio-temporal world, the *omnitudo realitatis*" (3).

In *Being and Time*, Martin Heidegger[16] (1962) presents *Dasein* as the combination of *Da* and *Sein* (Being). Korab-Karpowicz (N.d.) defines *Dasein* as Heidegger employs the term: "*Dasein* is that being in which any being is constituted." In contrast to psychological phenomenology, "pure or transcendental phenomenology will be established not as a science of facts, but as a science of essential Being (as 'eidetic' Science); one which aims exclusively at establishing 'knowledge of essences'," writes Husserl (2012, 3). He continues, "Individual Being of every kind is, to speak quite generally, 'accidental.' It is so-and-so, but essentially it could be other than it is" (11). Suggestive of Plato's preference for the Ideal realm of the eternal Forms and Aristotle's preference for the sensuous physical world, "*the positing of the essence*," argues Husserl (14), "*does not imply any positing of individual existence whatsoever; pure essential truths do not make the slightest assertion concerning facts*." Phenomenology's "[aiming] exclusively at establishing 'knowledge of essences'" (3) points to the need for

[16] Reading the works of Martin Heidegger resembles reading the Gospels, not because his thought is religious, but because his ideas and the certainty with which he presents them contribute to the air of inspiration from *quelle*, an unknown source.

epistemology to explain how people attain that knowledge.

3. Epistemology

a) General Epistemology

Epistemology concerns the how of knowing, e.g., how do we know what we know? Earl Babbie (2010, 4) defines epistemology as "the science of knowing" and "systems of knowledge." Charles McCoy (1986, 318) teaches, "Combining the Greek *epistemē* (knowledge) and *logos* (discourse), epistemology … explores the methods of knowing, the presuppositions and grounds of what is affirmed as knowledge, and its reliability and limits." Edmund Husserl (1970, 12-13) relates *epistemē* to "reason." "By epistemology," writes William Abraham (2006, 24), "I mean here a systematic account of rationality, justification, and knowledge."

The study of epistemology, like that of perception, extends back to Plato, who "originated epistemology in response to the Sophists' skepticism about uncritical pre-Socratic views that knowledge was possible" (McCoy 1986, 318). Diogenes Allen (1985, 47) explains Plato's ontology—the study of being—and his epistemology in *The Republic*: "Fundamental to Plato's ontology and epistemology is the division between the world of the senses and what can be grasped by intellect only, between the world of the senses and the world of the Forms," which Plato considers superior because that realm holds the ideal, the eternal. Aristotle (2003, 19) identifies *epistemē* as "scientific knowledge." As mentioned Aristotle says that we gain knowledge through our five senses. For example, we gain knowledge of the V.E. of a commercial videogame by looking at the screen, listening through the headphones or speakers, and perhaps feeling resistance through a joystick or other haptic device. Unlike what his teacher Plato teaches, Aristotle understands that our senses enable us to know the lay of the land, in this

case, the virtual land of the videogame. The study of epistemology moves to knowing God and knowing about God.

b) Religious epistemology

In their writings about perception, theologians and Christian philosophers apply epistemology to knowing about God and to knowing God. How do we humans perceive the invisible God? Does the gaining of knowledge of God require sense perception? William Alston (1991, 3) contends, "People sometimes do perceive God and thereby acquire justified beliefs about God." Alston (1991, 286-290) in his "epistemology of religious perceptual beliefs" enumerates overarching ways that people perceive, namely, attain knowledge of, God: "direct experience of God, natural theology, tradition, and revelation." John Locke (1958, 11) includes revelation in his definition of faith: "the assent to any proposition, not made out by the deductions of reason, but upon the credit of the proposer, as coming from God in some extraordinary way of communication. This way of discovering truths to men we call *revelation*." Beginning with a lower case "r," *revelation* as in *divine revelation* refers to God's revealing Himself to humankind. While in general revelation God reveals Himself to all humanity or at least all humanity who have the opportunity to sense God's revelation, in specific revelation God reveals Himself to particular people at specific places and times. William Abraham (2006, 67) cautions against equating general revelation with natural theology: "The doctrine of general revelation involves an *assertion* that God is revealed generally in creation; natural theology involves an *argument* from general features of the universe to the proposition that God exists."

Also from Perkins School of Theology, Albert C. Outler[17] (1991, 25) declares for Wesley "that our 'knowledge of God and of the things of God' is more nearly a response of trusting faith in God in Christ as Grace Incarnate than it is a mental assent to dogmatic formulations however true." Outler classifies John Wesley's theological method for interpreting the Bible into what Outler famously calls a "quadrilateral": "scripture, tradition, reason, and Christian experience." Although Methodists can follow Wesley's lead in consulting these four sources in the processes of the "interpretation of the Word of God in Scripture" (25) and even of making important decisions, this project uses the sides of the Wesleyan Quadrilateral to frame the analysis of knowing about God and knowing God.

1) Scripture

Scripture serves as the primary epistemological source for religious knowledge. Christians have knowledge of God through His revelation to the Hebrews as described in what-Christians-call the "Old Testament" and to the people of first-century ancient Near East as communicated in the New Testament. For example, when Moses met God in his direct encounter at the burning bush, he learned the divine name by asking God a question:

> But Moses said to God, 'If I come to the Israelites and say to them, "The God of your ancestors has sent me to you", and they ask me, "What is his name?" what shall I say to them?' God said to Moses, 'I AM WHO I AM.' He said further, 'Thus you shall say to the Israelites, "I AM has sent me to you."' (Exodus 3:13-14)

Christians believe that God revealed Himself in the person of Jesus of Nazareth. Each of the four evangelists, i.e., the writers of the four canonical gospels, writes from his perspective

[17] Dr. William J. Abraham is the Albert Cook Outler Professor of Wesley Studies at Perkins School of Theology at Southern Methodist University.

how the original disciples and other inhabitants of first-century Galilee saw, heard, touched, smelled,[18] and tasted[19] Jesus; in other words, they perceived Him through their senses. William Abraham (2006, 2) advises against confining divine revelation to the pages of scripture. God did reveal Himself as described in the Bible, but God reveals Himself in other ways as well.

The Reformers, of whom Wesley acts as the second bookend, emphasize the Bible as the supreme source for knowledge of God. Martin Luther touts *sola Scriptura*.[20] Through scripture alone, and neither tradition nor nature, claims Luther, is how we know about God (Johnson 1993). John Calvin answers the question of how do we humans know anything about God by relating scripture and eyeglasses. Dyrness (2014, 2) notes that for Calvin, "Creation is a 'theatre' for the glory of God. Scripture gives us glasses to see this glory." When John Wesley appropriates the *sola Scriptura* of Luther and other Reformers, Outler (1975, 9) contends that Wesley "never meant '*nothing but Scripture,*' just as by *unius libri*[21] he never meant to exclude other books from his reading list"; for example, Outler (1991, 24) later observes, "[Wesley's] reliance on Scripture as *the* fount of revelation was never meant to preclude a concomitant appeal to the insights of wise and saintly Christians in other ages." For Wesley scripture informs the other sources—reason, experience, and tradition.

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[18] See John 11:2 for an example of how the disciples smelled Jesus. "Mary was the one who anointed the Lord with perfume and wiped His feet with her hair; her brother Lazarus was ill." Certainly, all of those in the house could smell the then-fragrant Jesus.

[19] See Mark 7:32-35 for an example of someone's tasting Jesus, specifically the saliva of Jesus. "They brought to Him a deaf man who had an impediment in his speech; and they begged Him to lay His hand on him. He took him aside in private, away from the crowd, and put His fingers into his ears, and He spat and touched his tongue. Then looking up to heaven, He sighed and said to him, '*Ephphatha*,' that is, 'Be opened.' And immediately his ears were opened, his tongue was released, and he spoke plainly."

[20] Only Scripture.

[21] Albert Outler (1975, 9) contends that John Wesley referred to himself as *homo unius libri* (a man of one book), i.e., of the Bible. Wesley found forms of this Latin moniker in the writings of St. Thomas Aquinas and Bishop Jeremy Taylor (Southey, 1848, 113).

2) Tradition

The tradition of the Church serves as another epistemological source for religious knowledge. According to "Our Theological Task" of The U.M.C. (*Book of Discipline* 2016, ¶ 105, 85), "Christianity does not leap from New Testament times to the present as though nothing were to be learned from that great cloud of witnesses in between." Christians have learned about God for two millennia, and twenty-first-century Christians can learn from them. John Wesley, for example, began the movement of the people called Methodist, but he came out of the Anglican tradition. In fact, he loved the Church of England literally until the day he died in 1791. He learned from "the Patristic writings, the ecumenical creeds, the teachings of the Reformers, and the literature of contemporary spirituality," all of which enlightened his study of scripture (*Book of Discipline* 2016, ¶ 105, 83). The mystics of the past also interested Wesley, even though he resisted reading about them, per Robert Tuttle (1989, 18), until Wesley felt his "heart strangely warmed" by the Holy Spirit while walking down London's Aldersgate Street on May 24, 1738 (Idle 1986, 46). The mystics claim to have dramatically gained knowledge of God by uniting with Him. While over the last two millennia millions of believers who would not have considered themselves mystics have communicated with God, the list of Christians particularly attuned to knowing God has included those from the mystical tradition.

At the age of 30 and six months, Julian of Norwich became so sick that she thought that she would die from the disease. Born circa 1342 in England, she viewed her sickness as having come from God because she received divine visions. Her book *Showings* (Colledge and Walsh 1978) acts as a diary of her elaborate mystical visions. Julian enters, "And after this I saw God in an instant of time, that is, in my understanding, and by this vision I saw that he is present in all

things. I contemplated it carefully, knowing and perceiving through it that he does everything which is done" (137). She saw visions, such as the bleeding head of Christ. She heard God speak to her and ask her questions, such as if she were willing to suffer for Christ. She claims that she began the book by God's gracious gift. She ends this book of "showings and revelations" with a blessing: "Jesus, our true love and light and truth, will show this [revelation] to all pure souls who meekly and perseveringly ask this wisdom from him" (343).

Born five years after Julian, Catherine of Siena, Italy, as a girl joined the Dominican youth group called the Sisters of the Penance of St. Dominic. The group asked girls to devote "themselves to a life of contemplation and penance" (González 1984a, 335). Not a typical youth, Catherine turned her bedroom into her private convent from when she was 15 until she was 18. This twenty-fourth child of twenty-five children (Magill and McGreal 1988) locked herself into her bedroom, where she fasted, prayed, and received mystical revelations, such as visions of the stigmata[22] of Christ. She perceived Jesus as her Heavenly Lover, to Whom she was mystically married and Who ordered her to work as an activist for the poor, the sick, and the criminals (Duke 1992b). She later became a teacher of mysticism (González 1984a, 335).

Teresa of Avila, Spain, proclaims that the goal of mysticism is spiritual marriage with God. St. Teresa (1989) feels obliged to write the book *Interior Castle,* which she does in 1577. While wondering what to write and beseeching divine inspiration, "I began to think of the soul as if it were a castle made of a single diamond or of very clear crystal, in which there are many rooms, just as in Heaven there are many mansions" (29). She elaborates, "You must not imagine

[22] Ganzevoort (2008, 20) defines stigmata as "physical manifestations of divine grace, often in the form of the wounds of Jesus Christ. An important aspect of the history of stigmata is the fact that many of these saints developing stigmata were in fact themselves in one way or another marginalized and possibly traumatized."

these mansions as arranged in a row, one behind another, but fix your attention on the centre, the room or place occupied by the King" (37). One needs humility to enter the first room. She describes going through these rooms or mansions. By the fifth mansion, she prays for union with God and cautions her cloistered sisters, "when I speak of seeing God, I am referring to the way in which … He allows Himself to be apprehended in this kind of union" (106). She now refers to the Lord as her Spouse. She describes spiritual marriage when she illustrates the seventh mansion:

> This secret union [of Spiritual Marriage] takes place in the deepest centre of the soul, which must be where God Himself dwells…. I say there is no need of a door because all that has so far been described seems to have come through the medium of the senses and faculties and this appearance of the Humanity of the Lord must do so too.... The Lord appears in the centre of the soul, not through an imaginary, but through an intellectual vision … just as He appeared to the Apostles…. This instantaneous communication of God to the soul is so great a secret and so sublime a favour…. (Teresa 1989, 213-214)

She invites her sisters to travel inwardly through these mansions, but she tells them that they cannot enter all of them by their own power or initiative; rather, "the Lord of the Castle Himself must admit you to them" (234). As a result, the cloistered sisters may gain the deepest knowledge of God only by divine decree.

Born circa 1260 in Thuringia, Germany, Meister Eckhart also taught and preached about mystical union with God. In "Outward and Inward Mortality" (Field N.d., 19), this Neoplatonist monk preaches, "When the Divine Light penetrates the soul, it is united with God as light with light. This is the light of faith. Faith bears the soul to heights unreachable by her natural senses and faculties." The Divine Light refers to God's grace, which can "elevate the natural faculties to union in God above the merely temporal objects of existence" (19); in other words, the human faculties need to rise to God's level in order for the human soul to achieve mystical union with

God. Such elevation requires God's grace because the soul cannot rise on its own and because God's purity requires the soul's purity, the soul's becoming like God, in order to unite, Eckhart believes. Gary Sattler describes Meister Eckhart's beliefs about the senses and the soul:

> The senses serve the soul, providing it with information and possibility, but the core of the soul is without information about itself, since, being like God, it cannot be apprehended by the senses. Because the soul is free of senses and ideas, because it simply is, God can unite with it. Like unites with like. (Magill and McGreal 1988, 134)

Eckhart and Teresa consider the mystical union of the soul with God to last only temporarily (137), but the union profoundly affects the Christian. For the visually-oriented Julian of Norwich, she wrote a book; Catherine of Siena, she became a famous activist and teacher; Teresa of Avila, she inspired others to take inward spiritual journeys that would result in conforming their wills to that of God (Magill and McGreal 1988, 253); and Meister Eckhart, he set off on a life of contemplation.

In the tradition of the Church, mystic practices represent one epistemological method for religious knowledge. The history of Christian mysticism[23] has provided colorful examples of eventually-famous people of the faith who attained direct knowledge of God. While Wesley might not have read the writings of all of these four famous mystics, Robert Tuttle (1989, 25-26) observes, "Mysticism as understood by John Wesley, however, had a distinctively Roman Catholic flavor." Church history includes other Christian scholars who wrote about religious epistemology, such as by approaching the subject from the source of reason.

[23] Christians by no means own a monopoly on mysticism. Judaism, Islam, other religions, and even philosophies have had mystic strands running through their histories. The study of them, such as the whirling darvishes of Islam (Nielsen et al. 1988, 543), lies beyond the scope of this research.

3. Reason

Scholars have drawn from the well of reason to satisfy thirsts for religious knowledge. John Locke (1958, 10) in *An Essay Concerning Human Understanding* defines reason as "the discovery of the certainty or probability of such propositions or truths, which the mind arrives at by deductions made from such ideas which it has got by the use of its natural faculties, viz., by sensation or reflection." Born a year before Locke died, fellow countryman John Wesley lived from 1703 to 1791, that is, during the peak of the European Enlightenment, also known as the Age of Reason. Wesley responded to the contemporary emphasis on reason, especially Locke's epistemology (Pedlar 2012, 86). Outler (1991, 33) asserts, "Wesley's understanding of reason led him to a religious epistemology that hinges, crucially, on his view of intuition as a 'spiritual sensorium' in the human mind that constitutes what is most distinctively human, viz., our capacity for God." Father Walter J. Ong (2000, 6) broadly defines sensorium as "the entire sensory apparatus as an operational complex." As Ong relates sensorium to culture and religion, Outler (1991, 33) appropriates "spiritual sensorium," the phrase of philosopher Rudolf Steiner (Webber N.d.), for Wesley's understanding of human intuition. Outler (*ibid*) reminds the reader that for Wesley, "'Our knowledge of God and of the things of God' does not come from intuition, inference, and deduction alone" because God graciously grants such knowledge to "be experienced as an inward change of heart and head in which the mind's intuitions of the truth *are realized* in the heart." Therefore, reason ties closely with experience for Wesley.

Scholars have employed reason as an epistemological source for knowing if God exists. The eleventh-century Archbishop of Canterbury, Anselm developed the ontological argument for the existence of God. Saint Anselm (1903, 8) elaborates in *Proslogium*, "there is no doubt that

there exists a being, than which nothing greater can be conceived, and it exists both in the understanding and in reality." Saint Thomas Aquinas disagrees, according to Seattle Pacific University's Kenneth Einar Himma (2016), who maintains, "While St. Thomas Aquinas (1224-1274) believed that God's existence is self-evident, he rejected the idea that it can be deduced from claims about the concept of God…. The problem with this criticism is that the ontological argument can be restated without defining God." Thomas Aquinas and Immanuel Kant believe in God and diverge from Anselm about the ontological argument. Kant writes in *The Critique of Pure Reason* (1787, 177), "The notion of a Supreme Being is in many respects a highly useful idea; but for the very reason that it is an idea, it is incapable of enlarging our cognition with regard to the existence of things." Kant prefers to approach the subject from the vantage point of experience: "But all our knowledge of existence (be it immediately by perception, or by inferences connecting some object with a perception) belongs entirely to the sphere of experience— which is in perfect unity with itself" (*Ibid*).

René Descartes in *Meditations on First Philosophy* (1980, 45) asks if the idea of God, Who is "an infinite and independent substance, intelligent and powerful in the highest degree," comes from himself or from an external source. Writing uniquely in the first person in 1641, Descartes posits, "Indeed all these qualities are such that, the more diligently I attend to them, the less they seem capable of having arisen from myself alone. Thus, from what has been said above, we must conclude that God necessarily exists." Kant (1787, 178) responds, "The celebrated ontological or Cartesian argument for the existence of a Supreme Being is therefore insufficient; and we may as well hope to increase our stock of knowledge by the aid of mere ideas." Kant's response is congruent with his preference of experience over "pure reason."

While Anselm, Aquinas, Descartes, and Kant reasonably debated the ontological argument for God's existence, other Christian scholars have appealed to reason to understand the epistemology of religious knowledge. John Calvin created the term *sensus divinitatis* to describe the sense of, or awareness of, divinity that all people possess. "The *sensus divinitatis,*" comments Paul Helm (1998, 88), "is central to Calvin's religious epistemology even though Calvin uses the term 'know' in a way that is richer than the merely epistemic." Calvin (1599, 40) writes in his tome *Institutes of the Christian Religion*, "By the knowledge of God, I understand that by which we not only conceive that there is some God, but also apprehend what it is for our interest, and conducive to his glory, what, in short, it is befitting to know concerning him." For Alvin Plantinga (2000, 179), "The *sensus divinitatis* is a belief-producing faculty (or power, or mechanism) that under the right conditions produces belief that isn't evidentially based on other beliefs…. If the beliefs produced are strong enough, then they constitute knowledge," and thus Plantinga considers them "warranted." William Abraham (2010, 31) identifies commonalities between Plantinga and Wesley; for example, "Both reject the notion of the need for natural theology as being essential to the rationality of Christian belief…. They do, however, differ dramatically at one point: Wesley but not Plantinga makes much of perception of the divine."

Although John Wesley could appeal to reason for religious knowledge, Outler (Wesley 1964, 209) observes that Wesley favored religious experience. Wesley "could insist, against all formalists, that until faith is deeply personal, it is not yet authentic" (30). Supposedly, Anglican Bishop Butler chided Wesley, "Sir, the pretending to extraordinary revelations and gifts of the Holy Ghost is a horrid thing, a very horrid thing" (Placher 1983, 237). Such a remark during the

Age of Reason illustrates the preference of the then Anglican Church's staid leadership for reason over experience.

4) Experience

Christian experience, the final side of "the Wesleyan Quadrilateral," also serves as an epistemological source for religious knowledge. John Wesley "looked for confirmations of the biblical witness in human experience, especially the experiences of regeneration and sanctification, but also in the 'common sense' knowledge of everyday experience" (*Book of Discipline* 2016, ¶105, 83). Regeneration refers to the new birth that comes with Christian conversion in Wesley's *ordo salutis*, or order of salvation. Wesley (1954, 141) writes in his journal[24] for Thursday, September 13, 1739, "I believe [the new birth] to be an inward thing; a change from inward wickedness to inward goodness." He adds, "I believe [sanctification or holiness] to be an inward thing; … a participation of the divine nature; … a renewal of our heart after the image of Him that created us" (*Ibid*). Wesley "regarded his doctrine of sanctification as the peculiar tenet of the Methodist movement" (Robinson 1983, 232). Inside the depths of the human heart the spiritual changes graciously wrought by God the Holy Spirit constitute Christian experience, which should confirm biblical teachings and provide knowledge of God.

In his essay "The Witness of the Spirit; Discourse II," Wesley (1964, 209) lays out his "religious epistemology [which Outler describes as] a theory centering in the notion of the believer's immediate awareness of the reality of God's gracious presence in the inmost self ('the

[24] Wesley kept a detailed daily journal, which he wrote in code. He wanted to keep track of how he was living out God's sanctifying grace. Dr. Richard Heitzenrater, formerly of Perkins School of Theology at S.M.U., is credited as having cracked the code in the late twentieth century (Duke Divinity School 2016).

heart').” Wesley explains, “The sum of all is this: the testimony of the Spirit is an inward impression on the souls of believers, whereby the Spirit of God directly testifies to their spirit that they are children of God” (218-219). His main ideas include the following points: “Experience is sufficient to *confirm* a doctrine which is grounded on Scripture” and “the true witness of the Spirit is known by its fruit, ‘love, peace, joy,’ not indeed preceding but following it” (219).

God initiates human contact by extending His grace—His unmerited favor—to all people. This grace, which Wesley (1777, 508) identifies as “preventing grace,” enables humans to know of God and empowers humans to be able to respond to the divine call to follow Him. In “Working Out Our Own Salvation,” Wesley explains, “Every man has a greater or less measure of this, which waiteth not for the call of man. Every one has, sooner or later, good desires…. Therefore, in as much as God works in you, you are now able to work out your own salvation” (508). St. Augustine and Julian of Norwich also write about God’s making the first move in reaching out to us humans so that we would not only know about God, but also, know God. Augustine (1961b) puts forward that people cannot desire to perform good works without divine grace. Julian (Colledge and Walsh 1978, 251) postulates, “For I am sure that no man asks for mercy and grace with a right intention unless mercy and grace be first given to him.”

Some theologians have approached experience as a source for religious knowledge in non-traditional ways. Claiming an associate position with the Apostle Paul but actually writing in the fifth-and-sixth centuries, Pseudo-Dionysius teaches an apophatic theology,[25] in which the

[25]An apophatic theology is a theology of negation. Also called the *via negativa*, or the negative way or path, “Apophatic theology is a longstanding tradition that exposes the failure of language to speak adequately about the divine” (Davis 2011, 503).

only statements that people can make about God involve stating what God is not (Placher 1983, 95). Humans know of God via experiences of denial and withdrawal from the world. "The true knowledge of God," comments Placher (95) on Bishop Gregory of Nyssa, is in the words of this fourth-century Eastern Orthodox theologian, "the seeing that consists in not seeing, because that which is sought transcends all knowledge, being separated on all sides by incomprehensibility." Worship services of the Quakers fall into the apophatic category when they gather in silent prayer (Steere N.d.)(Ware 1995). Another theologian, Friedrich Schleiermacher (1999) answers his question "What is Christianity?" in 1830 by arguing that Christianity is neither a belief, i.e., knowledge, nor an action, i.e., ethic, but an experience. Christianity's "feeling of absolute dependence on God" (8) has its roots at the heart of human suffering. The nineteenth-century Albrecht Ritschl agrees with Schleiermacher's experiential description of Christianity and locates theology as a description of that experience, but he moves away from the "feeling of absolute dependence on God" (Duke 1992a).

Christians have learned of God and about God through "direct experience of God" (Alston 1991, 286). Alston (1991, 324) equates "direct experiential awareness of God" with "the *perception* of God," "direct experience of God," and "mystical perception," which for him differs from the mystical experience this paper illustrated in the earlier section on tradition. He (11) does not want to discount "the low intensity, background experiences of God's constant presence that figure importantly in the lives of many devout persons." For people who have had a mystical perception of God, Alston contends, "God has been *presented* or *given* to their consciousness, in generically the same way as that in which objects in the environment are (apparently) *presented* to one's consciousness in sense perception" (39). People who have

experienced God in this way have described the divine presentation as, "God was present … my consciousness perceived him" and "He appears to the soul by a knowledge brighter than the sun" (15).

In *The Elusive God: Reorienting Religious Epistemology*, Paul Moser (2008, 126) wants to downplay the usual "*propositional* knowledge that God exists"—as this paper elaborated in the section on reason—by preferring "*reconciling, filial* knowledge."[26] He argues, "A tenable epistemology of Jewish and Christian theism … will promote … a distinctive species of volitional knowledge of God's reality: that is, *filial* knowledge of God as one's perfectly authoritative and loving *Father*" (95). Christians with such a knowledge of God experience God as a Father Who loves them as His children. Moser employs the metaphor of a tunable radio in his referring to knowledge as "attunement" (113). He insists, "A perfectly loving God would communicate on a frequency available to *all* people who are open to divine rescue on God's terms" (117). Christians have experienced God at various times and in differing places, even when God seems hidden.

How do we have knowledge about God? We know God or know about God through the Bible, tradition, reason, and Christian experience. John Wesley proposes that the last three sources of religious knowledge inform the primary source: scripture. Religious epistemology describes how we know what we know about the triune God. Interestingly, William Abraham in *Crossing the Threshold of Divine Revelation* (2006) postulates that the Church could have canonized a theory about epistemology of religious knowledge, as the Church has canonized doctrines about theology proper, but has chosen not to do so. "Canonical theists," such as

[26] *Filial* relates to *family*. Christians' labeling God as Father means that they belong to His family, i.e., as His children.

Abraham, "insist that the failure to canonize an epistemology was a wise omission both for the good of the church and for the good of epistemology" (17). While epistemology refers to "a systematic account of rationality, justification, and knowledge" (24), this research concerns V.E.'s as communication technologies of faith. Attention now turns to the area of knowledge of the virtual.

B. The virtual

The study of V.E.'s raises fascinating theological and philosophical issues and questions about the virtual. What is virtual? What is real? How does the virtual relate to religion? Where does the virtual locate itself? The virtual "is what 'is almost there,'" contend Denegri-Knott and Molesworth (2013, 2). "The virtual is quite often 'not there,'" answers Pierre Lévy (1998, 27) in his text *Becoming Virtual: Reality in the Digital Age.* "Virtualization," writes Lévy (29), "incorporat[es] temporal unity without spatial unity" and leads to "deterritorializ[ation]" of a "person, community, act, or piece of information." Various scholars have placed the *real/physical/actual* in opposition to the *illusory/dream/virtual* or have argued for other relationships among them.

Appearing in many academic disciplines, the word *virtual* possesses various meanings that have traveled through dialectical processes. Production operations management, marketing, aerospace, military science, education, linguistics, botany, medicine, physics, mathematics, engineering, data processing, computer science, library science, philosophy, and even history (Ferguson 2000) represent only some of the multitudinous fields in addition to V.R., V.E.'s, and virtual worlds that employ the term *virtual*. As mentioned in Chapter 1, Marie-Laure Ryan (2001, 12) states, "In its everyday usage the word *virtual* is ambiguous between (1) 'imaginary'

and (2) 'depending on computers.'"

For physicists Salzman and Salzman (1960, 378), writing during the early years of mainframe computers and decades before the advent of Web 2.0, *virtual* means "almost real," such as in the following scientific observations: "the virtual boson behaves kinematically as an incoming, almost real, particle," and "the effect of the sequence … is quite different in the case of a virtual particle than in the case of a real particle." They thereby contrast the "virtual" with the "real." Moreover, *virtual* negatively conceived means "almost real," as if the virtual drops to second-class status, that is, by offering less value than does the real. A definition meaning "almost real" remained in effect in popular Western culture until personal computers became ubiquitous among households, especially with the proliferation of online accessibility. Denegri-Knott and Molesworth (2013, 2) argue, "Virtual is understood here, as Shields (2003) does, as both real and ideal and entwined with our perception of reality. It is what we imagine." However, they add, "It is what 'is almost there.'" "The most common definition for Virtual is," declare Crampes and Ranwez (1999), "being in essence or effect but not in fact; in other words, being in a state of possibility."

At the start of the third millennium, *virtual* became synonymous with *online* for Alexandre Ardichvili (2008) and many other people. Administrators of online K-12 public schools, for instance, call their academies "virtual schools" (Miron et al. 2013). Certain school districts within many states allow eligible students from *their state* to take all of their classes online. The students do not have to live within the geographic bounds of that school district and might never step inside brick-and-mortar school buildings. The Connections Academy (2016) of "online schools" across America tout each of their schools as "virtual school: real learning."

They require "learning coaches," usually parents, who have the task of "enhancing virtual learning" for their children (8). Such employment of "virtual" demonstrates that they, like Ardichvili (2008), interchange "online" and "virtual." While Miron and others in their 2013 report call for much more research about the effectiveness of online schools, these full-time virtual schools are neither "almost real" schools, nor "imaginary" schools, nor schools "in essence or effect but not in fact"; otherwise, they would not receive state accreditation and funding.

Rather than limit the *virtual* to the popular *occurring online*, Marie-Laure Ryan (2001, 12) offers, "A … more philosophical sense [of *virtual*, which] does not seem as influential on the popular usage." Ryan submits an elaboration of virtual's roots:

> The classic example of virtuality derived from Aristotle's distinction between potential and actual existence (*in potentia* vs. *in actu*) is the presence of the oak in the acorn. In scholastic philosophy 'actual' and 'virtual' exist in dialectical relation rather than in one of radical opposition: the virtual is not that which is deprived of existence but that which possesses the potential, or force, of developing into actual existence. (Ryan 2015, 18)

While Ryan comes to V.R. from literary studies, V.R. specialists differ on whether they consider the virtual in general and V.R. in particular to be illusory. Jarod Lanier (Kelly, Heilbrun, and Stacks 1989), who coined the term *V.R.*, calls V.R. an illusion. Slater and Wilbur (1997) see V.R. as illusory. On the other hand, Bryson (1996, 63) reminds the reader, "virtual reality is an effect, not an illusion," while for Philip Zhai (1998, 33), "the virtual is no more illusory than the actual." Lévy (1998, 30) adds, "The virtual is not imaginary. It produces effects."

Marie-Laure Ryan pits against each other the *virtual* understandings of Jean Baudrillard and Pierre Lévy. Ryan (2015, 19) characterizes Baudrillard's position as "virtual as fake";

Lévy's, "virtual as potential." In Baudrillard's (2004, 368) intriguing article "Simulacra and Simulations," he asserts that an image, or an image as understood by the society that uses it, transitions through four increasingly-entropic phases, in the last of which the image "bears no relation to any reality whatever: it is its own pure simulacrum." Durham and Kellner (2006, 447-448) comment that Baudrillard defines simulacrum as "a copy without an original" because "the Baudrillardian simulacrum displaces and renders obsolete the idea of an 'original'…. This society of simulacra is hyperreal – more real than any original could be – modeled on simulations and ideals that are then reproduced in actual existence." He wrote the essay "Simulacra and Simulations" in the late 1970's, decades before the advance of V.R., but in 1996 he includes V.R. in the book *The Perfect Crime*, in which he writes, "With the Virtual, we enter not only upon the era of the liquidation of the Real and Referential, but that of the extermination of the Other" (109). Part of the perfect crime consists of V.R.'s dispelling of the world.

As Ryan identifies Jean Baudrillard's "virtual as fake," she labels Pierre Lévy's "virtual as potential" (19), but she allocates most of her argument for Lévy's position to the actual rather than potential. This research finds that Lévy and Deleuze challenge the virtual/real dichotomy. Building upon the work of Gilles Deleuze (1994), Pierre Lévy (1998, 16) contends, "Strictly speaking, the virtual should not be compared with the real but the actual, for virtuality and actuality are merely two different ways of being." The interests of Lévy, a French philosopher and media scholar, lie in examining the transitions from one mode to the other. In his book *Difference and Repetition,* Deleuze (1994, 212) writes about the possible, which is synonymous with the real. "Unlike the possible," writes Lévy, "the virtual is a kind of problematic complex, the knot of tendencies or forces that accompanies a situation, event, object, or entity, and which

involves a process of resolution: actualization" (24); therefore, the virtual and actual differ from each other and respond to each other. Lévy proposes, "the interaction between humans and computer systems implies a dialectic between the virtual and the actual" (25), not the real. Deleuze folds "existence" and the Kantian "Ideas" (Husserl 2012, 6) into the mix: "The virtual … is the characteristic state of Ideas: it is on the basis of [the virtual's] reality that existence is produced, in accordance with a time and a space immanent in the Idea" (Deleuze 1994, 211).

Rob Shields (2003) turns from the philosophical and theological study of "the virtual" in his book of the same name to "virtualisms in history." He reminds the reader that *virtual* relates to *virtue*. He writes, "Few remember that an order of angels was said to be called 'The Virtues'" (3). He illustrates the statement that "The virtual has long existed in the form of rituals" with a study of the Eucharist in the Protestant Reformation. Anglican Archbishop Thomas Cranmer of went on trial for heresy in September, 1555, twenty-one years after King Henry IV positioned himself as the supreme head of the Church in England. The cross-examination centered on Cranmer's "teachings regarding the reality or virtuality of the Eucharist" (6). Shields notes, "Cranmer's understanding gradually changed away from a belief in the Real Presence of Christ in the bread and wine towards a position favouring the symbolic and virtual presence of Christ in the Eucharist" (6). He concludes, "The doctrine of virtualism raised questions concerning the way we understand presence – must it be concrete and embodied or was 'essentially present' good enough…. The same questions are raised today concerning online environments and virtual reality…." (6). Are V.E.'s and the rituals simulated in them acceptable, or are they simulacra? What can designers of V.E.'s and their church consultants do to avoid the creation of cheap copies of the original? Shields summarizes, "If the virtual has meanings of 'virtue', of

being ‘almost-so’ or ‘almost-there’, one does not need to look far to find virtual worlds which surround us or their historical counterparts” (4).

C. Worlds and Religion

In James Cameron’s (2009) blockbuster movie *Avatar*, the character of Jake Sully switches back and forth between his physical body and his virtual one, his avatar. While sitting in the physical world, Sully eventually tells himself, “Everything is backwards now, like out there is the true world, and in here is the dream.” “Out there” for Sully refers to the virtual world; as a result, the virtual world for this *Avatar* protagonist “is the true world.” James Carey (2009, 23) contends, “We first produce the world by symbolic work and then take up residence in the world we have produced.” Such logic applies to V.E.’s, which function as virtual worlds. Philosophers, theologians, and V.E. creators approach worlds from their own spheres.

Philosophers relate worlds to perception and experience. For philosopher Edward G. Ballard (1978) in his text *Man and Technology*, “the term ‘world’ can refer to a very large collection of objects or to the scene of mankind’s life and activity.” Ballard provides the following varying, but related, definitions of “world”:

- The name I shall give to that which renders a culture possible is ‘world.’
- From the point of view of the self, world may be described as the primary relation which a man forms between himself, others, and the environment.
- Culture is a particular and concrete expression of this basic relation called world.
- World is the name we give to the most general and pervasive limits which are evident to us. (Ballard 1978, 21-24)

We humans can perceive the world through our experience, insists Ballard. As a result our worlds change over time, namely over the long time of epochs. We speak of “the Western world” or “the medieval world,” for example (25). While commenting on the contrarian

Friedrich Nietzsche, Martin Heidegger (1977) points out that Plato believes in two worlds or realms. If a world changes over time, then that world is the sensory, "merely apparent, unreal world" in which we live, according to Plato. The "realm of the suprasensory has been considered since Plato, or more strictly speaking, since the late Greek and Christian interpretation of Platonic philosophy, to be the true and genuinely real world."

Maurice Merleau-Ponty (1964) also relates world to perception and experience when he writes of the perceived world. "The world itself," he writes, "is the totality of perceptible things and the things of all things" (16). We humans obtain "perceptual experience" of the sensible world, in which we always live (13); for example, not only do we perceive the world, but also, our perceptions take place in the world. Merleau-Ponty declares, "Ultimately the real world is the physical world as science conceives it, and it engenders our consciousness itself" (23). As Plato values the realm of the Forms over the earthly world, Merleau-Ponty wants to go beyond the perceived world by thinking critically but understands the perceived world as "always the presupposed foundation of all rationality, all value and all existence" (13). He fondly calls here on Immanuel Kant's philosophy that "we can only think the world because we have already experienced it" (17). Designers of V.E.'s might desire to simulate worlds that they have experienced through their travels and research. But does Kant's philosophy allow V.E. designers to pull from their imaginations to create worlds unknown to their experience?

Religion's speaking to the subject of worlds, as will be shown, first necessitates definitions of religion. A palette of definitions paint the religious landscape because different authors want to highlight different elements. As has been said, Friedrich Schleiermacher (1999, 13-15), writing in 1830 toward the end of the Romantic period, for his definition identifies as a

"common element" to various religions the "feeling of absolute dependence." Rudolf Otto (1923) responds to Schleiermacher. On the one hand, Otto also wants to affirm religion's affectivity; but on the other hand, he would not define religion as the feeling of *absolute* dependence. Otto prefers "creature-consciousness," which he defines as "the emotion of a creature [namely a person, such as Moses at the burning bush], abased and overwhelmed by its own nothingness in contrast to that which is supreme above all creatures," namely God (10). Consciousness comes into play for William James (1902, 58): "It is as if there were in the human consciousness *a sense of reality, a feeling of objective presence,* a *perception* of what we may call 'something there'…." French social scientist Émile Durkheim (2012, 381) also addresses religion's reality when he declares, "But religion exists; it is a system of given facts; in a word, it is a reality."

Building on Durkheim's (2012, 41) assertion "that the idea of religion is inseparable from that of the Church," cultural anthropologist Melford Spiro (1966, 96) defines religion as "an institution consisting of culturally patterned interaction with culturally postulated superhuman beings." Gordon Lynch (2012), also following Durkheim but moving in the opposite direction of his ontologies, prefers "the sacred" over "religion." Unlike Spiro's definition of religion, Lynch's more-inclusive definition of the sacred encompasses the religious, the secular, and social life: "The sacred is a communicative structure focused on absolute realities around which the meanings of social life are constituted and that exert normative claims on the conduct of social life" (133). Lynch limits his analytical framework, which will be explained later in this literature review, to reality rather than study the virtual. Sarah Hoyt (1912, 127) favors the etymology of Marcus Tullius Cicero, who in 45 B.C. in *De Natura Deorum* (*On the Nature of*

the Gods) championed *religio*'s deriving "from *relegere*, as meaning *to go through* or *over again in reading, speech, or thought"* and who connected *religio* with obligation. Nielsen et al. (1988, 3) summarize religion as referring "to those beliefs, actions, and institutions which reflect the human pursuit, worship, and obedience of God."

Religion, despite its ancient origins, brings together *virtual* and *reality*. Jim Blascovich and Jeremy Bailenson (2011, 22) state, "Historically, virtual reality is perhaps most commonly found in *religion*." Marie-Laure Ryan (2015, 17) envisions the historical relationship of "*virtual* and *reality*" as a "semantic liaison," which she develops throughout her 2001 book and its 2015 second edition. "Virtual worlds approach the powers of religion by offering transcendent places and experiences," contends Robert Geraci (2014, 87). Similar to how visitors to a massive cathedral, such as the Cathedral of Reims, France, might respond with feelings of awe and acknowledgement of having entered a "sacred" space ontologically different from a "profane" space (Durkheim, 1915, 32), visitors to virtual worlds, says Edward Castronova (2008, 189) are transported "to another plane" of existence.

Christians and followers of other religions believe in the existence of the unseen but real spiritual realm. C. S. Lewis (1952, 136) surmises, "If we find ourselves with a desire that nothing in this world can satisfy, the most probable explanation is that we were made for another world." In other words, Christians have believed not only that the spiritual realm exists as an ontological reality, but also, that we humans find our ultimate home there. For two millennia such belief has provided comfort for the grieving and hope for the living. Christian hymnody sings of the spiritual realm or heaven. For example, Charles Wesley, one of John's younger brothers, writes, in his hymn *Come, Let Us Join our Friends Above* (*U.M.H.* 1989, 709) the following lyrics:

"Let saints on earth unite to sing with those to glory gone, for all the servants of our King in earth and heaven are one." And Eliza E. Hewitt (*U.M.H.* 1989, 702) writes in her hymn from 1898, "When we all get to heaven, what a day of rejoicing that will be! When we all see Jesus, we'll sing and shout the victory."

The Social Principles of The U.M.C. imply that while we humans live in this sensible world, we are not to wait passively to progress to the heavenly realm upon our physical deaths; rather, we are to actively care for the physical realm. Specifically, *The Social Principles* (2012, 105) declare, "All creation is the Lord's, and we are responsible for the ways in which we use and abuse it." Both biblical testaments champion the human care of Creation. Authors on Christian stewardship such as Eugene Grimm (1992), Douglas John Hall (1990), James Harnish (2011), and Rhodes Thompson (1990) posit that God has loaned us humans our physical bodies and has given us the responsibility to practice stewardship of them, the environment, and all material things that we possess. Will future versions of *The Social Principles* or *The United Methodist Book of Resolutions* include the imperative to take care also of the virtual world?

The writer of the Gospel of John in the Christian Bible contends that Jesus Christ came from God and returned to God after Christ's death, burial, resurrection, and ascension. Jesus prayed, "I have given them Your word, and the world has hated them because they do not belong to the world, just as I do not belong to the world" (John 17:14). Along with other Christians, United Methodists believe that each human began as an embryo, although Jesus pre-existed as the eternal Christ; however, like Christ we humans will be resurrected, and Christ's followers will live with Him for the rest of eternity. Since our earthly lifespan lasts only a second compared to the rest of eternity, Blascovich and Bailenson (2011, 23) ask if this corporeal life

really is the virtual; in other words, the eternal spiritual realm is the real world.

Biblical scholar N. T. Wright lays out the most-compelling theological understanding of worlds in his corrective for twenty-first-century Western Christianity. The Anglican Wright (2016) identifies the eighteenth-century Enlightenment, especially after the devastating Lisbon earthquake of 1755, as the time when Western Christianity vastly increased the distance between this physical world and the heavenly one. Similar to what happened after the American Civil War as will be shown below, Christians in Europe and Colonial America before the Enlightenment, believed in the bodily resurrection of the dead, contends Wright. Christians believed that their deceased loved ones would await the general resurrection, when they would receive new heavenly bodies and live thereafter in God's presence. Wright says that Western Christianity since biblical days had understood the underlying cosmology of this world and a proximate heaven.

The Enlightenment ushered in a secular age that changed this worldview in the second half of the eighteenth century. Fueled by Voltaire in France, David Hume in Scotland, and Thomas Jefferson in America, the Enlightenment turned Christianity from being an integrated understanding of life into a "religion," which then had no place in public life. Since heaven refers to the abode of God, the heavenly world necessarily "moved upstairs" when the Enlightenment "banished God to the attic" (Wright 2016). The eighteenth-century Deists, like the ancient Epicureans, believed that God or the gods did not intervene in the affairs of men (and women). God literally remained in heaven at a significant distance above the earth. They, like Plato, considered the earth as inferior to the spiritual realm "upstairs." As a result of the Enlightenment's two-tier architecture, Western Christians began to believe that God lives in a

distant heaven. The goal of the Christian life became believing in Jesus so that one's soul upon physical death would escape this corruptible existence and go *up* to heaven. Wright asserts that these beliefs, even among theological conservatives, are alive and well today and resemble Platonic philosophy more than they do biblical theology. In Wright's (2016) words, "We have Platonized our eschatology, moralized our anthropology, and paganized our soteriology."[27]

Professor Wright wants twenty-first-century Christians to recapture the worldview of first-century Christians in this regard. He wants Christians to understand that the realms of heaven and earth, instead of existing in spatially very-distant locales, actually touch each other and even overlap in particular places or at particular times. He appeals to part of the Apostle Paul's love chapter, often read at weddings: "When the complete comes, the partial will come to an end" (I Corinthians 13:10) and "For now we see in a mirror, dimly, but then we will see face to face" (I Corinthians 13:12a). In other words, at the completion of creation at the end of times "when the complete comes," God will lift the veil between heaven and earth, and humans clearly will see the proximity of the two worlds, which will become one. Merleau-Ponty's (1964, 27) speculation would then apply: "And perhaps some Christians would agree that the other side of things must already be visible in the environment in which we live."

In his argument about heaven and earth, Wright (2011) then makes the critical move of positing that first-century Judaism believed that the two worlds met and overlapped in the Temple in Jerusalem. The Temple served as a "massive incarnational symbol" for Judaism (133) and as a "signpost pointing forward to another reality that had lain unnoticed for generations"

[27] Harvey (1964, 224-225) defines "**Soteriology.** Derived from the Greek words *sozein* (to save) and *logos* (discourse), the term traditionally denotes that part of Christian THEOLOGY concerned with the doctrine of salvation."

(134). Luke contends that the angel Gabriel announced to Mary that she would bear a son named Jesus, Who "will be great, and will be called the Son of the Most High, and the Lord God will give to Him the throne of His ancestor David" (Luke 1:32). Jesus not only "descended from the house and family of David" (Luke 2:4), but also, became that "house," according to Wright (2011, 134), who gives the following explanation:

> [Jesus] was establishing his long-awaited saving and healing rule on earth as in heaven. Heaven and earth were being joined up—but no longer in the Temple in Jerusalem. The joining place was visible where the healings were taking place, where the party was going on…, where forgiveness was happening. In other words, the joining place, the overlapping circle, was taking place *where Jesus was and in what he was doing*. Jesus was, as it were, a walking Temple. (133)

Similar to the start of Genesis 1, the Fourth Gospel commences with "in the beginning," in this case, "in the beginning was the Word." John declares that the Word, the *Logos*, put on flesh and bones in the person Jesus of Nazareth. Pheme Perkins (1990, 951) comments, "Reference to the Word becoming flesh (*sarx*) goes beyond the OT images of divine glory and Wisdom dwelling with Israel." Beasley-Murray (1987, 2) translates John 1:14, "And the Word became flesh and pitched his tent among us, and we gazed on his glory…." "Tent" and "glory" allude to the Temple's predecessor, the tabernacle. The Israelites transported the tabernacle during their wilderness experience, met God there, and beheld His glory. The *Logos* was "tabernacling" with humanity in Jesus of Nazareth (Smith 1988, 1047). As a result Jesus Christ is the tabernacle of God according to John 1:14 and the Temple of God according to N. T. Wright (2011).

For this project that Temple in Jerusalem could serve as a model. Although many craftspeople and artists have employed wood, paint/canvass, ink/paper, stylus/drawing program, and other media to depict the Temple building in two-and-three dimensions, designers in V.R.

could model the physical buildings and the concepts about which N. T. Wright postulates. For example, a V.R. simulation could enable the avatars of users to walk through the Temple grounds and interact with virtual agents or avatars of the visitors and priests. The avatars of users could enter forbidden places such as the Holy of Holies, which Jews believe housed the Ark of the Covenant. Only the high priest could enter the Holy of Holies. He was allowed to enter it on only one day a year, *Yom Kippur*, the Day of Atonement, according to Leviticus 16. An affordance of V.R., a portal could allow the user's avatar to step from the earthly realm into the heavenly one and back into the earthly one. Since the Temple stood at the intersection of heaven and earth, Wright (2016) sees the Temple as a "microcosm" of those two worlds.

Proponents of V.E.'s seek to focus on the reality of the worlds created in V.R. "Virtual worlds are indeed worlds," contend Randy Hinrichs and Charles Wankel (2011, xiii).

D. Artificial intelligence and the human soul/body relationship

While V.R. could simulate the Jerusalem Temple, intelligent V.E.'s require A.I. to enable their functioning. Once separated, the research fields of A.I., V.R., and V.E.'s came together in the early 2000's (Luck and Aylett 2004). Autonomous virtual agents in V.E., for example, require A.I. in order to ask questions, provide answers, and direct action. The study of A.I. can have theological implications by bringing to light and reexamining understandings of the human soul and the human body and their relationship to each other and to God. Such reexaminations can lead to reformulations of the underlying theology.

Studying A.I. necessitates defining key terms. "A broad definition of A.I.," according to Ibrahim and Morcos (2002, 669), "can be the automation of activities that are associated with human thinking, such as decision making, problem solving, learning, perception, and reasoning."

Richmond Thomason (2012) defines A.I. as "the subfield of Computer Science devoted to developing programs that enable computers to display behavior that can (broadly) be characterized as intelligent." Russ Bjork (2008, 96) identifies the bifurcation of A.I. into "weak A.I." and "strong A.I." The former he defines as "processes that achieve the same results as human intelligence (or even better results) in a *specific* domain"; the latter, as "in a broad sense, to refer to the goal of creating artifacts that are intelligent (and hence even self-conscious persons) just as we humans are" (96). The International Business Machine's Deep Blue computer that defeated Gary Kasparov in a chess duel in 1997 exemplifies "weak A.I." because the computer operated in the specific domain of chess playing. "Strong A.I.," says Bjork (2008, 96), "raises issues related to the essential nature of humanity" because it, like humans, covers multiple domains.

Beginning with Alan Turing's (1950) famous essay "Computing Machinery and Intelligence," the study of A.I. involves much more than the examination of computer hardware and software. Philip Agre (1995, 3) boldly pronounces, "In short, A.I. is philosophy underneath." He claims that concerns about A.I., such as future vectors it should take, have their roots in divergent philosophies. A.I. includes theologies "underneath" because much of Western and Eastern philosophies interact with theologies, as will be shown later.

A concern with the nomenclature *A.I.* involves the second word. Why is *intelligence* the locus? Could designers have called it "artificial body"? Agre (1995) rightly contends, "A.I. research programs attempt to work out and develop the philosophical systems they inherit." The primary philosophical system that Western A.I. researchers inherited traces its lineage back to the ancient Greek philosophers (Barbour 1999). Hubert and Stuart Dreyfus note that, long before

René Descartes, Plato viewed intelligence as knowledge with its locus in the "formal rational relationships that exist independently of the body and the material world" (Barbour 1999, 375). For Plato and many other ancient Greeks, the purity of the mind exceeds that of the body; moreover, intelligence resides in the mind. Robert Geraci (2006) surmises that the philosophical and theological beliefs, such as civil religion, underlying the culture have influenced technologists working in A.I. and other fields even if those technologists do not personally profess those beliefs. Since many twentieth-century A.I. researchers in the West inherited this preference of mind over body, the terminology "artificial intelligence" aptly describes *their* conceptual models, which also place mind over body in importance.

While Plato preferred the mind to the human body, his famous student Aristotle looked to the material world. Rafael's famous fresco *The School of Athens* in Italy visually illustrates their preferences. Rafael positioned the two brilliant philosophers center stage as they walk and talk with each other in ancient Athens. Plato points upward to stress the ultimate reality of the Forms, while Aristotle points downward to emphasize the sensibles, i.e., the things that we can sense in this world. Plato carries a book, his *Timaeus,* in which he describes his notion of time as "a moving image of eternity" (Birx 2009). Aristotle holds his book, his *Ethics,* in which he describes human behavior (Joost-Gaugier 2002).

Aristotle's conception of the human, therefore, differs from Plato's mind-body dualism. Aristotle replaces the term *mind* with the word *soul*. The Aristotelian "soul is the principle of life in those things that are animate" (Sanderson 2007). More than humans have souls, according to the philosopher. Thanks to the Moslem scholar Averroës, who metaphorically offers a backwards hyperlink to Aristotle by keeping the writings of the Greek philosopher, the scholastic

theologian Thomas Aquinas can comment on Aristotle (González 1984). The more-earthy Aristotle says that the soul requires a body for its existence. Sanderson (2007, 29) states that Aquinas "makes an exception in the case of the human soul, saying that it can survive death but it cannot operate without its co-principle." Aquinas postulates that the soul fuses with the matter, i.e., the body. He believes that, since the Aristotelian form—not the Platonic Form—signifies, matter differentiates one person from another. Aristotle's Hylomorphic theory states that substance consists of matter and form (Hardie 1964, 54); in other words, matter and form comprise a single entity, such as a person. Would A.I. researchers in the West follow the road of Aristotle and Aquinas and thus value embodied robots?

As Aristotle leapfrogged over Plato via Aquinas, Plato leapfrogged over Aristotle via René Descartes. In painting *The School of Athens* fresco, the brilliant Rafael operates as one of the first major painters to employ the single-point perspective of Descartes. More than the employment of Cartesian perspective in Rafael's grand painting unites Plato and Descartes. The Enlightenment philosopher strengthens Plato's mind-body dualism. Hundreds of years before the advent of computers, let alone A.I., Descartes in his *Discourse on Method* speculates about the body as an automated machine. Philip Agre of Stanford University writes the following quotation about Descartes:

> His clearly drawn dualism held that automata, animals, and the human body could all be explained by the same mechanistic laws of physics…. In establishing this partition [between body and mind/soul], one of the tests was the conventional distinction between animal capabilities, which reside in the body, and specifically human capabilities, which required the exercise of the soul's faculties of reason and will…. The soul itself has ideas, but it has no physical extent or structure. (Agre 1995, 4)

Since a wall of separation exists between the body and mind/soul for Descartes, the mind/soul can exist separately. The Hylomorphic theory champions the unity of form, while this Cartesian theory promotes dualism. The word dualism connotes equality. But are the body and mind/soul equal?

Late-nineteenth-century Americans, especially Christians, pushed the soul farther apart from the body as a response to the Civil War. In her book *This Republic of Suffering: Death and the American Civil War,* Harvard president Drew Gilpin Faust (1999) describes the effects of the Civil War on Americans. She paints grisly scenes of carnage, as Americans fought, not a foreign enemy, but each other. More than 600,000 people died. Hundreds of thousands more suffered physical injuries. With that many deaths and injuries, a high percentage of Americans either were affected or knew families who were. Post-bellum Christianity and American culture sought solace in escapism from the wars of this physical realm.

As evidenced by his sermon *The Great Assize,* John Wesley (1771, 171-185) followed other Christian leaders of his day and earlier in believing in the general resurrection of the dead—that is, someday Christ will return in a second advent and raise the dead. According to Faust (2009), Americans after the Civil War started to view heaven as a spiritual place that the deceased enter immediately upon death rather than affirm such historical Christian doctrines as the resurrection of the dead and the arrival of the New Jerusalem. The idea of a New Jerusalem or of a new version of this physical earth's becoming people's dwelling for the rest of eternity did not seem as comforting as a heavenly entrance after death (Faust 2009). American hymnody from the period sings of this change of theology. For example, three years after the war, Sanford F. Bennett penned the following words for the hymn *In the Sweet By and By*:

> There's a land that is fairer than day,
> And by faith we can see it afar;
> For the Father waits over the way
> To prepare us a dwelling place there.
> *Refrain*
> In the sweet by and by,
> We shall meet on that beautiful shore. (Bennett 2008)

"That beautiful shore" of a land "afar" sounded comforting to suffering Americans who wanted their deceased loved ones and themselves someday to escape the physical suffering of this war-torn country. Unfortunately, such a change in theology, in cultural beliefs, further elevated the soul over the body in the eyes of lay Americans. The souls of the righteous survive death and enter heaven, where souls will be recognized by other souls.

With Hylomorphic theory integrated form gives a person his or her identity. With Cartesian theory the mind/soul carries greater weight than the body in the thinking of dualists. America's response to the Civil War goes even further in promoting the mind/soul, not just for Protestant Christians, but also, for American culture (Faust 2009). Whether A.I. researchers in the United States are Christians, Jews, Muslims, New Agers, agnostics, or atheists, they inherited this body-mind dualism, one that gives primacy to the mind. Some A.I. researchers have sought escapism by seeking a Second Garden of Eden in "a heavenly kingdom in virtual reality" (Geraci 2006, 231). Sanderson's preference of the Hylomorphic theory is favored over the dualisms that Descartes introduced and spawned (Sanderson 2007) because mind-body dualism has led to the devaluation and degradation of both the human body and the physical environment and because more-recent biblical scholarship supports a more-unified conception of the human.

Although dualism is being employed here to make a comparison, this research agrees with Robert Geraci (2006) that philosophical and theological genealogy have accounted for the

different approaches in the East and West to developing A.I. While the East sees the integration of body and mind, the study of A.I. in the West demonstrates that Westerners still believe in body-soul dualism, which affects how they develop A.I. and thus how they describe themselves. Platonic dualism continues with Augustine in the third and fourth centuries. Plato points to the ideal realm of the Forms, while Augustine describes the City of God. This Bishop of Hippo considers the material not as pristine, not as God-like, as the soul (González 1984). Sadly, this preference for the spiritual brings with it the subjugation of the material.

The combination *of the early-agrarian-religions' positing that crops result from the sky-god's impregnating of the land of mother earth* (Garber 1986) *and of Plato's metaphorically pointing up to the sky* results in the literal sky's being seen as superior to the earth, in humanity's being seen as superior to animals and nature, in men's being seen as superior to women, in the spiritual's being seen as superior to the material, and in the mind's being seen as superior to the body. In such a dualistic environment, one which feminist theologians rightly decry (Barbour 1999, 366), the situation makes sense that Westerners want ontological distance between humans and our creations (Geraci 2006, 238). Regrettably, Western history is replete with such examples of our defining ourselves in opposition to the other.

Most A.I. researchers in the West bring this mind-over-body baggage with them in their designing A.I. While Eastern researchers consider the body of the robot and the mind of the robot, Western researchers consider mainly the mind of the robot. Stated differently, Western researchers see the challenges in the development of robots as problems with the software, not the hardware, because they elevate the mind (software) above the body (hardware). Even though the human brain fits in the human head, designers do not give robots human faces also because

Westerners consider the face to be part of the body (hardware) and thus not as important as the mind (software). Seminal secular thinkers in A.I—Ray Kurzweil and Hans Moravec—see the body as unnecessary. Similar to how American Christians since the Civil War have sought escape from the physical earth through the soul's entrance directly into heaven upon death (Faust 2009), Kurzweil (1999, 144) wants to escape from his body by uploading his mind into computers.

Fear also leads to the American public's uneasiness with faces on robots. Science fiction writer Isaac Asimov labels the fear of robots "the Frankenstein complex" (Geraci 2006, 239). Americans often consider humanoid robots as monsters because they fear creations that resemble humans gone awry, that is, that they are morally defective, as Augustine might state. In the 1927 film *Metropolis*, the aftermath of a Western war once again elicited popular reaction. Europe and the United States mechanized themselves during World War I. Fritz Lang made a horror film that shows what could happen if the mechanization continues unabated. The mad scientist takes the saintly Maria and hooks her up to the female-looking robot Hel, who comes alive as it receives more energy from a dwindling Maria. Film's first cyborg, Hel scares audiences because they fear this not-quite-human, that is, "a defective copy of Maria" (Brasher 2004, 148). Their fears are realized when all *hell* breaks lose, when the literal *Hel* "proceeds to wreak havoc on the city of Metropolis" (Brasher 2004). Their reaction demonstrates that Westerners fear morally-defective versions, not of their bodies, but of their souls because they have believed that their souls define who they are as humans.

Westerners have thought of humans as traveling on a temporal trajectory. Both Jewish and Christian Bibles start with "In the beginning" and follow a linear vector with the story of

God's dealings with humanity. The study of A.I. leads to questions about what follows humanity. Posthumanity, secular researchers such as Ray Kurzweil, Hans Moravec, and Nick Bostrom would answer, but between humanity and posthumanity lies transhumanity. According to Bostrom (2009), posthumans will ontologically differ from humans and not just a change in self-perception. Some posthumans, such as a future Ray Kurzweil, might decide to relinquish their physical bodies and let their mind live eternally thereafter in a high-speed computer, such as was depicted in the 2014 film *Transcendence.* What is ironic is that in the distant future posthumans might subscribe to ancient Gnosticism. Gnostics take Plato's dualism to the extreme. They seek the *gnosis* (i.e., secret knowledge) that is imparted to the enlightened. Their salvation entails the liberating of the spark from the physical body (Hendricks et al. 1968, 127).

Nick Bostrom inquires about the relationship of transhumanism and religion. Transhumanism is more philosophical than religious; but like a religion, the A.I. subject of transhumanism seeks the betterment of humanity and provides meaning and direction to life. He contends, "Unlike most religious believers, however, transhumanists seek to make their dreams come true in *this* world," i.e., the physical world in which they presently live (Bostrom 2009 *Transhumanist,* 359). To the extent that Western Christian believers have embraced popular body-soul dualism and have looked forward to the direct ascension of their souls into heaven, Bostrom's statement rings true. However, believers in most world religions have sought to improve life on this side of the grave by establishing hospitals, schools, colleges, labor unions, training unions, food pantries, homeless shelters, and assistance centers. American Walter Rauschenbusch, for example, responded to the excesses of the Victorian Era by declaring the

1900's to be the Christian century. His social gospel movement sought to bring in the Kingdom of God by striving to overcome social ills (Hendricks et al. 1968, 283).

Transhumanists, on the other hand, seek to save themselves from this bodily existence by uploading their minds to a computer and leaving their bodies behind. Such logic is reminiscent of the biblical narrative of the tower of Babel. The Babylonian builders thought that they could construct a ziggurat[28] that could reach up to God. The author of Genesis 11 employs some humor when he says in effect that God had to bend over and squint just to see the Tower of Babel, of which its builders became so proud. Robert Geraci (2008) labels the Transhumanist concept of using A.I. to effect, or at least allow, the singularity and eventually ride the wave from transhumanism to posthumanism "apocalyptic A.I."

Religions have their own eschatologies. Judaism still awaits the coming of their Messiah. Christianity has many different concepts about the completion of creation and many people who strongly support their favored narrative to the exclusion of other orthodox stories of how the world will end. The denominations need not be afraid to promote their eschatological beliefs. Brenda Brasher (2004, 19) comments, "Rodney Stark, William Bainbridge, and other sociologists studying religion reveal that religious groups that strip off particularity and abandon strictness soon lose their adherents."

But what if the singularity and posthumanity are the world's fate? "For Christians, a further question arises," declares Russell Bjork (2008, 99). "Should artifacts that exhibit genuine personhood some day exist, what would this mean for the Christian understanding of humanity as having been created in the image of God?" Would we humans feel like we are no longer

[28] The Tower of Babel was a ziggurat, which Lawrence Boadt (1984, 128) describes as a "temple tower, sometimes rising two hundred feet or more."

special creatures? Would we feel like the new big brother or sister when the baby comes home from the hospital and displaces us from being the only, special child? In the case of the advent of posthumanity, we humans might not be alive on this earth to ask any questions.

The science fiction television show *Battlestar Galactica* offers helpful ways to conceptualize life and death. The 21st-century mini-series of the television show has humanoid cyborgs called Cylons. One of them, Caprica Six exclaims, "I can't die. When this body is destroyed, my memory, my consciousness, will be transmitted to a new one" (Vessey 2008, 289). Boxing serves as an exception, reserved for those who develop unfixable flaws. Boxing refers to the placement of the Cylon's memories into a box. If another Cylon needs those memories, then they may be unboxed and loaded into the body of that one. But overall, Cylons cannot die. They know that if their body becomes incapacitated their memories and consciousness can end up in a box or in another Cylon. Such existences void their lives of meaning. Vessey makes the following comparison:

> Agency, reflecting on their existence, seeking to understand their existence as part of something larger—all are necessary for a meaningful life, and all are common between humanoid Cylons and mortal humans. The difference is that humans, precisely because they must die, must try to understand what it is to have lived a complete life in order for their death to be a successful one, whenever it comes. (Vessey 2008, 299)

According to the philosophy of *Battlestar Galactica,* the finitude and reflectivity of life and death give life meaning. Applying such a philosophy to transhumanist desires lowers the meaningfulness of a disembodied life lived in a computer's memory. A prayer in "A Service of Death and Resurrection" (*U.M.H.* 1989, 871) responds, "Help us to live as those who are prepared to die. And when our days here are accomplished, enable us to die as those who go forth to live."

The Platonic/Cartesian body-mind/soul dualisms have influenced Westerners, including those who research A.I. whether they acknowledge such influence or not. The American public's theological response to the carnage of the Civil War stretched the body-soul dualism concept even further by emphasizing escapism. As this paper has shown, dualist thinking in Western culture has provided a conceptual model that has placed the body on the back burner of the A.I. stove. This relegation has stymied A.I. development.

The good news is that theological perspectives other than dualist-influenced ones exist. Methodists and other Christians may revisit ancient biblical texts and unity-affirming doctrines in an effort to replace material-degrading dualisms. A biblical study of human identity begins with the belief held by the world's three major monotheistic religions—Judaism, Christianity, and Islam—that God created humanity. People find in scripture support for viewing humans as embodied selves rather than as part body and part soul. Methodist theologian Lynn de Silva (Barbour 1999, 363) writes, "Biblical scholarship has established quite conclusively that there is no dichotomous concept in the Bible, such as found in Greek and Hebrew thought. The biblical view of man is holistic, not dualistic."

Anglican Bishop N. T. Wright (2006) also recognizes the body-soul dualism of popular Christianity today and recommends that we recover the early-church's belief in the general resurrection of the dead. He states, "Resurrection isn't a fancy way of saying 'going to heaven when you die.'" Instead, he contends, "it's a way of talking about being bodily alive again after being bodily dead" (114-115). At the general resurrection of the dead, bodies will be resurrected. Reviving such a doctrine helps Westerners to better appreciate the human body and the material world in general.

The *Catechism of the Catholic Church* also provides some unity-affirming doctrines. Paragraph 364 declares, "Man, though made of body and soul, is a unity. …Man may not despise his bodily life. Rather he is obliged to regard his body as good and to hold it in honor since God has created it and will raise it up on the last day" (U.S. Conference 2000). Readers almost can hear the translated voice of Thomas Aquinas in that opening sentence, which refers to the Hylomorphic Theory. Paragraph 366 adds, "[The soul] is immortal: it does not perish when it separates from the body at death, and it will be reunited with the body at the final Resurrection" (U.S. Conference).

The most important Christian theological doctrine for understanding the study of A.I. is the doctrine of incarnation. Christians traditionally have believed that God exists in a Trinity of three Persons. The Second Person of the Trinity, the *Logos,* took on human form in the person of Jesus of Nazareth, Whom Christians have described as fully-divine and full-human. Taking Plato's body-mind dualism to the extreme, the Gnostics considered the body to be evil. They thus denied the doctrine of the Incarnation. In effect, they asked, "why would an ideal God dirty God's Self by taking on a body, which is evil?" For similar reasons the Docetists championed the Christology that Jesus Christ only appeared to be human. The body, however, must have value if God chose to incarnate the *Logos* in one. The Greek term *logos,* from which we get the English word logical, means word or reasoning principle (Hendricks 1968, 318). The people of the first century were not unfamiliar with *logos* because the Stoics and other Greek philosophers defined *logos* as "the universal power or mind that gave [logical] coherence to the universe" (McKim 1996, 164). In other words, the universal mind became incarnate. Jesus was not half mind/divine and half body/human; rather, Christ was fully-mind/divine *and* fully-body/human.

Since the universal mind became fully embodied, artificial *intelligence* does appropriately name the discipline. A.I. researchers can feel confident that they have a solid theological conception to pursue embodiment in their work.

The question remains as to whether these alternative beliefs will spread through Western culture in general and to those people working specifically in A.I. Human bodies, the environment, and other material creations could suffer further neglect and abuse if Westerners operate out of a cognitive model of people that promotes a disembodied understanding of the soul. Until the researchers and developers of A.I. gain an appreciation for the embodiment that A.I. affords, A.I. development will remain a stationary, mainly cerebral pursuit.

E. The *tektōn* of Christianity

In a rhetorical move related to communication technology, the writer of the F.G., John, selected one, the Word, to describe the Second Person of the Trinity. In a move related to technology in general, Matthew and Mark view Jesus as working as a *tektōn*. This Greek word, traditionally translated as "carpenter" (Woolf 2014, 3), appears in the New Testament only in Matthew 13:55 and Mark 6:3, where it describes Jesus. Woolf sees the middle-class *tektōn* Jesus as a union man. For commentator Richard B. Gardner (1991, 222), *tektōn* "can refer to anyone who works with wood, stone, or metal, whether as a craftsman who fashions objects or as a builder engaged in construction." A *tektōn* also may be a songwriter, poetry maker, author, or artisan (Detweiler 2013, 23-24).

Mark states that after Jesus finishes teaching, "Many who heard him were astounded. They said, 'Where did this man get all this? … Is this not the carpenter?'" (Mark 6:2-3). Religious leaders in Matthew ask, "Is not this the carpenter's son?" (Matthew 13:55). In other

words, "Is this not the *tektōn*, the son of a *tektōn*?" Darryl Tippens (Detweiler 2013, 23) notes, "The potential double entendre embedded in the question 'Isn't this the artisan, the maker of things?' It also could have been read after the fact as 'Is not this the son of the Artisan, the Maker of (all) Things?'"; therefore, even though the people who asked these questions meant them as criticisms, Matthew and Mark are alerting their readers that the creative Jesus originates with the Creator. While John refers to the Second Person of the Trinity as the Word, Matthew and Mark identify Jesus as a *tektōn*. Jesus, the definitive *tektōn,* makes and uses *technē*; therefore, His followers stand in good stead by making and using technology.

F. Conclusion to theology and philosophy of V.E.'s

Philosophy lays the underpinnings to understanding the virtual, perception, general epistemology, and representation. Christian theology covers these subjects and adds religious epistemology and the human soul/body relationship in regards to A.I. While a project with the qualitative research subject of V.E.'s should turn to philosophy, a project about V.E.'s as communication technologies of faith needs to appeal to theology. This section has analyzed both. Knowledge of the theology of V.E.'s helps in asking how the faith, namely the U.M. faith, can be dissected into its component aspects for the purpose of the communication of these dimensions by V.E.'s.

CHAPTER 3

FAITH COMMUNICATION DIMENSIONS

> That Christ might dwell in your hearts through faith, that you might be rooted and grounded in love, in order that you might be empowered to grasp with all the saints what is the breadth and length and height and depth, and to know the love of Christ which surpasses knowledge, in order that you might be filled up to all the fullness of God. (Ephesians 3:17-19, Lincoln 2014)

I. Introduction

This study argues that V.E.'s can communicate dimensions of the faith that previous technologies have not been able to communicate or communicate as well. What are the dimensions of faith that Methodists and their predecessors have communicated? *The dimensions are the component aspects of the belief system and how that belief system will express itself.* A V.E. as a communication technology of faith needs to be able to communicate these aspects, these **faith communication dimensions**. Similar to how the more pixels that a digital camera has to capture images, the more definitive the resulting photograph will be; the more dimensions of faith that a technology can communicate, the more accurate the resulting representation of the faith will be. This research needs to consider not only the quantity, but also, the quality of those dimensions. They need to accurately depict the faith. High-fidelity simulations of anything require high-fidelity understandings of the referent; therefore, starting the analysis with a description of the referent U.M. faith will lead to the identification, selection, and creation of faith communication dimensions.

II. The actions of the people of The U.M.C.

Closely analyzing the actions that members of The U.M.C. and her historical antecedents corporately and individually have taken in order to live out their faith reveals aspects of the faith that when combined produce a full picture. They have spoken, written, read, and heard proclaimed texts about Bible stories and verses, moral teachings, theological teachings, Christian-living examples, and inspiring stories of Methodists and other Christians throughout the millennia. They have read and said the liturgy. They have read and sung words to the hymns and songs. They have heard music of instruments and the voices of worship leaders and fellow parishioners. They have heard church bells announce the start of worship. They have felt the waters of baptism, the handles of the acolyte's candle-lighters and crucifiers, the wood of the communion railing, the cups of communion, the cushions of the pews, the handles of a casket, the sweaty palms of brides and grooms, their own palms touching each other in prayer, the handshakes and hugs of others, the robes of the choir and worship leaders, the ashes on their forehead on Ash Wednesday, and the heat of candles on Christmas Eve. For Holy Communion they have tasted the bread and the grape juice, which Welch originally developed as a substitute for communion wine. They have tasted their own tears in response to an affective sermon or after learning the news of the death of a fellow church member.

They have smelled the scent of the flowers on the altar or the overpowering perfume on the woman sitting in front of them. They have seen a teacher write on the board, a preacher preach while waving his or her hands or not, an usher extend a hand to a senior trying to climb the stairs, people asking for and receiving forgiveness, a homeless person receiving a meal, and a crying child being comforted. They have looked up at the architecture of the sanctuary and seen

what resembles the bottom of a wooden boat, one that symbolizes that the worship is to be a worthy-ship to sail the congregation to God in praise. They have seen the liturgical colors of the paraments, such as clerical stoles and pulpit scarves. They have looked at the stained glass windows, which tell stories of the faith through colorful artwork. They have used their whole bodies in church mission projects, in carrying supplies from people's vehicles into the fellowship hall, and in sliding into home plate at the youth baseball game. As a result the faith that has been and can be communicated is multi-dimensional and consists of sensory information, thoughts, and a variety of emotions. If a virtual environment could be used to communicate the faith, then the V.E. could draw upon these components.

III. Two established taxonomies of dimensions

Now that the above specific actions of the faith have been described and learned, that knowledge will help determine which currently-delineated dimensions could apply to V.E.'s as communication technologies of faith. Which dimensions represent what happens as United Methodists corporately live out their faith? Two taxonomies will serve as the sources of possible dimensions. In other words, the following pair of taxonomies will inform the identification and selection of faith communication dimensions.[29]

First, Rodney Stark and Charles Y. Glock of the University of California at Berkeley in 1968 wrote *American Piety: The Nature of Religious Commitment*. In preparing their survey of Americans, they found it necessary to develop dimensions of religion. Stark and Glock (1968, 14) propose, "Within one or another of [five dimensions,] all of the many and diverse religious

[29] Although this research found these two prominent taxonomies, having *two* taxonomies has the benefit of affording comparison.

prescriptions of the different religions of the world can be classified. We shall call these dimensions: *belief, practice, knowledge, experience,* and *consequences.*" Since they wanted to know about the commitment of the surveyed Americans to their religion, creating dimensions before designing surveys and other methods would benefit the ability of Stark and Glock to capture each religion's "religiousness" (13). They developed dimensions that pertain to people's *commitment to their religion* rather than to *religions themselves*; as a result, not all of their five dimensions segue into faith communication dimensions. For example, their "practice" measures expectations of a religion's followers, including ecclesiastical leaders, for actually practicing that faith. This research seeks to simulate more objective dimensions that describe the faith itself; nonetheless, the five dimensions of Stark and Glock set a long-established foundation on which to build a taxonomy of faith dimensions.

Ninian Smart (1995) developed the second established taxonomy of dimensions on which this analysis builds. This professor at the University of California at Santa Barbara[30] (Smart 1995, xv, 8) identifies seven "dimensions of religion"[31]: "the doctrinal or philosophical; the mythic or narrative; the ethical or legal; the experiential or emotional; the ritual or practical; the social or organizational; and the material or artistic." Smart notes that these dimensions appear in no particular order and that his giving them double names "helps to elucidate them and sometimes to widen them" (10).

While Stark and Glock (1968, 1) want to research the "little studied" "dimensions of religious commitment" because "Both organizationally and theologically, the heart of religion is

[30] U. C. Santa Barbara was one of the universities visited for this project's primary research.

[31] Smart (1995, 9) prefers to name the Divine "Focus" or "Foci" instead of "God" or "gods" because "this notion of focus enables us to talk about worship without having to comment on their validity, without having to comment on whether there is a Vishnu or a Christ."

commitment"; Smart (1995, 8-9) wants "to provide a realistic checklist of aspects of a religion [his definition of *dimensions*] so that a description of that religion or a theory about it is not lopsided" and "to give a kind of functional delineation of religions in lieu of a strict definition." In other words, their interests differ. Stark and Glock presented their research of American religion in 1968, when The Methodist Church merged with the Evangelical United Brethren to form The U.M.C. Many ecclesiastical scholars such as Hout and Greeley (1987) point to 1968 and the surrounding years as marking the beginning of the drop in worship attendance by American Protestants and Catholics.

Many denominations by that time had passed the apex of the upside-down-"U"-shaped church life cycle, resided in the maturity stage, and were headed downward. Maintaining the structure replaced the driving vision of earlier stages (Farr 2011, 7). Statements such as "Historically, the primary concern of all religious institutions has been to lead men [and women] to faith, and the continued existence of any religion would seem to depend upon accomplishing this task" suggest that Stark and Glock (1968, 1) are interested in maintaining the institution, perhaps because they identified the times of the late 1960s and foresaw the downward vector in church attendance. For a particular religion to continue, its followers would need to express commitment to it. Such concern in churches still exists today, five decades later.

While the interests of Stark and Glock lie in maintaining the existence of religion, Smart wants to present a taxonomy that helps to classify religions. "These classifications come from reflections about the various cultures of humankind," Smart (1995, 1) writes, "in hope of clarifying perceptions." He creates his taxonomy of dimensions to enable him and others in religious studies to describe and analyze religions. He calls his methodology one of "dialectical

phenomenology," by which he means "more particularly the relationship between different dimensions of religion and worldviews"[32] (7). Smart, in other words, wants to not only identify the descriptive ingredients of religions, but also, taste how those ingredients relate to each other over time when mixed and baked. Although the interests and reasons of Smart and of Stark and Glock in developing their respective classifications of dimensions differ, both taxonomies help in analyzing religion and offer some possibilities as faith communication dimensions.

IV. Analysis of possible dimensions

Knowledge of the actions of the faith and the understanding of two established taxonomies of dimensions set the scene for the analysis of the dimensions themselves. Both Stark and Glock (1968) and Smart (1995) combine practice and ritual. While for Smart the practical enlarges the ritual, practice and ritual work together for Stark and Glock, for whom, "**Practice/ritual** is defined as the expectation held by all religious institutions that the faithful will observe and perform certain rites and sacred or liturgical acts" (81) and "perform acts of devotionalism" (108). Worship falls under "ritual" in both taxonomies. "Practice" includes many practices, such as evangelism, missions, and giving. Immediately apparent is the fact that the "Practice/ritual" and "Ritual or Practical" dimensions encompass too many components to do each one justice as descriptors, especially since worship plays such an important role in this project. Smart's "Doctrinal or Philosophical" and "Material or Artistic" also suffer from trying to describe too much; therefore, *the quandary calls for the creation of a third, high-definition taxonomy of dimensions*. The "video monitor" needs more pixels to more-accurately display

[32] Smart (1995, 8) prefers the term *worldview* over the term *religion* because "this schema also applies to worldviews other than religious ones."

Table 3.1. Comparison of Taxonomies of Faith Dimensions

Stark and Glock's "Dimensions of Religious Commitment"	Smart's "Dimensions of Religion"	Kay's "Faith Communication Dimensions"
1. Practice/Ritual	1. Ritual or Practical	1. Worship/Ritual 2. Practical
2. Religious Belief 3. Knowledge	2. Doctrinal or Philosophical	3. Doctrinal 4. Biblical 5. Christian Educational 6. Christian Historical
--	3. Mythic or Narrative	7. Narrative
4. Experience	4. Experiential or Emotional	8. Experiential
5. Consequences	5. Ethical or Legal	9. Ethical
5. Consequences	6. Organizational or Social	10. Social
--	7. Material or Artistic	11. Aesthetic 12. Architectural 13. Sensible
--	--	14. Symbolical
--	--	15. Virtual

the picture of religion. *As a result this research introduces the Faith Communication Dimensions (F.C.D.) as a preferred taxonomy of dimensions of religion*, as presented in Table 3.1.

Since worship of the Triune God plays a central role for Christians, the **Worship/Ritual** dimension focuses on the components related to corporate and individual worship. Worship/ Ritual includes liturgical acts, worship rituals, and devotional acts, whether in the church or in the home. **Practical** deserves its own category. Practical refers to the following practices of religion: such as administration, Christian service, mission work, and financial giving.

Evangelistic[33] is pulled from Practical because evangelism, that is, the sharing the Good News, necessitates faith communication and thus deserves its own dimension. Another broad category, Smart's "Doctrinal or Philosophical" covers "Religious Belief" and "Knowledge" of Stark and Glock, who rightly contend that a person of faith needs to know and believe what that faith teaches. For Stark and Glock (1968, 22), "belief" means belief in the realm of the supernatural, of which is conceived in historical "Christian terms, that is, a personal God, a divine Saviour, and a life beyond death." But their interests concern people's religious commitment rather than an objective description of the faith.

In contrast, the F.C.D. taxonomy multiplies one or two dimensions into four: Doctrinal, Biblical, Christian Educational, and Christian Historical. **Doctrinal** equals Smart's "Doctrinal or Philosophical" minus the other three aspects because each deserves attention. **Biblical** may include biblical doctrines and passages. In Albert Outler's (1991) quadrilateral of John Wesley's sources of biblical interpretation, scripture takes the preeminent side. Since Christianity's beginning, its leaders have stressed the importance of **Christian Education** so that Christians of all ages may learn about the faith. Since Christians have taught that God has taken an active role in human affairs, **Christian History** has accounted for part of the curriculum.

F.C.D. separates **Narrative** from Biblical and Christian History. While Stark and Glock do not mention narrative, Smart (1995, 133) expands it with "Mythic" and argues, "Narratives are important because they help to define both groups and sacred identities and persons." Stories appear in the Bible and in Christian History, especially Methodist history, but not all scripture and not all history appear as narrative. The Psalms, for instance, take the form of poetry. When

[33] *Evangelistic* and *evangelism* do not equal *evangelical* and *evangelicalism*. *Evangelism* is the sharing of the faith. *Evangelistic* is the adjective form of *evangelism*.

the authors of the Bible tell stories, such as in the gospels, readers/hearers need to consider narrative elements, particularly as the stories are communicated.

When United Methodists have told stories, the narratives often have spoken of how early Methodists experienced the Holy Spirit in their lives. Although John Wesley loved the Church of England until his death in 1791, he wanted eighteenth-century Christians to experience the faith each and every day. Methodists since Wesley have emphasized the activity of God the Holy Spirit, as evidenced by the denomination's cross-and-flame logo, in which the flame represents the Spirit; therefore, a description of the U.M. faith without the **Experiential** dimension would remain incomplete. Regarding "experience," Stark and Glock (1968, 125) declare, "The properly religious person will at one time or another achieve some sense of contact, however vague or fleeting, with a supernatural agency." Rather than impersonal and sporadic, that contact for Wesley became personal, hourly, familial, intimate, and loving.

Methodists and other Christians have seen the need for their faith to manifest itself in **Ethical** living and working. John Cobb distils Wesleyan beliefs to two words: grace and responsibility. God offers humanity grace, while people have the responsibility to respond. Christian response is to consist of accepting that grace and living a life emulating that of the Christ. Wesley called that holiness. Stephen Monsma (1986, 223) asserts, "As God's image bearers, we live in an ongoing relationship of accountability," to God, to each other, and to the rest of creation. The United Methodist "Social Creed" (*Book of Discipline* 2016, ¶ 166, 145) declares, "We dedicate ourselves to peace throughout the world, to the rule of justice and law among nations, and to individual freedom for all people of the world." The Church has built

hospitals, orphanages, senior-adult homes, and homeless shelters. The Church has advocated for the marginalized, worked for fair-labor laws and fair-housing practices, promoted ethical business practices and investing, fought for safe working conditions, and sought racial equality. Therefore, the Ethical dimension has extended—sometimes more faithfully than other times—throughout Christianity and needs to be communicated so that Methodists and all Christians know the ethical teachings of Jesus Christ and thus live them out in all of the spheres in which they travel.

The **Social** dimension relates to the Ethical because ethics apply to life in society. Wesley prefers the term holiness to label the process of Christians' becoming made in the whole image of God. He identifies two types of holiness: personal and social. David Watson (2017) of Dayton Theological Seminary argues that when Wesley cautions, "There is no holiness but social holiness," Wesley means that Methodists are to be holy in community with others because people need each other's help. Despite a popular current American mindset, biblical Christianity is not a solo sport. Christians live and practice their faith in community. Jesus did not call the One: He called the Twelve. According to the F.G., being a Christian means being members of God's family, sheep in His flock, branches in His vine, and parts of His body. The Social dimension of Christianity indicates that Christians are a new community in Christ the Church.

Smart describes the "Material or Artistic," but the F.C.D. taxonomy realizes the need here for specialization. Smart's overly-expansive category becomes the Aesthetic, the Architectural, and the Sensible in the F.C.D. classifications because these aspects need to be delineated and communicated. Hendricks (1968, 16) provides a standard definition: "Aesthetics is the branch of philosophy that deals with the question of beauty." Plato, Kant, and Hegel

address beauty, which for Hegel "is essentially spiritual." Hendricks elaborates on the relationships among aesthetics, art, humankind, and God:

> The inner life of man, that is, man's relation to the eternal or to value, finds expression in art. Man encounters the eternal and makes his own reaction to this reality. In art he expresses this experience in sensuous form. This is a part of man's way of understanding his encounter with God. Anywhere man encounters genuine beauty he encounters the beauty of God. (Hendricks 1968, 17)

Such relationships illustrate that Christianity has an **Aesthetic** dimension, which needs to be communicated in order to touch "this reality" and encounter "the beauty of God."

This research agrees with Clyde Kilby (2016, 239) in his acknowledgement, "Aesthetics has to do with form, design, harmony, beauty," and in the declaration of Ephesians 1:8-10 (N.R.S.V. 1989): "With all wisdom and insight [God] has made known to us the mystery of his will, according to his good pleasure that he set forth in Christ, as a plan for the fullness of time, to gather up all things in him, things in heaven and things on earth." Kilby (2016, 240) replies, "No greater aesthetic consummation is possible."

Architecture warrants its own dimension. First, the incarnation of the Second Person of the Trinity in the specific body of Jesus of Nazareth in a specific place validates the importance of place. Since Christianity became the official religion of the empire, Christians have worshipped in buildings of one sort or another, such as basilicas, cathedrals, brick buildings, white-framed meetinghouses, and metal buildings. Even when congregations have rented facilities, those storefronts, schools, or other buildings have hosted public worship. Second, the style of architecture affects the styles of worship and ministry; for example, a congregation meeting in a converted loft warehouse probably would offer more-creative ministries and seek to reach out to a community that differs from a congregation meeting in a suburban Gothic

cathedral. Third, the Architecture dimension encompasses not only the permanent interiors and exteriors of church buildings, but also, arks/sacristies, carillons, columbaria, furniture, gardens, ingress/egress, labyrinths, lighting, stained glass windows, and steeples.

The F.C.D. taxonomy creates a new dimension called the **Sensible**. A very important aspect of religion, particularly as a F.C.D., concerns the epistemological fact that followers can employ their human senses in their perception of the faith system. Although United Methodists have focused on sound and sight, Catholics, Anglicans, and Orthodox Christians have added smell with the use of incense. Most Christians have appealed to touch, as described above, and taste with the administration of Holy Communion.

The Church's vast repertoire of Christian symbolism necessitates the creation of the **Symbolical** dimension. Symbolism has helped explain doctrines, such as the Triquetra for the Trinity, the dove for the Holy Spirit, the shell for baptism, and the lamb holding the cross for Jesus as the *Agnus Dei*.[34] Symbolism can take concrete form in crosses representing the cross of the crucifixion, communion-table crosses with the "I.H.S." monogram for Jesus, and Chrismon ornaments with Advent themes. Symbols can represent abstract concepts in material ways, such as the ceiling of a cathedral's symbolizing the Church as a boat,[35] and in non-material ways, such as the anchor's symbolizing hope. A taxonomy of F.C.D. would fall woefully short without the Symbolical dimension to impart the expression of Christianity in symbols.

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[34] The Latin *Agnus Dei* equals the "Lamb of God," such as in John 1:29 (N.R.S.V.)—"The next day [John the Baptist] saw Jesus coming towards him and declared, 'Here is the Lamb of God who takes away the sin of the world!'"

[35] A ceiling, especially a wooden ceiling, of a cathedral's sanctuary resembles the bottom of a boat if viewers turn their heads upside-down. Worship is to be a worthy-ship to sail worshipers in praise to God.

This research proposes the **Virtual** as one of the F.C.D. because this project involves the journey toward and through the Virtual. Denegri-Knott and Molesworth (2013, 2) and Shields (2003) understand the Virtual "as both real and ideal and entwined with our perception of reality. It is what we imagine." While God is not imaginary, God's residences include the human imagination. Since we can perceive God in reality, people in both testaments and since Biblical days have aspired to seek the Virtual, i.e., the Lord made present to them. They also have created media—all of which in essence is virtual reality—to place between themselves and God; thus, the medium of the Bible can become V.R. A taxonomy of F.C.D. needs to embrace the Virtual dimension.

V. Conclusion

While Stark and Glock (1968) and Smart (1995) have provided dimensions in their desire to define religions for different reasons, *this project adds to scholarship with the creation of the Faith Communication Dimensions taxonomy.* Stark and Glock (1968) created five "dimensions of religious commitment": "Practice/Ritual," "Religious Belief," "Knowledge," "Experience," and "Consequences."[36] Although Ninian Smart (1995) does not refer to Stark and Glock or their taxonomy, Smart's longer classification includes similar "Dimensions of Religion": "Ritual or Practical," "Doctrinal or Philosophical," "Mythic or Narrative," "Experiential or Emotional," "Ethical or Legal," "Organizational or Social," and "Material or Artistic." The F.C.D. taxonomy expands on these two because F.C.D. require more exactness, "more pixels to produce a high-definition picture" of the U.M. faith. Therefore, *this project introduces eight additional*

[36] For Stark and Glock (1968, 175), the umbrella term "Consequences" refers to "Churches as Moral Communities," "Ethicalism," "Communal Involvement," and "Particularlism."

dimensions: **Evangelistic, Biblical, Christian Educational, Christian Historical, Aesthetic, Architectural, Sensible, and Virtual**. These new dimensions add to the list of refined ones—**Worship/Ritual, Practical, Doctrinal, and Narrative**—and the list of Smart's dimensions—"**Experiential**," "**Ethical**," and "**Social**."

This research heeds Smart's (1995, 10) caution that "Religion is by no means equidimensional" in that the analytical weight of dimensions shifts when applied to other faiths and then converts his thought to claim that each of the F.C.D. does not carry the same analytical weight as the other fourteen F.C.D. *When applied to the socio-cultural analysis of earlier and new communication technologies, this taxonomy of fifteen F.C.D. assists as a tool in answering the research question:* "Do inherent qualities of virtual environments offer additional faith communication dimensions that are different from other media types?"

CHAPTER 4

THE WEAVE OF THE HISTORICAL THREAD OF METHODISM

> John Wesley wrote to one of his itinerant preachers, "It cannot be that the people should grow in grace unless they give themselves to reading. A reading people will always be a knowing people." (Wesley 1931, 247)

Since this research looks at the K.C.T.E. of The United Methodist Church (U.M.C.) and its historical antecedents, an unfolding of the story of the people called Methodists provides some necessary background. The historical antecedents include the early church described in the New Testament and later documents, the church up until 1054, the Western church from 1054 to 1534, the Church of England from 1534 to the Wesley's in the eighteenth century, the early Methodist movement, the Methodist Episcopal Church (M.E.C.) and its two main splinter groups from 1784 to 1939, and The Methodist Church from 1939 to 1968. Traveling this narrow and simplified path from the New Testament to The U.M.C. of today should help identify the major events, players, and theologies of early, medieval, and early-modern Christians and of the people called Methodists.

Forty days after the women proclaimed that the tomb of Jesus of Nazareth was empty and that they heard that Jesus had been resurrected from the dead, the eleven walked with the risen Christ up a mountain. He instructed them to stay in Jerusalem. According to Luke's account (Acts 1:8, NRSV), Jesus explained, "But you will receive power when the Holy Spirit has come upon you; and you will be my witnesses in Jerusalem, in all Judea and Samaria, and to the ends of the earth." The eleven remained in the capital city. The number of disciples had swelled to one-hundred-and-twenty people ten days later.

Thousands of Jewish pilgrims by then visited Jerusalem for the festival of Pentecost. At 9:00 that morning, the crowd of pilgrims and others witnessed the arrival of the Holy Spirit in dramatic fashion:

> And suddenly from heaven there came a sound like the rush of a violent wind, and it filled the entire house where they were sitting. Divided tongues, as of fire, appeared among them, and a tongue rested on each of them. All of them were filled with the Holy Spirit and began to speak in other languages, as the Spirit gave them ability. (Acts 2:2-3, NRSV)

Peter addressed the crowd's concerns that the 120 disciples were inebriated. He assured them that this event happened too early in the day for them to have become intoxicated. Peter's words to the crowd cover most of the second chapter of Acts. In one of the largest altar calls and mass baptisms in Christian history, 3,000 non-Christians responded affirmatively to Peter's message.

United Methodists and most other Christians point to the Day of Pentecost as the birthday of the church. In the Third Gospel and in Acts, the author and physician Luke locates the Day of Pentecost fifty days after the first Easter Sunday; however, the Fourth Gospel places the arrival of the Holy Spirit on Easter Sunday evening. The risen Jesus simply breathes on the eleven and on any other disciples there in the house and says, "Receive the Holy Spirit" (John 20:22). United Methodists and other Christians have adopted Luke's timeline for their liturgical calendars. No matter the timeline of Pentecost, for Luke/Acts and John, the Holy Spirit not only gives birth to the Church, but also, supplies the power for the Church.

Starting with 3,120 people and with the inspiration of the Third Person of the Trinity, the Church began in order to continue the ministry of Jesus Christ. The Gospel of Matthew concludes with the Great Commission of Jesus to the eleven and ultimately to all Christians: "Go therefore and make disciples of all nations, baptizing them in the name of the Father and of the

Son and of the Holy Spirit, and teaching them to obey everything that I have commanded you" (Matthew 28:19-20). Jesus earlier, i.e., at the Last Supper in John 14, had told the disciples that they would do greater works than Jesus did because they would be empowered by the Holy Spirit. The Book of Acts and other books of the New Testament describe how the Apostle Paul and others traveled to ports around the Mediterranean Sea to spread the Good News of Jesus Christ and to establish churches.

As the early Church expanded beyond the pages of the Bible, the Roman Empire's reception of Christians began to change. At the end of the first century, Christians of the Johannine community,[37] for example, had become accustomed to attending the synagogue on the Sabbath and Christian worship on the first day of the week. Caesar required that his subjects worship him as a god. Jewish leaders had secured an arrangement with the Roman Empire that the Jews would not have to break commandment by worshiping Caesar. The Empire saw early Christians as belonging to a sect of Judaism rather than a new religion. Since the Empire viewed Christians as Jews, Christians enjoyed the peace granted to the Jewish people. In fact, many Christians by the end of the first century had become accustomed to the situation and no longer emphasized the differences between Christianity and Judaism (Sloyan 1988, 1).

Whenever some Christians attending Jewish worship services in the Johannine community started to say that they believed in the divinity of Jesus, the synagogue leaders excluded them from the synagogue. Some other Christians in that community decided to remain quiet about their beliefs so that they could remain in the synagogue. The writer of the Fourth

[37] *Johannine* is the adjective form of the name John and refers to the New Testament writings traditionally attributed to an early Christian(s) named John, i.e., the Gospel according to John, First John, Second John, Third John, and the Book of Revelation. Biblical scholars call the Gospel according to John "the Fourth Gospel" (F.G.). The *Johannine community* here refers to the community of people to whom the writer of the F.G. wrote (Johnson 1986, 466).

Gospel sought to remedy such theological acculturation by emphasizing the divinity of Jesus; therefore, John (1:14) wrote a theology from above by describing Jesus as "the Word [who] became flesh" (Brown 1997).

The Roman Empire started persecuting Christians as imperial leaders realized that Christianity had differentiated itself from Judaism. They no longer allowed them to enjoy the privilege of religious freedom. The lives of many Christians ended in martyrdom. More Christians went underground. They met secretively in house churches for hundreds of years. Justo González (1984a, 102) contends, "early in the fourth century … the last and worst persecution broke out" during Emperor Diocletian's reign. Later, Emperor Galerius' health began to fail. He wanted Christians to pray to their God for his healing; therefore, on April 30, 311, he issued the Edict of Toleration, in which he stated, as recorded in the words of Eusebius (González 1984a, 106), that the Roman government would "allow them to be Christians once again, and once again gather in their assemblies" as long as they prayed for the Empire. Two years later and after the defeat of Maxentius on the Milvian Bridge, the victorious Constantine met with Licinius in Milan. Part of their agreement included an end to the persecution of Christians. González (1984a) claims that the Edict of Toleration had a larger effect than the Edict of Milan did in stopping the violence against Christians. Constantine saw making Christianity the official state religion as a strategic move to unite the Empire.

Some Christians look back at Christianity's becoming the official religion as a positive happening. Christians no longer faced official persecution. They could openly practice their faith. The number of Christians grew exponentially. Other Christians peer back and see the negative aspects. People became Christians because they resided in the Empire rather than by

choosing Christianity of their own volition. Their level of commitment to Christianity might not have run as deeply as that of the Christians who believed in Christ while they knew that such belief could result in their execution. Later, Christianity and the Empire became so enmeshed that the church experienced corruption (Vidal-Naquet 1987, 100, 148, 155).

The Empire allowed church worship services to occur in basilicas. James White (1993, 72-73) contends that Christian practice and even theology changed as Christians came out of hiding in intimate house churches or residential areas and moved into the basilicas. These Roman courts of law had enough space to accommodate many people. Worship services adopted some of the features of a courtroom, such as clergy's sitting in the throne chairs, clergy's wearing robes of judges, acolytes' bringing in light to illuminate the dark space, processing, recessing, choirs' singing, and people's being respectful. Having worship services in courts of law encouraged Christians to think of God as a monarch and as a judge. Christians bowed their heads to God as a royal subject would to a king.

Christianity grew numerically throughout the Roman Empire during the days of the early Church and during the medieval period, when the church labored to define its beliefs. Various church councils met to develop doctrine. In 325, Emperor Constantine presided over the Council of Nicaea, which rejected the Arian position that the Word of God was a created being by supporting the position that God the Son is of the *homoousios,* i.e., same substance, as that of God the Father (Placher 1983, 76). González (1984a, 166) asserts that Athanasius of Alexandria, who died in 373, would become the champion of Nicene orthodoxy. Methodists and other Christians have recited the resulting Nicene Creed since then. The theological and philosophical writings of Bishop Augustine of Hippo (354 –430) would prove to be important for Methodism's

founder John Wesley (1703-1791) and the rest of Western Christianity because Augustine fleshed out the doctrine of original sin, which Wesley and most Christians have believed (Placher 1983, 116). Antioch, Alexandria, Jerusalem, Rome, and Constantinople turned into the locations of politically powerful groups headed by authoritative bishops. At the turn of the second millennium, the bishops of Rome and Constantinople rose to prominence and grew to become rivals. They disagreed about clerical celibacy and the use of unleavened bread. Western/Eastern cultural differences also came into play as the relationship between Rome and Constantinople became more acrimonious. Finally in 1054, the Pope and the Patriarch excommunicated each other (Placher 1983, 100). Western Christianity and Eastern Christianity to this day have remained separated following that schism.

The path that led to Methodism followed the Western route. Influential theologians Anselm of Canterbury (1033–1109) and Thomas Aquinas (1225–1274) wrote in the early centuries of the second millennium. Wesley built on the groundwork that Anselm laid regarding predestination and freewill, the atonement, and the propagation of original sin (Deschner 1985) (Nuth 1992). Later, during the early years of the European Renaissance, Thomas à Kempis (1379–1471) penned *The Imitation of Christ* (Kempis 2003), which became the world's best-selling book, and one that Wesley referenced.[38] Ships afforded European missionaries the ability to spread Christianity to places beyond their continent by sailing south around Africa's Cape of Good Hope and into the Indian Ocean and by sailing west to North and South America.

A German Catholic monk, Martin Luther (1483-1546) responded to the abuses that he said he saw in the Church by legendarily (Duffy 2016) posting his ninety-five theses on October

[38] John Wesley in his sermon *A Plain Account of Christian Perfection* referred to *The Imitation of Christ* as *Christian's Pattern.*

31, 1517, on the door of the castle church in Wittenberg, Germany. That supposedly-posted bill was not unique because he earlier had a printer print copies, which were distributed throughout the village (Postman 1993, 64-65). He complained about the sale of indulgences and the priest's role as mediator between Christians and God. Luther's hard work, many talents, intelligence, and theology led to the translation of the Bible into the German vernacular, the printing of copies of the Bible, his writing of hymns, congregational hymn singing, and the laity's forgiving each other (Placher 1983, 181-187). Martin Luther was the first Protestant Reformer, while John Wesley was the last one.

Only seventeen years after Luther's posting, English King Henry XIII made himself, rather the Pope, the supreme leader of the Church of England. The Anglican Church served as the *via media* between the Roman Catholic Church and the rest of Protestantism. The Church of England presented their doctrine in the *Thirty-Nine Articles of Religion,* written by Thomas Cranmer in 1562 (Oden 1988). A few decades later, Dutch theologian Jacobus Arminius (1560-1609) opposed Calvinist predestination and championed freewill in regards to people's having the choice to believe in Christ for themselves. John Wesley so advocated Arminius' freewill that he later named his periodical *The Arminian Magazine.* For John Deschner (1985), Wesley drew inspiration also from Bishop Jeremy Taylor's (1613-1667) *Rule and Exercises of Holy Living and Dying* and Reverend William Law's (1686-1761) *Christian Perfection* and *Serious Call*.

Methodism's founder, John Wesley, was born to the Reverend Samuel and Susanna Wesley in 1703 in Epworth, England. As a young man, John decided to follow his father's footsteps into the ordained ministry in the Anglican Church, the Church of England. His father told him that scholarship was an appropriate reason for being ordained but a much better reason

for ordination would be "a desire and intention to lead a stricter life" (Kenyon 2013, 43). A few days later, he began listing rules and resolutions in a book that would become his journal (Idle 1986). He wanted to keep track of his spiritual pulse. He wrote that God loved us humans so much that John wanted to live a holy life in return. His younger brother Charles felt the same way. At Oxford University in the 1720's, John and Charles gathered together five or six friends who shared their commitment to disciplined holy living. They invested three or four nights during the week studying classical literature and Sunday's reading theology. They ministered to prisoners and to a few financially-poor families in town. On weekday mornings, as early as 5:00, they would gather to hear each other preach.

They caught the attention of antagonists, other Oxford students who made fun of their group for being so disciplined and so excited about the Bible and classic literature. English universities during the Enlightenment emphasized Reason and scoffed at excitement. They labeled them "Enthusiasts," "Bible Moths," "Bible Bigots," "Sacramentarians," the Holy Club," and especially "Methodists" because they—like an ancient Roman group—were so methodical. They adopted the name "Holy Club" for their group at Oxford because they were committed to holy living (Heitzenrater 1984b). After graduation from Oxford and ordination in the Church of England, John Wesley sought ways to expand his Holy Club. He approached the Bishop of London about his receiving a pastoral appointment, but the bishop would not give him one because he, too, considered Wesley too extreme. Wesley responded to the bishop's denying him a parish church by saying "the world is my parish" (Wesley 1984, 72).

Another member of the Holy Club, George Whitefield invited John Wesley out to the fields near Bristol, England, to preach outdoors in the 1730's. Wesley agreed. He preached to a

total of approximately three-thousand coal miners during shift changes. Many of the poor coal miners might have wondered why this 125-pound, Oxford-educated clergyman bothered to preach to them. The Calvinistic work ethic came from a belief that God had double predestined people—some to eternal salvation and others to eternal damnation. Europeans began to want an indicator of their eternal destiny. Many thought that God would not waste his material blessings on those whom He planned to damn; therefore, wealth must indicate one's eternal destiny. God would save the rich and damn the poor (McRay 1986b). As a result of such Calvinist teachings, the poor, dirty coal miners knew their fate and understandably did not bother going to church.

Wesley preached to the coal miners that God has not already determined their eternal destiny. Rather, they have the freewill to decide for themselves whether or not they want to accept Christ. The coal miners readily responded to such hopeful preaching. Wesley's message spread throughout England. The numbers of the people called Methodist grew rapidly. Wesley traveled on horseback around Britain and on foot around London. Similar to how the first Christians went to the synagogue on the Sabbath and to church on the Lord's Day, these Methodists went to the Church of England on Sunday mornings and to Methodist meeting houses at other times. He kept his insistence on ministering with a preference for the poor. He organized bands and classes, that is, small groups for mutual accountability.

Methodism spread throughout England and in America. He ordained Thomas Coke and Francis Asbury as the first two General Superintendents. They sailed to America and established many churches. Since the number of new churches outpaced the number of clergy, Methodist clergy rode on horseback from church to church. In Methodist nomenclature the General Superintendents appointed the clergy to their charges. Assigned churches were points on a

circuit. The laity became very important because they led the churches when the circuit-riding clergy were at other points on the circuit.

The people called Methodist did not become a denomination until the Christmas Conference of 1784 in Baltimore, Maryland (Norwood 1974). John Wesley sent documents to the meeting in order to establish the M.E.C. Although the founder of the M.E.C., Wesley loved the Church of England until he died in 1791. Mennonite pastor Martin Boehm (1725–1812) and German Reformed pastor Philip William Otterbein (1726–1813) formed the United Brethren in Christ movement in 1800. They shared similar theology with the Methodists (Wesley 1964). Thoughts of merging with the Methodist movement were proposed, but merger did not materialize until 1968.

The M.E.C. grew throughout the United States. In 1828, a group protesting the M.E.C.'s having bishops and the church's understanding of the role of the laity split off to form the Methodist Protestant Church. The denomination split north and south in the 1844 over the issue of slavery, which Wesley had despised (Norwood 1974). By the time of the Civil War, Methodists in all three branches comprised one half of the number of Christians in America (Gaustad 1976). The name changed in 1939 to The Methodist Church as the church reunified. In April, 1968, in Highland Park, Texas, The Methodist Church merged with the Evangelical United Brethren Church to form today's denomination: The U.M.C.

Following this thread through the history of The U.M.C. and its historical antecedents provides an overview necessary for the examination of the K.C.T.E. that have occurred along this two-thousand-year-long timeline. The laity and clergy of the Christian Church over the millennia, including Methodist churches in the last three centuries, have utilized technology to

communicate the doctrine, dogma, and discipline of the universal Church. The analysis of past and present technologies helps to determine which future technologies might effectively communicate the faith to generations yet unborn or yet come of age.

John Wesley greatly affirmed and recommended the reading of the communication technology of the book or codex. Wesley (1931, 247) wrote to one of his itinerant preachers, "It cannot be that the people should grow in grace unless they give themselves to reading. A reading people will always be a knowing people." He knew that regular reading of the Bible and other Christian books would help Methodists in their process of sanctification, that is, their growing in Christ's grace. Reading Methodists would learn about the contents of the biblical canon, Christian history, Christian classics, other worthwhile subjects, and eventually the Methodist faith. Since Wesley so affirmed the codex as a faith-supporting technology, if he were alive today he probably would recommend the V.E.'s as communication technologies if they effectively communicated the faith.

CHAPTER 5

SOCIO-CULTURAL ANALYSIS

OF KEY COMMUNICATION TECHNOLOGY EVENTS

> Advances in our understanding of culture cannot be secured unless they are tied to a vivid sense of technology and social structure. (Carey 2009, 49)

> As [Raymond] Williams has argued, [social life] also includes the sharing of aesthetic experience, religious ideas, personal values and sentiments, and intellectual notions—a ritual order. (Carey 2009, 27)

I. Introduction

While reviewing interdisciplinary literature, this research includes analyses of K.C.T.E. in the history of The U.M.C. and its antecedents. As Chapter 4 showed in detail, the genealogical line of The U.M.C. travels back through the Church of England of the sixteenth through eighteenth centuries, the genesis of the Protestant Reformation in the sixteenth century, the Western Church in the eleventh through sixteenth centuries, and the medieval and early Church all the way back to its birth on the Day of Pentecost in the New Testament. This narrow path still affords the rhetorical landing on pods of K.C.T.E. for analysis.

II. Communication

Although people have known how to communicate with each other for as long as humans have existed, the study of communication is relatively new, and the definitions of communication have been varied and often obtuse. Writing in the *Journal of Communication* only three years after the publication's launch, Cartier and Harwood (1953) acknowledge a lack

of consensus among scholars about the definition of communication. They (Cartier and Harwood 1953, 74) contend, "*Communication is a process of conducting the attention of another person for the purpose of the replication of memories.*" Only the listener makes replications of the speaker's words. Such a definition limits communication to words. More than memories are communicated, and more than attention getting occurs in communication. The definition of Cartier and Harwood does not include the message or the medium, but the word "replication" evokes a re-creation of the speaker's thoughts in the mind of the listener. Also writing in the 1950's, Colin Cherry rightly describes communication as "essentially a social affair," one that has evolved from person-to-person to global (Beck, Bennett and Wall 2004, 266).

Raymond Williams from British cultural studies differentiates between the singular and plural forms of communication. This scholar from England writes in 1962, "I mean by communication the process of transmission and reception," while communications in his book by the same name refers to "the institutions and forms in which ideas, information, and attitudes are transmitted and received" (Beck, Bennett and Wall 2004, 269-270). A self-professed Marxist, Williams classifies newspapers, radio stations, and television networks as institutions for mass communication. On the other hand, person-to-person communications—whether face-to-face, via written letters, over the telephone, via text messaging, or in email messaging—involve institutions mainly through the transmission of the messages, e.g., by the post office, telephone companies, and Internet service providers, but not usually in the composition of messages.

As will be shown with the explanation of James Carey's (2009) "transmission view of communications," definitions in the 1970's, 1980's, and 1990's continued to emphasize transmission because most communication scholars operated out of a paradigm that viewed

communication as the process in which a message is transmitted. For example, William Metz (1979, 2) defines communication "as the art of transmitting information, ideas, and attitudes from one person to another." Decades before the social media use of emoticons, this definition championed the perspective that the attitudes of the sender may join the information and ideas along the transmission lines. "Communication is the process of transmitting a message from a source to an audience via a channel," according to Sandman, Rubin, and Sachsman (1982, 1). Written with a focus on mass media, this definition well suits one-to-many media, particularly radio and television; however, in digital social media, many people can serve as sources. The roles of sources and audiences can reverse at different times. Unlike that of Cartier and Harwood, this definition considers the medium or channel.

Roman Jakobson (1960) identifies six factors of verbal communication. With words he draws a diagram forming a cross. Along the horizontal beam, he writes that the "The ADDRESSER sends a MESSAGE to the ADDRESSEE." Above and below "MESSAGE" on the vertical beam sit "CONTEXT, CONTACT, CODE." He defines "CONTACT" as "a physical channel and psychological connection between the addresser and the addressee, enabling both of them to enter and stay in communication." Both the addresser who encodes and the addressee who decodes need to understand the "CODE."

Noam Chomsky (1975, 83) elaborates on code, which he calls "the *code model*. A *code* is a system which pairs internal messages with external signals, thus enabling two information-processing devices (organisms or machines) to communicate." This explanation demonstrates how communication is related to community because the internal messages need to come together in community with external signals. He writes, "Communication is a process involving

two information-processing devices. One device modifies the physical environment of the other. As a result, the second device constructs representations similar to representations already stored in the first device." Chomsky (91) also notes that communication may be verbal or nonverbal with his preference for the "stronger" verbal.

Members of the American Communication Association gathering at their 1995 annual meeting composed an official definition of communication: "The field of communication focuses on how people use messages to generate meanings within and across various contexts, cultures, channels, and media" (Korn, Sherwyn and Boileau 2000, 40). The National Communication Association (2014) adopted the same definition. As with the definition of Sandman, Rubin, and Sachsman, the A.C.A.'s statement looks at communication as a process. Like that of Cartier and Harwood, the definition limits communication to messages. Korn, Sherwyn, and Boileau (2000) twice assessed the use and appropriateness of the A.C.A.'s definition: immediately after its adoption in 1995 and four years later. The results of their survey of members in 1999 showed that most members indicated that the definition aptly described the field, although some respondents remarked that the definition did not afford consideration of interactivity. Carey (2009, 19) looks to "the work of Weber, Durkheim, de Tocqueville…, Huizinga…, Kenneth Burke, Hugh Duncan, Adolf Portman, Thomas Kuhn, Peter Berger, and Clifford Geertz" as well as "those colleagues and descendants of Dewey in the Chicago School." "From such sources," writes Carey (19), "one can draw a definition of communication of disarming simplicity yet, I think, of some intellectual power and scope: communication is a symbolic process whereby reality is produced, maintained, repaired, and transformed."

Communication between two people or groups runs, or can run, in both directions. At one moment, person A is the sender and person B is the receiver. At the next moment, they can switch roles in this one-to-one communication. Mass communication has involved one-to-many communication, while social media has afforded many-to-many communication. Later chapters will expound on theories of communication of James Carey (2009), who looks at "communication as culture"—an approach that will help in the socio-cultural analysis of K.C.T.E.'s.

III. Technology: Definitions

A. *Technē* and "Technology"

Communication describes the type of technology under consideration. Definitions of technology come from scholarly writings from ancient Greco times to today. Although technology originates with the Greek *technē*, Everett Rogers (1986, 1) asserts, "The word *technology* comes from the Latin root *texere*, to weave or construct. So technology should not be limited just to the use of machines" and should be considered in its social and organizational contexts. Cartier and Harwood (1953, 75) encourage turning to philosophy, such as the philosophy of technology, for understanding definitions because "Basic definitions are the function of philosophy." "Definitions are not neutral," cautions philosopher of technology Don Ihde (1993, 47).

The definition of technology by Carl Mitcham (1994, 1), who is considered a recent expert in the field, remains short and to the point: "the making and using of artifacts." But the development of the term in the West is not that simple and begins more than twenty-three centuries in Greece. Aristotle (2003, 19) provides an early definition of technology with his

word *technē,* which refers to the production of crafts in his *Nichomachean Ethics*. Frederick Ferré (1995, 140) writes that *technē* is the "Greek term for arts or skills in general." The addition of *logos* to the end of *technē* produced "technology" as the study of the making of crafts, the study of "practical arts," the study of "useful arts," or the study of "applied science" (Schatzberg 2006, 487).

David Noble (1997, 93) credits Harvard professor and physician Jacob Bigelow both with "introducing a new word: 'technology'" when in the early nineteenth century Bigelow spoke about incorporating science and the "useful arts" and even with recommending technology's placement in the name of M.I.T. upon the university's founding.[39] English-speaking scholars employed *technology* in reference primarily to the teaching of the technical skills or arts. Eric Schatzberg (2006, 489) writes, "*Technology* was a field of study, not the object of study."

Schatzberg (2006, 503) maintains that American professor of economics and other social sciences Thorstein Veblen in the early twentieth century centered *technology* on the German *Technik* and elevated *technology* as a word and a concept. In his radical book *The Engineers and the Price System,* the iconoclastic Veblen (1921, 68) defines technology as "the state of industrial arts," the knowledge of which belongs to the community. Similar to how Aristotle's (2003, 19) *technē* considered "craft-knowledge"[40] because he relates *technē* and *epistemē*, Veblen's *technology* also covers knowledge. Schatzberg (2006, 511) insists that Veblen's work shows that the meaning of technology shifted in the early twentieth century "from a field of study to the object of study—that is, from the study of the industrial arts to the industrial arts themselves."

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[39] Schatzberg surmises that Bigelow's speech at M.I.T.'s opening in 1861, more than his 1829 lectures, popularized the term *technology* in America (Schatzberg 2006, 491).

[40] *epistemē* (Aristotle 2003, 19).

Technology then began to occupy both singular and plural forms. Combined with the addition of *technique* in the 1920's and later by Jacques Ellul (1964), the resulting number of meanings of *technology* and *technologies* multiplied. Of these many meanings, this research recommends Don Ihde's definition of technology "as the set of tools by which humans interact with their environment." For Ihde (1993, 45), the technology must include a material element, some uses, and "a relation between the technologies and the humans who use, design, make, or modify the technologies in question."

B. A Christian definition of technology

This research builds upon a Christian definition of technology. In *Responsible Technology: A Christian Perspective,* Stephen Monsma (1986) and others from the Calvin Center for Christian Scholarship create the following monotheistic definition in response to anthropological definitions of Melvin Kranzberg, Carroll W. Pursell, Jr., and Lewis Mumford, epistemological definitions of Mario Bunge and Robert Merrill, and sociological definitions of Jacques Ellul:

> In essence we can define technology as a distinct human cultural activity in which humans exercise freedom and responsibility in response to God by forming and transforming the natural creation, with the aid of tools and procedures, for practical ends or purposes. (Monsma 1986, 19)

Monsma's definition has some areas needing improvement. Precisely how it explains the production of communication technologies remains unclear. Somewhat cumbersome, as are many current definitions of technology, this definition lacks an epistemological understanding of technology, even though the word comes from the Greek words *technē* and *logos*, which implies

knowledge; for example, Frederick Ferré (1995, 140) defines technology as "practical implemented intelligence."

On the other hand, this definition has several positive aspects. First, this definition acknowledges a Wesleyan understanding of grace and responsibility: God offers humans grace, free will, and the opportunity to respond to those offerings (Cobb 1995). Second, "Natural creation" implies that God involves God's Self with the creation of nature. Philosopher Martin Heidegger in his classic text *The Question Concerning Technology* sees technology as a "provoking, setting-up disclosure of nature" (Mitcham 1994, 153). Technology helps nature to disclose its true identity. Third, by recognizing human free agency, Monsma's definition avoids the technological determinism advanced by Harold Innis (Baragar 1996) and Marshall McLuhan (Lundby 2013, 227) and denounced by Thorstein Veblen in his earlier works (Schatzberg, 505). Veblen (1919, 87) might agree with the "activity" and "practical" parts of the definition because his "machine technology" in *The Vested Interests and the State of Industrial Arts* includes actions.

Most importantly for this dissertation, a fourth positive aspect of Monsma's definition revolves around the adjective "cultural." Turning to anthropology, philosopher Don Ihde (1993, 49) argues that since the dawn of humanity there have been "*no human cultures that are pre-technological*"; in other words, technologies exist in every human culture. Clifford Christians (2002), approaching technology from a Christian vantage point, rejects studying of technology as only a neutral tool that may be used for good or evil. "Technology," Christians (2002, 38) writes, "is the distinct cultural activity in which human beings form and transform natural reality for practical ends." In many of his writings, Marshall McLuhan writes extensively about the

effects of technology, especially communication technologies, on culture. Neil Postman (1993) sees culture's surrendering to technology in what he calls "technopoly." James W. Carey (2009, 7) contends, "Technology, the hardest of material artifacts, is thoroughly cultural from the outset." Carey declares that we understand people and their use of communication technology only by examining their particular culture. Overall, the strengths of this definition by Stephen Monsma outweigh its weaknesses, especially when considering technology and religion.

C. Communication technologies

In *War and Peace in the Global Village*, Marshall McLuhan, Quentin Fiore, and Jerome Agel (1968) assert, "Members of every nation are connected by communication technology." But what is communication technology? The term obviously has referred to technologies—both analog and digital ones—used to communicate. Everett M. Rogers (1986, 2) broadens the definition to include more than only devices because he wants to contextualize the technology and its use: "*Communication technology* is the hardware equipment, organizational structures, and social values by which individuals collect, process, and exchange information with other individuals." Communication occurs, however, between more than only individual people. For example, organizations may occur with other groups. Rogers claims that communication technologies extend back to when written language was invented.

The list of communication technologies has ancient beginnings and continues to expand. This list begins in 3000 B.C. with Egyptian hieroglyphic writing (Fang 2012, 24). Walter Ong (2012, 77) declares, "More than any other single invention, writing has transformed human consciousness." Other communication technologies include parchment, paper, murals, stained glass windows, printing presses, telegraph, telephone, phonograph, vinyl records, audiotape,

film, still cameras, movie cameras, movie projectors, radio, television, cable TV systems, satellite TV systems, videotape, audio CD's, CD-ROM's, DVD's, copiers, typewriters, word-processors, computers (word-processing software, desktop-publishing software, desktop computers, laptop computers, and printers), UseNet, email, Internet (Web 1.0 and Web 2.0, especially social networks), digital games, serious digital games, virtual environments, virtual reality, augmented reality, cellular phones, and smart mobile phones.

This list could expand if behind-the-scenes technologies are included; for example, additional communication technologies would include those that have been employed to deliver the mail (e.g., steamboats, wagons, trains, and trucks), those that reproduce audio (e.g., microphones, recorders, amplifiers, speakers, Public Address systems, and even hearing aids), and those that project visual images (Vu-Graph projectors, film projectors, video projectors, and screens). This long list does not exhaust the enumeration of possible communication technologies.

D. Key communication technology events

Key communication technology events (K.C.T.E.) include the inventions of the alphabet, writing, printing, radio, television, and the Internet. The word *events* is used to emphasize that not only the communication technology itself is studied, but also, the technology's invention, its reception by the church leaders and members, and its impact on dogma, doctrine, and discipline are considered. Communication technology events are considered *key* if their use affected the faith.

IV. Introduction to theoretical frameworks

Theoretical frameworks will help with the analysis of the use of communication technologies, past and present, in an effort to determine how well the latest technologies of V.E.'s can communicate dimensions of the faith because frameworks provide structured analytical methods for understanding. Vincent A. Anfara, Jr., and Norma T. Mertz (2006, xxvii) "define theoretical frameworks as any empirical or quasi-empirical theory of social and/or psychological processes, at a variety of levels (e.g., grand, mid-range, and explanatory), that can be applied to the understanding of phenomena." Trent (n.d.) adds, "Theoretical frameworks are specific theories about aspects of human existence…, provide a particular perspective, or lens, through which to examine a topic…, and usually come from other disciplines"—a fact pertinent to this examination, which involves many disciplines.

This research selects two theoretical frameworks for the qualitative analysis of communication technologies: one from the two listed in *Communication as Culture* by James W. Carey (2009) and one from the five described in *Digital Religion: Understanding Religious Practice in New Media Worlds* by Heidi A. Campbell (2013). Appendix A describes all seven frameworks. These two books respectively address the historical approaches to studying communication and the present-day ways of examining digital religion—topics that reach back more than three millennia and look forward in order to understand the communication of faith.

The use of a pair of frameworks affords comparison of the two and provides a more-thorough analytical coverage of the topics. Gordon Lynch's (2012) "mediation of sacred forms" complements James Carey's (2009) "ritual view of communication" because both consider culture in the usage analysis of technologies that communicate the faith. The use of these

frameworks helps the analysis to extend beyond a study of the technologies themselves to socio-cultural analyses of how members of The U.M.C. and its historical precedents have utilized the technologies and how that use in turn has affected people of faith and sometimes the faith itself. This analysis will land on K.C.T.E.

V. Frameworks for socio-cultural analysis of K.C.E.T.

A. James Carey's "ritual view of communication"

Communication technologies can be analyzed from James Carey's (2009) "ritual view of communication" framework. The research employs this framework to analyze the effects of technologies that Methodist Christians and their predecessors have used to communicate the faith because the "ritual view" sees communication as a cultural phenomenon; in other words, this view is important to this project because it requires analyses of communication technologies with one eye's looking at cultural considerations and the other eye's looking at how "to represent an underlying order of things" (15), which faith describes. The research examines the relationship between K.C.T.E. and the faith of The U.M.C. and its Christian antecedents. This framework involves additional primary and secondary research about communication technologies of the past and their societal effects as communicators of the Christian faith. The "ritual view" with its emphasis on culture and representation guides the identification of the relationships between the technologies and the faith.

B. Gordon Lynch's "mediation of sacred forms"

This research will employ Gordon Lynch's (2012, 87) "mediation of sacred forms" as a theoretical framework for analyzing digital religion. Lynch (29) defines sacred forms as

"*specific, historically contingent, instances of the sacred.*" He applies this approach to representation and to media. Lundby (2013, 231) writes, "What is to be regarded as sacred is not just a matter of representation of certain objects but also of the reception of these representations." Lynch provides the following elaboration:

> All sacred forms are mediated. The interaction of symbol, thought, feeling, and action that characterizes sacred forms is possible only through media that give sacred forms material expression. Media enable communication about, and interaction with, those forms. Such media include images, sounds and material objects, spaces, institutional practices, and even the bodies of those who are taken, in some way, to embody or exemplify the sacred. (Lynch 2012, 87)

Such a description could appropriately apply to the representation of faith in a V.E., especially immersive V.R.

When applied to the communication of the United Methodist faith, Lynch's framework relates to Carey's "ritual view" first by building upon the relationships between technologies and the faith of The U.M.C. and its historical antecedents by looking at V.E.'s used for this purpose. Second, by employing a different, albeit also-socially-oriented, theoretical framework in order to analyze V.E.'s., Lynch's (2012, 87) "mediation of sacred forms" understanding complements Carey's "ritual view." The research employs Lynch's analytical framework because, of the three theoretical frameworks that Knut Lundby (2013, 234) highlights as being in the best "position to grasp changes in the overall picture of religion and new media," Lynch's approach is most well suited for analyzing V.E.'s, declares Lundby. The application of these frameworks will help to socio-culturally analyze key communication technology events.

VI. Plotting the analytical course

Rather than examine communication technologies themselves, Chapter 5 will analyze the events of their use. Crowley and Heyer (2016, x) contend, "The whole of human experience, therefore, seems to depend greatly upon the form or forms of communication that are most in ascendancy during any era." The use of papyrus, for instance, increased during New Testament times. Scholars of both testaments have referred to God's saving activity[41] in the vector of human history as *Heilsgeschichte*, the German term for Salvation History (Scott 1986, 48). Instead of existing as an abstract concept or an unknowable deity, the personal triune God has revealed Himself to humankind through human history. The term "Christ-event" refers to Christ's historical incarnation more than 2,000 years ago (Fitzmyer 1981, 630); therefore, one may speak of divine *events* in *history*. God's choosing to reveal Himself in historical events demonstrates the importance of events for Christian communication. Since New Testament times, culturally-conditioned Christian communities or societies have affirmed these events, whether God is claimed to have revealed Himself to one person or to hundreds of people. As a result K.C.T.E. warrant analysis from socio-cultural perspectives.

Chapter 5 becomes a trek along the K.C.T.E. pathway from the use of the alphabet to the use of I.V.E.'s. This 3,200-year sojourn consists of identification of K.C.T.E. along the way and their socio-cultural analyses. "The task of sociocultural analysis," contends James Wertsch (1998, 3), "is to understand how mental functioning is related to cultural, institutional, and historical context." The use of frameworks assists with this task. With this project frameworks

[41] The Hebrew Scriptures tell the stories of how God repeatedly and physically saved the Israelites, such as through the exodus from Egypt. The New Testament says that God through the Christ event makes possible eternal salvation. *Heilsgeschichte* includes both physical and spiritual dimensions of salvation.

will help to analyze how United Methodists, their Methodist predecessors, and earlier Christians have utilized these communication technologies to communicate the faith. James Carey's "ritual view of communication" will serve as a socio-cultural analytical framework for most of the trip; Gordon Lynch's "mediation of sacred forms," for the last, digital leg.

Since this research explores the communication of faith for the Church, a look into The U.M.C. will prove beneficial because the Church might already have frameworks that this project could apply. First, the late Professor Albert Outler of S.M.U. developed a four-part classification system to frame John Wesley's theological method for interpreting the Bible. Outler (1991) situated scripture, tradition, reason, and Christian experience into a Wesleyan "quadrilateral." The founder of Methodism appealed to these four subjects when interpreting scripture. They will form a framework for analysis.

Second, the current official hymnal (*U.M.H.* 1989) presents the ancient four-part order of worship. "The Basic Pattern of Worship" includes the "entrance, proclamation and response, thanksgiving and communion, and sending forth" (2). These four parts of the service will function as a worthwhile framework because worship remains as the primary corporate activity for United Methodists and other Christians. Both of these frameworks, which served in the analysis of the latest developments in V.E. research as described in Chapter 2, will be applied to the analysis of the applications as presented in Chapter 6. As a result of working through analytical frameworks, new sets of relationships will emerge between V.E.'s and the U.M. faith.

VII. Explanation of socio-cultural analysis of K.C.T.E.

As has been shown, many disciplines come together to inform the topic of V.E.'s as technologies for the communication of the faith of The U.M.C. and its historical antecedents.

While scholars might disagree about the meanings of some key terms, various theories, and needed applications, this investigation attempts to provide insight into how V.E.'s might serve as communication technologies of the faith. To accomplish this goal, the dissertation employs two of the already-described socio-cultural approaches—Carey's "ritual view of communication" and Lynch's "mediation of sacred forms"—to examine the technologies that U.M. Christians and their predecessors have used and are using to communicate their systems of religious belief.

A. Alphabet and writing

The socio-cultural analysis of K.C.T.E. needs to begin before the Common Era. As text-based religions, Judaism and Christianity respectively needed to have the Hebrew and Greek alphabets and writing in place so that they could proceed. Both world religions center around a text-based Bible, which starts with "In the beginning" and linearly points to the end of time. As the vector of communication technologies of faith aims toward V.E.'s, alphabets and writing enable most of the intervening technologies to will and to work.

Writing transforms words from those that are spoken and heard to those that are seen and read. Father Walter J. Ong (2012, 80) asserts "writing (especially alphabetic writing) is a technology, calling for the use of tools and other equipment." Marshall McLuhan (1962, 21) hypothesizes, "The interiorization of the technology of the phonetic alphabet translates man from the magical world of the ear to the neutral visual world." Words heard in oral cultures seemed to "live, and move, and have [their] being," said Epimenides (Luckert 1991, 30), within the seemingly-magical world of the human mind. McLuhan theorizes that words spoken and sounds heard in an oral culture demand a response from the hearer, while the viewer of written letters of the alphabet reads words that may be tabled, read at another time. Since the words of word-

based cultures allow people in society to define their reality and compose their thoughts, alphabets are needed to construct those words. The alphabet and writing would prove necessary for Judaism and Christianity to flourish as text-based religions.

The alphabet and writing began before the birth of the Christ, but these communication technology events helped to lay the requisite foundation for the Christian faith. After the Israelites worked as slaves in Egypt, they exited Pharaoh's country during the exodus "within the middle part of the 13th century B.C." (Kitchen 1992, 703). The Torah says that Moses left the encamped Israelites and walked up the mountain, where God spoke to him. Moses returned with two stone tablets, on which he said that none other than the finger of God had inscribed the words of the covenant (Exodus 31:18, Deuteronomy 9:10).

Those tablets not only functioned as physical media between YHWH and the cultic communities, but also, represented the whole Mosaic Law—including the 613 commandments, the entire Torah, and even all of the Hebrew Scriptures. More broadly conceived, the tablets function as more than a synecdoche[42] and a symbol. They *act as a mental model signifying access to the divine: Moses vicariously entered the LORD's presence on behalf of the Israelites.* When Jewish and Christian worshippers form mental concepts of his meeting God and his returning down the mountain with the engraved Ten Commandments, those two tablets can become virtual for them because the worshippers can mentally place themselves "almost there" (Denegri-Knott and Molesworth 2013, 2) in the biblical scene in particular and can more abstractly see *themselves* as recipients of the benefits of divine encounter of Moses. As a result

[42] Seto (1999, 92) explains this figure of speech: "Traditionally, synecdoche is defined as a relation in which a part stands as a whole or a whole stands for a part...."

the tablets in this mental model ultimately turn into a virtual portal that opens into God's presence.

Later in the thirteenth century, the civilization of Phoenicia grew to become an economic power. On the Mediterranean coast, far north of Egypt, just north of postmodern-day Israel, sits Lebanon. But, for hundreds of years after 1200 B.C., Lebanon was known as Phoenicia. Surrounded by *military* empires, Phoenicia became a world *economic* power. An action that helped the Phoenicians become such an economic force was that they promoted one of the world's first alphabets. The ability to write enabled the Phoenicians to record business transactions. Christine Pawliuk (2001) contends, "As widespread traders, the Phoenicians were a people desperately in need of an alphabet." The 22-letter Phoenician alphabet led to the 22-letter Hebrew alphabet around 1000 B.C. The Hebrew alphabet, like the Phoenician alphabet, consisted of only consonants. A half-a-century later (Fang 2012, 24), the Hebrew people began to take the stories of their faith, which each generation had *told* to the next one, and to use the new Hebrew language to *write* down those stories on scrolls of parchment or papyrus. In other words, the authors of the Hebrew Scriptures used the in-place communication technology of written words to write scripture.

The Phoenician alphabet led not only to the Hebrew alphabet, but also, later to the Greek alphabet. Around the year 800 B.C., the Greeks added vowels to the Phoenician alphabet and thus improved it to create a Greek alphabet. McLuhan (1962, 61) argues, "The world of the Greeks illustrates why visual appearances cannot interest a people before the interiorization of alphabetic technology." The Greeks crafted poetry and chiseled sculptures. They wrote about philosophy, history, math, and science. The thinking about, and teaching of, such abstract

subjects require the technology of the alphabet for their development, comprehension, and communication to others, who need to know the alphabet in order to receive and understand such communication. Greeks living in the first and second centuries thus needed to know the alphabet and writing in order to understand and accept abstract theological concepts of the new Christian religion.

Alphabets and writing have afforded the virtualization of reality. While novelists have written fiction, other authors have put reed pens to papyrus, ink pens to paper, and fingers to keyboards to write words that they thought described their perceived reality. Their end product has not equated with reality or even perceived reality because words do not equal reality; rather, words describe reality or the authors' version of reality. The words that the authors have written thus become a virtual form of reality. Marie-Laure Ryan (2001, 2015) sees "narrative as virtual reality." Authors also have augmented reality by writing words that describe more than what exists. Twenty-first-century A.R. and V.R. continue the trajectory of writing by extending the human sense of reality. Like written words V.E.'s can illustrate the thoughts and dreams of their creators and depict worlds of endless possibilities, such as those envisioned by nineteenth-century poet Emily Dickinson (1999), who enthusiastically writes, "I dwell in Possibility – A fairer House than Prose – More numerous of Windows – Superior – for Doors."

Writing expanded the writer's/reader's/hearer's sense of self. Writing allowed people to write about themselves. Since people then could read or hear about other people, one person could realize that he or she differed from the writer. As a result the idea of "the individual" grew as literacy slowly increased in such society (Parry 2009), although the high cost and effort necessary to make copies of scrolls that people could read limited access to texts. "The

individual" also would become larger than life as a virtualized one, abstracted from the human body. Pierre Lévy (1998, 29) would agree that such a virtualized self exists abstracted from the body, with "temporal unity [but] without spatial unity," meaning that it co-exists in time with the human body but does not occupy the same physical location because the virtualized has no physical location.

Writing's creation of the virtualized self will prove necessary for the invention of V.E.'s. The writer/reader/hearer could not only consider the virtualized self as a sovereign ontological reality, but also, interact with it. For instance, he or she could think about it, empathetically look at its point of view, and even ask it questions. Although it could not answer them, he or she could conjecture what its answers might be. The separated virtualized self, freed for endless possibilities, could do things unimaginable for the physical self. V.E.'s, especially V.R., on the other hand, can do all that writing can do and more, such as answer questions, respond to its user's input, show what writing describes, and produce the sounds that writing mentions or the reader infers. Unfortunately, in the hands of the Greek philosophers the creation of the virtualized self would lead to a dualism of the virtual versus the physical.

Not every Greek scholar appreciated the invention of writing. Speaking is superior to writing, insists Socrates in Plato's "Phaedrus." Written in the fourth-century B.C., "Phaedrus," one of *The Dialogues of Plato,* tells of the conversation between Plato's teacher Socrates and a young man named Phaedrus. Socrates worried that people would forget information if they wrote it. He employed an Egyptian tale to explain this problem of forgetfulness. Socrates told Phaedrus the tale of the god Theuth, whom the Egyptians believed discovered written letters. Another Egyptian god, Ammon told Theuth, "this discovery of yours will create forgetfulness in

the learners' souls, because they will not use their memories; they will trust to external written characters and not remember of themselves" (Plato 1892, 275).[43] Considered the first media critic (Parry 2009), Plato saw the key communication technology of writing as inferior to oration.

Oral transmission of the biblical story came with several benefits. The one-to-one or one-to-a-few transmission meant that the sender remained in close proximity to the receivers. He or she could see his or her audience. If the look on the faces of receivers indicated that they did not understand the message, the sender could make the adjustments necessary so that they could. The sender might have known the names of the receivers and could call them by name. Even if the sender did not know their names, oral transmission still counted as an intimate experience. Intimacy would build trust between sender and receiver. Jesus never wrote any known scripture; He *spoke* to His audiences. In the F.G.'s farewell discourse in the intimate setting of the Upper Room on Maundy Thursday, for example, Jesus *tells* the worried Eleven,[44] "And now I have told you this before it occurs, so that when it does occur, you may believe" (John 14:29).

The personal nature of oral transmission would assist with recall; for example, on the first Easter Sunday, "two men in dazzling clothes" (Luke 24:4) told the women, "Remember how [Jesus] told you, while he was still in Galilee, that the Son of Man must be handed over to sinners, and be crucified, and on the third day rise again.' Then they remembered his words" (Luke 24:6-8). Nineteen hundred years later, radio would rise as a seemingly-intimate communication technology as listeners would hear one-to-many broadcasts of the voice of

[43] Plato's words especially apply in the 21st-century, when people "trust … external written characters" by entering phone numbers into the address book of their cell phones rather than remember phone numbers.

[44] The moniker "the Twelve" technically refers to the original twelve disciples, sometimes called the twelve apostles. After Judas left the Upper Room and before Matthias was chosen to take his place (Acts 1:26), eleven original disciples remained. The broad term "disciples" encompasses all women and men who follow and learn from Jesus.

sender, who seemed to be speaking intimately to the listener, especially during the dark of night. But oral transmission remains as more intimate and personal than radio because the speaker occupied the same physical space, the sender and receiver could usually see and hear one another, the sender and receiver often developed personal relationships with each other, and the sender could tailor and adjust the message for the specific audience.

The K.C.T.E. of the invention and use of writing occurred over centuries and slowly displaced oral transmission. The Greek alphabet was in place in the first century during the birth of Christianity, but the stories about Christ circulated orally. The fact that people relied on oral transmission rather than written communication does not lessen the truthfulness of the content, because the people of biblical times had to rely on speaking. Writing remained widely unavailable or unaffordable to the average person a millennium and a half before the advent of the printing press. Thus, they ordered the information in ways that they could remember, such as in parables and stories, and tried to accurately tell others, who listened intently. They remembered well because the oral transmission required that they do so. Socrates probably would have concurred.

When the apostle Paul penned his letters to Christian communities, writings that would become the first books of the New Testament, he wrote them using the Greek alphabet. Paul and other authors wrote their letters to various congregations located in nations surrounding the Mediterranean Sea. The leaders of those house churches read aloud those letters to their congregations. Referring to the middle of the first century, Berryman (1991, 65) asserts, "Writing and receiving a letter were much more dramatic than they are today. They were media events." The four evangelists, especially the writer of the Gospel according to John, realized that

those people who witnessed Jesus of Nazareth and those people's children were dying and that Christ might not return in the near future as they expected. Their deaths and the delayed *Parousia*[45] necessitated the writing of the gospels for posterity to know the message of Jesus of Nazareth and what He did. The F.G. concludes, "This is the disciple who is testifying to these things and has written them, and we know that his testimony is true. But there are also many other things that Jesus did; if every one of them were written down, I suppose that the world itself could not contain the books that would be written" (John 20:24-15).

James Carey's (2009, 27-28) "transmission view of communication" would say that the dissemination of the gospel to distant lands in the first century would require written texts, but his "ritual view of communication" sees the social changes accompanying the dawn of writing. The Hebrew term for "word," *dabar* also means "event" or "active word event" and refers to the event of words being spoken (Ong 2012, 74; Preuus 1996, 81). When God communicates in both testaments, God primarily speaks. Augustine (2014, 32) worries that spoken words "cease to exist as soon as they come into contact with the air." Asserting that the "audience" disappears with the move from hearing spoken words to reading written words, Ong (2012, 73) writes, "There is no collective noun or concept for readers corresponding to 'audience.'" Since New Testament times, however, liturgical practice has consisted of the reading aloud of the written text to the congregation. This oral proclamation of the written word has promoted unity among the congregation who hear because the hearers collectively listen to such synchronous communication.

Despite the fact that few people, including Christians, in the first-and-second-centuries

[45] *Parousia* is the Greek word for the second coming of Christ.

could read any book, scholars call early Christianity a "bookish religion" (Gamble 2010). In the ancient world, explains Harry Gamble, "The forces and institutions required to foster and sustain widespread literacy were simply absent" (29). Like Gamble, Larry Hurtado (2016) also sees Christianity as a "bookish religion" and acknowledges the low literacy rates, but Hurtado goes beyond Gamble in differentiating Christianity from the pagan religions of the Roman world. First, Christians heard Biblical texts read aloud in the context of corporate worship. Features of manuscript copies of Christian texts assisted liturgists and other readers with this task. Hurtado notices, "these features, which are not typical of Roman-era copies of literary texts, include elementary punctuation, enlarged spaces to signal sense units such as sentences and paragraphs, slightly enlarged first initial letters of each line, and other devices as well, such as generous-sized lettering and generous spacing between lines of text" (108-109).

Second, the comparatively-large volume of Christian writings supports the bookish moniker for Christianity. The count of individual Christian texts stands at more than two hundred in just the first three centuries, while each text contains more words than do other writings of the day. Hurtado elaborates, "Ordinary ancient papyrus letters of the Greco-Roman era (and about 14,000 survive) averaged 87 words each" (120). The word-counts of the books of the New Testament, on the other hand, dwarf the word-counts of such letters. For example, the Apostle Paul wrote an aggregate of 11,255 Greek words in his two canonical letters to the Corinthians. The writing genres of some of the New Testament books differ from those of the pagan Greco-Roman world and even those of the Old Testament. Hurtado points to the prophecies of the Book of Revelation, which the Johannine author purports to have received in *written* form rather than by the Hebrew oracle "Thus saith the LORD" (II Samuel 7:5, K.J.V.).

"Revelation is, thus," writes Hurtado, "a particularly strong witness to the place of 'textuality' and the 'bookishness' of early Christianity" (126).

Third, early Christians invested much time and effort in copying and distributing texts. For example, E. Randolph Richards (2004, 165) estimates that a scribe would have needed 10.7 hours spread over two days to copy the 908 lines of I Corinthians. Paul addressed his letters to churches in specific locales, such as those in Corinth, Greece, and Rome, Italy. Although some New Testament letters circulated among various congregations, Father Raymond Brown (1997, 627) discredits the idea of seventeenth-century Archbishop Ussher and others that the church's name on the letter in the canonical Bible indicates the last congregation, such as at Ephesus, to receive the manuscript. For those churches to receive letters, a scribe had to work for a few days to handwrite each one and other Christians had to either hand-deliver the letters or personally pay for their dissemination because no public postal service existed. Hurtado surmises, "How much time and resources early churches devoted to communicating with one another … certainly shows that Christians thought of themselves as connected with other believers translocally and that they thought it crucial to share texts with one another as constitutive of their faith" (132).

And a fourth piece of evidence supporting the bookishness of Christianity focuses on "physical and visual distinctives." "In the larger Roman cultural environment of the first few centuries AD," contends Hurtado, "the overwhelmingly preferred bookform for literary texts was the bookroll, or scroll" (133). He estimates that in the second century ninety-five percent of non-Christian texts came on scrolls, while seventy-five percent of Christian texts appeared on codices. Eric Turner (2011) draws the following description of the codex in comparison to the bookroll:

> In this form of book the sheets of papyrus or of cut and treated skin [e.g., parchment] are not pasted or stitched together to form a long roll but are superimposed on each other, folded across the middle, and then secured by stitching so that they open into pages. The outside pages can be protected by binding covers and the whole ensemble then forms a durable, sturdy book, easy to store, easy to open and refer to, easy to carry about, and withal capacious since it uses both sides of the writing material. (1)

Early Christians preferred codices, especially for highly-valued texts, namely scriptures, and benefitted a codex's being "easy to store, easy to open and refer to, easy to carry about, and withal capacious" (1), benefits that have lasted for two millennia, even up to the current crossfade of print culture into digital culture (Parry 2009). Turner and Hurtado describe the codices of humans, but Wellmon (2015, 75) turns to Augustine's argument about the reading of humans and angels: "Unlike their mortal kin, angels read without mediation." In *Confessions*, Augustine (1961a, 13:15) knows about angels because he believes that God told him about them: "Their codex is never closed, nor is their book ever folded shut" (Wellmon 2015, 75).[46] The codex they read is God Himself. The lives of the angels that they live before God are ever unfolding in an ever-expanding and adaptive system.

Another visual distinctive for Hurtado, the *nomina sacra* as shown in Appendix B "refers to a Christian scribal practice of writing certain words [in Greek] in a distinctive abbreviated way, usually the first and final letters of the word, yielding a 'contracted' form of it, and with a horizontal stroke placed over this abbreviated form" (Hurtado 2016, 138). Since public readers of Christian texts containing such abbreviations pronounced the full words instead of the abbreviations, "the *nomina sacra* were exclusively *visual* phenomena," i.e., seen by only the reader, and "attest the emergence of an identifiable early Christian 'visual culture' and, indeed,

[46] R. S. Pine-Coffin (Augustine 1961a, 321) translates this sentence as, "The book they shall read shall not be closed. For them the scroll shall not be furled."

may well be the earliest evidence of this" (140-141). Textual features to aid in the public reading of scripture, the copious amount of Christian writings in both numbers of documents and word counts of each one, the large amount of time, effort, and resources expended in the copying and distributing of texts, and "physical and visual distinctives" such as the development of the codex and the creation and use of the *nomina sucra* all not only differentiate Christian writing from that of the Roman world, but also, support the "bookishness" of Christianity. Writers of the books of the Bible and of other early Christian texts communicated the faith through their writing.

The oral and the written combined as these two transmission systems overlapped in earliest Christianity. New Testament authors, especially the writers of the four gospels, incorporated orally-circulating material in their texts. The writer of the Second Letter to the Thessalonians (2:15), for example, passionately encouraged the recipients to recall the message no matter which transmission system was used: "So then, brothers and sisters, stand firm and hold fast to the traditions that you were taught by us, either by word of mouth or by our letter." Today's list of 39 Old Testament books and 27 New Testaments books first appeared in the fourth century. The medium changed from the scrolls to the much-easier-to-access codices during the first and second centuries (Dykes 2013).

Early Christians responded to the development and use of the codex by thinking of the biblical canon, not as separate scrolls, but as a unit (Johnson 1993). Considering the Bible as unit helped effect unity among Christians because they all could point to a common text. As the thirteen-century Aquinas and the eighteenth-century Wesley would identify themselves as *homo unius libri,* a "man of one book" (Outler 1975, 9), Christians since the establishment of the biblical canon could refer to themselves as *populo unius libri*, the people of one book. The

centralized reference of the written Bible—full of material that the first Christians had passed on via personal and intimate oral transmission—and the incredible story that the Bible tells combined to produce a lasting belief system.

For the story to continue, Christians had to have had enough Holy Spirit-inspired passion to keep proclaiming the Gospel despite government persecution. As described in detail in Chapter 2, the Roman government viewed first-century Christianity as a subset of Judaism. Jewish leaders had secured with the Romans an arrangement in which they released the Jews from the requirement to worship Caesar as a god. Christians enjoyed their inclusion in this variance; however, toward the end of the first century as Christianity differentiated itself from Judaism, the Romans forced the Christians to comply (Sloyan 1988, 1). Many Christians passionately witnessed to their faith. From the Greek word for "witness," *martus*, comes the English word "martyr." The martyrs died for their "eye-and-ear witnessing" (Strong, Swanson, and Kohlenberger 2002, #3144). Against such barbaric persecution, impassioned Christians persisted. They continued to communicate the faith to the next generation. Rome fell in the fifth century, while Christianity lives to this day.

This passion among Christians acted as the cement that unified and forwarded the belief into the virtual. Such passion comes from God the Holy Spirit, but Christians have had to open, and have opened, their hearts to allow the working of the Spirit. Passion surrounds the biblical corpus because the Holy Spirit inspired it. Inspiration means that the Spirit breathed His life-giving *Spirit into* it. God the Holy Spirit inspired the biblical writers when they wrote their texts and has inspired people when they have read the Bible or heard the Bible read, such as in worship. Benefactors' surprising the needy with financial giving usually results in the needy's

thanking God for the provision. God receives these thanks, thanks which God might not have otherwise been given. In a similar dynamic, *the human creation of the communication technology of the Spirit-breathed Bible as a book produced a medium for the Spirit to have inspired billions of people, people who might not have otherwise been inspired by God*. Looking at the dynamic from God's perspective shows the Spirit's having a highly-effective technology for communicating with people thanks to the creation of a unified Bible.

As a mental concept, the Bible becomes virtual in several ways. First, as the two stone tablets divinely inscribed with the Ten Commandments have become virtual in a mental model for Jews and some Christians, the Christian Bible as a unit has turned virtual in a concept for Christians, whom the Holy Spirit has inspired as they have read the Bible or heard it read. The philosophy of Gilles Deleuze in *Difference and Repetition* helps with "the geometric proof" leading to this project's claim of the Bible's becoming virtual. "The virtual," asserts Deleuze (1994, 211), "is the characteristic state of Ideas: it is on the basis of [the virtual's] reality that existence is produced, in accordance with a time and a space immanent in the Idea." Since the purpose of religion is to provide meaning to life, ideas must play important roles in a religion's central written text. While the Bible consists of various forms of literature—such as history, law, poetry, Gospel, letter, and apocalypse; ideas, especially important ideas (Metzger and Coogan 2001), appear throughout the biblical writings. Applying the above philosophy of Deleuze results in viewing the Bible as virtual because the virtual "is the characteristic state of Ideas" and important ideas fill its pages, from the idea of Creation in the Book of Genesis to the idea of the advent of a new heaven and a new earth in the Book of Revelation.

Second, the Bible becomes thought of as virtual also by understanding the etymological connection between "virtual" and "virtue." Both words have roots in the Latin *virtus* (Salem 2017) and the Greek *dunamis* (Strong, Swanson, and Kohlenberger 2002, #1411), both of which mean power or strength. The writers of the 1611 King James Version of the Bible, for example, translated *dunamis* as "virtue" in Luke 6:19: "And the whole multitude sought to touch [Jesus]: for there went **virtue** out of him, and healed them all." Rob Shields (2003, 3) observes, "As an adjective, a 'virtual person' was [during medieval times] what we might today call a morally virtuous or good person: a person whose *actual* existence reflected or testified to a moral and ethical *ideal*." Put another way, a "virtual person" displays empowered virtues. For Christians and even most of Western society, those virtues have come from the Bible (Arthur 2003, 57). The Bible as a book of virtues, therefore, could become thought of as virtual.

And third, with the definition of virtual as "almost there" (Shields 2003, 4), the Bible may conceptually become virtual. For example, some Christians over the centuries have referred to the Bible as the Word of God, even though the prologue to the F.G. (John 1:1 and 1:14) acknowledges that "the Word was God" and that "the Word became flesh and lived among us." Such a position can lead to idolatry when Christians worship the Bible. While valuing the Bible, United Methodists[47] are less comfortable equating the Word of God with the Bible and more comfortable with the dogma of "Article IV of The Confession of Faith" (*Book of Discipline* 2016, ¶ 104, 73), that is, "We believe that the Holy Bible, Old and New Testaments, reveals the Word of God so far as it is necessary for our salvation." The Bible *reveals*, rather than *is tantamount to*, the Word of God. But with either position, God the Holy Spirit speaks through

[47] Some U.M. clergy and laity value the Bible more highly than do other United Methodists.

scripture. By reading the Bible or hearing the Bible read, attentive Christians can place themselves "almost there" in the biblical narrative. But looking more deeply at this point with an eye toward the virtual uncovers the reason: the biblical characters, scenes, stories, and even ideas are "almost there" in front of the reader by their coming to the reader instead of by his or her going to them. Passionately pursuing the concept of the virtual leads to the reader's opening his or her mind to the possibility of the text's approaching him or her. Thus, the Bible can be thought of as "almost there," that is, virtual.

The written Bible's status as unit since at least the fourth century has provided a common text and a central reference for Christians from across the theological spectrum. Christians believe that the Bible is the only book with which the Author is always present; therefore, God the Holy Spirit can impart new, timely revelations to readers and hearers with each reading or proclamation. Passionate Christians thus have championed the regular reading of the Bible and its worldwide distribution. Without their passion the Bible eventually would just sit on coffee tables in living rooms. With their passion Christians from various churches and denominations could rally around a common biblical canon and push toward raising the importance of the Bible for everyone to read. Christians of different faiths could learn that they have more common beliefs in the Bible than they believed that they did. The Bible's conceptually becoming virtual could effect an abstracted unity among Christians, as Jesus prayed "I ask … on behalf of those who will believe in me through their word, that they all may be one" (John 17:20-21). Holy Spirit inspired passion could enable and surround this process of virtualization. *Considered abstractly, the virtual then is a seeking, an aspiring to an abstracted unity*. As the Bible gave

God a medium for communication with those created *imago Dei* that God would not have had if humans had not made it, *the Bible considered virtually is a spiritual form enabled by technology*.

B. Stained glass windows

1. The research

Although Christians have read written words and have heard written words spoken, visual arts, primarily stained glass windows, have communicated the faith in ways that other communication technologies have not. Visual arts have included media from murals, stained glass windows, icons, frescoes, paintings, drawings, sculpture, and even architecture to paraments,[48] banners, posters, Power Point slides, environmental projection, and bulletin covers; however, this section focuses its gaze on stained glass windows.

The key communication technology event of the invention and continuing creation of stained glass windows has had a long history with socio-cultural implications. While the invention of colored glass predates the church, artisans began creating stained glass windows during medieval times, when church buildings became the first edifices to receive them. Their illumination came from radiant rather than reflected light. Many Medieval Europeans could not read; therefore, the windows served as a communication technology that visually depicted theological concepts and brought biblical stories to life.

Unlike the creation of many other communication technologies and like the creation of some works of art, the making of stained glass windows involved a corporate process that required commissioning. The patrons, the artisans, the clergy, the monks, the nobility, the

[48] Paraments include pulpit scarves, fabric bookmarks for Bibles, communion table coverings, and stoles and robes that worship leaders can wear.

architects, the builders, and others worked together in the enterprise. Each party could affect the outcome. Raguin (2013, 29) contends that the windows installed in the great cathedrals of the Western world proclaim "the social status of those who commissioned the windows" and should be viewed "as artistic expressions vital to the societies that produced them." Current and future congregants could see two stories in a window: the biblical, theological, or other story that the artist crafted in stained glass and the story of the window's commissioning. Parishioners could look at the windows and know which wealthy families commissioned them.

European society changed in the fifteenth-and-sixteenth centuries with the rise of both the merchant class and the parish church. The center of a village's social, legal, artistic, and religious life, the parish church received financial support from farmers, craftsmen, and shop owners. Still, most members of the rural and urban working classes could not read. They could see the visual images, but the subject of the imagery changed. Raguin (2013, 45) notes, "In parish churches, stained glass imagery was far less likely [than the glass imagery of earlier cathedrals] to represent abstract theological principles. Instead, it reflected what was important for the laity: a direct, emotional link to God and the saints." To those who highly valued the Communion of Saints in their lives, the depiction of the saints in stained glass provided a weekly, if not daily, visual representation of the saints with whom the laity could communicate; for example, depictions of saints as warm, caring figures helped the laity consider them as approachable. Representation of their own patron saint allowed them to pray for the saint's intercession in a very tangible way. As a result the medium played a role in people's Christian beliefs and their personal piety. Appendix C details the windows famously described by the twelfth-century Abbot Suger of the Abbey of St. Denis in France.

Laura Hollengreen (2015) of the College of Architecture at the Georgia Institute of Technology contends that Christian cathedrals exemplify immersive communication technologies. While buildings are immersive, the architecture of medieval cathedrals, especially with stained glass windows, communicated the Christian faith to those who crossed their thresholds. For the building interiors, the architects and artists of Byzantine basilicas and Romanesque and Gothic cathedrals utilized stained glass windows, statuary, crosses, soaring wall heights, varying room sizes, floor plans, floor patterns, and other architectural elements to tell without words the Christian faith. The windows of the French Gothic Chartres Cathedral southwest of Paris provide primary and secondary scenes, i.e., the story depicted in one window continues in another. Since architects of Romanesque cathedrals placed the windows flush with the exterior of the building, people worshipping in the nave could determine the thickness of the walls. Architects of Gothic cathedrals such as Notre-Dame Cathedral brought the stained glass windows and thus their messages closer to the worshippers by installing the windows flush with the interior walls.

Hollengreen said that light plays an important role in church architecture. Christians have seen light as having a theology, such as the contention of the author of First John that "God is light" (I John 1:5); therefore, church architects may pay attention to how light impacts a worship space. Sunlight backlights stained glass windows and shines through clear glass. Asking, "How to evoke the divine through light?" Hollengreen (2015) observes that sometimes a negative dialectic results from the revelation of light in the darkness, such as in the shadows of an interior. This dialectic illustrates John 9:5, in which Jesus announces, "As long as I am in the world, I am the light of the world." Hollengreen highlights the Greek Orthodox Cathedral of the

Annunciation in Atlanta as having clear-glass windows that surround the shape of the icons. As worshippers look at the icons written[49] on the walls of the sanctuary, they can look to the sides and top of each icon and see light coming through the clear glass; moreover, they can see nature through those windows.

In the early twentieth century, the sanctuary of Travis Street Methodist Episcopal Church, South, in Sherman, Texas, contained a stained glass window depicting Jesus with boys and girls gathered around him. The scene resembles what Matthew 19:14 depicts: "But Jesus said, 'Suffer little children, and forbid them not, to come unto me: for of such is the kingdom of heaven.'" The artist in Germany painted the last part of that verse across the bottom of the window. However, a social-cultural analysis of the window reveals that on the bodies of the children the artist painted the faces of the actual children of the family who commissioned the window in the early twentieth century. In the late 1800's, Dr. Hugh L. and Laura Hall had three daughters: Laurine, Ilta, and Mertis. The Halls commissioned the window for the 1910 sanctuary in memory of the girls. Referring to the painting of the children in the window, Lois Sanders Gunn (1993, 117) contends, "Faces shown in full view were from actual photographs of the latter two [daughters], who died in 1887 of diphtheria within a few days of each other."

The Hall family did more than remember their late children. They had the artist place those children in a biblical narrative, one referencing the kingdom of heaven. As Methodist Christians they evidently believed that the souls of Laurine, Ilta, and Mertis resided in heaven. The children in the window occupy not only a place in the kingdom of heaven, but also, the prime spot of the kingdom, i.e., on the knee of Jesus. In 1955 when the church moved into a

[49] Icons are written rather than painted.

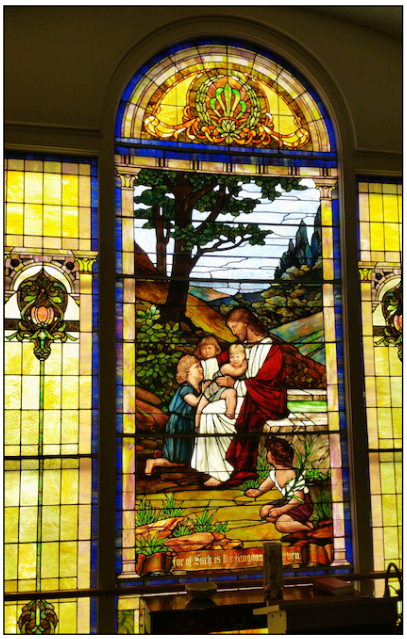

Figure 5.1. The Hall family stained glass window in the parlor of the First U.M.C. of Sherman, Texas. Photographs by Kelly Barker (2014). Used with permission.

new, larger building and changed their name, they had the window relocated from the south wall of the sanctuary of Travis Street Methodist Episcopal Church, South, to the west wall of the parlor of First Methodist Church of Sherman. Worshippers in the old sanctuary and later parishioners in the parlor could see a communication technology's showing that the Hall daughters had a close relationship with Jesus Christ, i.e., they resembled the children whom Jesus taught and loved. By having the artist paint the faces of their daughters on the children seated around Jesus and write "for of such is the kingdom of heaven," those parents showed that *children like theirs* populate God's kingdom.

The location of stained glass windows in a church building, primarily in the sanctuary, affects the social-cultural importance of this communication technology. Following their Roman Catholic and Anglican predecessors, Methodists have referred to their primary worship space as the *sanctuary.* Some other Protestant traditions call the room the *auditorium* because they emphasize the audio of the Word proclaimed. John Wesley and other Methodists who have championed holiness have wanted to make room for the holy activity of God in corporate worship. They thus have kept the nomenclature *sanctuary*, which allows for the auditory, the visual, and the dramatic. The locus of stained glass windows in what Methodists and other Christians consider sacred space heightens the affective atmosphere of the worship service; for example, a worshipper can respond to the beauty of a window depicting a nativity scene with awe, wonderment, or tears of appreciation for what the window communicates to its viewers. Such emotion in one parishioner can spread to others worshippers in a ripple effect.

Anne F. Harris, associate professor of art history and director of the Women's Studies Program at the U.M. DePauw University, approaches stained glass windows from the directions

of literature and Heideggerian philosophy. As Marie-Laure Ryan (2015) compares V.R. to narrative, Harris (2015) compares stained glass windows to literature. She identifies two words, *ductus*, from which comes "inductive" and "deductive," and *varietas,* from which comes "varieties," as affecting stained glass window and literary interpretations. "In the context of stained glass," Harris (2015, 4) writes, "[*ductus*] speaks to how the medium leads the eye through its visual field."

She argues that late medieval poets such as Geoffrey Chaucer could take advantage of difficult-to-interpret window scenes by signaling a variety of "interpretive possibilities to their audiences." Relying on the work of Mary Carruthers, Harris (5) writes, "In the monastic setting, *varietas* relieves *taedium*—as stained glass lightens the heavy surface of stone, and as literary uses of stained glass disrupt but enliven narrative flow in texts." For stained glass windows, the varieties of interpretations and visual paths through the windows could benefit the viewer's faith development over the centuries and even today because theologians invite Christians to live with the questions, consider various possible answers, and not settle for only the literal and obvious interpretations.

Harris (2008) turns to the phenomenology of Martin Heidegger to explain how medieval worshipers understood the windows within the architectural context of a nave/sanctuary, the liturgical context of the cathedral's life, and even the transactional contexts of their lives and livelihoods. For example, she locates in the windows of Chartres Cathedral a painted glass panel depicting shoemakers' lifting another window from the relics. In other words, the cathedral's window shows the representation of another window, which the cobblers handle. Harris (8) surmises, "In the hands of the shoemakers, the stained glass window signaled the participation of

these merchants in the liturgical life of the cathedral." Furthermore, Harris furnishes the following explanation:

> Heidegger's emphasis on the phenomenology of things (the "thingness" of things), on how materiality as it is experienced and perceived can be meaningful, is very productive for understanding the medieval emphasis on materiality…. A new art history of stained glass can be written when it is perceived as a thing, not a representational surface. This new (old) way of seeing stained glass embeds it more deeply into its architectural frame, and implicates it more profoundly in the activities of church space. (Harris 2008, 8-9)

As a result of looking at the window as a thing itself, Anne Harris (6) argues that medieval church leaders related the windows to the liturgical rituals orchestrated within the worship service or mass. If this liturgical relationship existed during the Medieval period and exists today, then stained glass windows do more than provide worshipful ambience and canvases for representational, or even abstract, art; they raise the importance of, and complement, the liturgy, not to mention teach the work of the people[50] to the people. Moreover, her Heideggerian argument supports Bryan Feille's (1994) claim that, if a discrepancy exists between the architectural style of the worship space and the style of worship, that the "architecture wins," i.e., the sanctuary's architecture overpowers the style of worship occurring within that space; therefore, addressing stained glass windows in a possible V.E. of a worship service would need to take into account the liturgy and its relationship to the windows. Such a V.E. would need to communicate the faith dimensions of aesthetics, architecture, Bible, Christian history, practice, religious belief, and especially worship.

Examining Heidegger's phenomenology of things raises interesting questions regarding the virtual. How does the becoming virtual of a stained glass window or the Bible, for instance,

[50] Liturgy is the work of the people. James F. White (1990, 31) explains, "Its origin is the Greek *leitourgía*, composed from the words for work (*érgon*) and people (*laós*)."

affect its "thingness"? Is each one less of a thing for having turned virtual? Yes, thinking that the virtual means "almost there" necessitates devaluing the "thingness" of the item. An "almost stained glass window" and an "almost Bible" ontologically would hold less value as things than would a "stained glass window" and a "Bible." On the other hand, thinking with Crampes and Ranwez (1999) that the virtual exists "in a state of possibility" destabilizes the measure of "thingness." The thing could become more a thing or less of a thing. Heidegger's acorn could grow into a mighty oak tree or could die. Since the virtual also "is what we imagine" according to Denegri-Knott and Molesworth (2013, 2), the virtual could greatly increase in value as imagination grows. Therefore, a virtual stained glass window as a thing could gain in worth in an imaginative mind for the virtual is "both real and ideal and entwined with our perception of reality."

U.M. congregations still incorporate stained glass windows into their designs for new buildings so that the windows will communicate the faith. For example, Church of the Resurrection, currently the largest-membership United Methodist congregation in America, plans to install a colossal stained glass window in their upcoming 3,500-seat sanctuary, which is being designed to stand for at least a hundred years. Senior Pastor Adam Hamilton (2014) writes to his congregation, "The window will be a sermon in glass (or many sermons in glass)." Daylight will shine it as sunlight does through most stained glass windows so that the worshipers *inside* the church can see the design, but interior electric lights will illuminate this window so that people driving by the Church of the Resurrection in a wealthy Kansas City suburb at night will be able to see the designs. The window's bright interior illumination and expansive 47-foot-by-98-foot

Figure 5.2. Proposed elevation of sanctuary building of Church of the Resurrection ("Leawood's United Methodist" 2014).

size afford nighttime viewing, not only from the parking lot, but also, from two miles away on "U.S. Highway 69 and from 115th Street and Metcalf Avenue" (Roberts, 2014). The clergy, staff, building committee, architects, and window designers are planning for the window to affect the society of Leawood, Kansas, for at least a century. Hamilton (2014) writes, "Long after we're all gone we hope this window will still be proclaiming the gospel" to the community.

This research contends that stained glass windows can serve as a metaphor for communication technologies of faith because the study of them points to what a medium is and does. German theologian Friedrich Schleiermacher alerted the religious academy of the need for hermeneutics, which is a system of interpreting the Bible and other texts (McGrath 1994, 498). Later, German thinker William Dilthey broadened the definition of hermeneutics to "the systematic interpretation of the human experience" (Grenz 1996, 101). The word *hermeneutics* is related to the Greek god Hermes. Mythology explains that Hermes acted as a messenger between humanity and the gods; in other words, he travelled across the median between the two

realms. Since he carried *messages* as he went back and forth or up and down, meaning existed in the median and in the medium (Amato and Brown 2013). Or as Marshall McLuhan and Quentin Fiore (1967) stated, "The medium is the message."

For the Christian all of creation serves as a medium of divine expression. The Eternal Artist assembles His own palette out of every resource under the sun—and including the sun. The particulars of divine creation are simply erstwhile manifestations and assurances, ways of touching the ineffable. Psalm 19:1 proclaims, "The heavens are telling the glory of God; and the firmament proclaims His handiwork." Stained glass windows in churches have served as a medium between the sun and the worshippers. God is "the superessential Light" (Panofsky-Soergel 1979), to employ the vocabulary of sixth-century Christian theologian and philosopher Pseudo-Dionysius the Areopagite. Other medieval theologians also equate God and light or the Son and the Sun; therefore, stained glass windows act as a medium between God and the worshiping community. The sunlight travels through both clear glass and stained glass on its way to the worshipers in the sanctuary. The colored glass of different hues serves as an artistic medium through which the rays pass. Moreover, stained glass windows may be seen as screen-less interfaces between the spiritual realm of God and the physical realm of the worshipers. Stained glass windows thus may act as a metaphor for technologies that communicate the faith. This project studies how communication media have and could communicate the Christian faith of The U.M.C. Clyde Kilby (2016, 82) explains that the Christian faith's namesake took ordinary objects from first-century Galilean life, such as "patches, and wineskins, a speck of dust in the eye, the house on a rock," and "transformed these not alone into practical instruction but into everlasting art, and the art became the vehicle of instruction, nay, the instruction and the art

are one." For many centuries in the West builders have installed that art in the window openings of church buildings. The medium of stained glass windows in its own aesthetic manner has communicated the Christian faith.

2. Stained glass windows: the excursus

> STAINED GLASS is an indiscrete medium. Unlike other visual media, which remain within the discrete boundary of their material frames, stained glass exceeds its materiality. Its colors steal beyond its architecture, marking sunlight; its tracery is heavy or light, plotting characters and stories, or dissolving narrative into a kaleidoscopic array. (Harris 2014, 303)

The study of stained glass windows in churches[51] is painted from an interdisciplinary palette. Architecture, visual art, media, astronomy, communication technology, representation, biblical narrative, theology, Christian education, liturgical studies, piety, and Christian history, not to mention sociology and culture, all color the analysis. In their architectural guide for the construction and maintenance of Anglican churches, the Diocese of London (Diocesan 2006) maintains, "The main purpose of painting pictures in coloured glass was to tell a story and to keep the building water tight and let light in." Of course, windows also insulate the building and keep out the elements. Parishioners can admire the visual art of each window as they allow the window to tell a story of faith. The window can "speak" to them in ways that the spoken word cannot do as well and not as aesthetically. Since most church buildings with stained glass windows, especially cathedrals, contain more than a single such window, an aggregate or even synergistic effect of multiple windows occurs. Together, all of the windows show more stories,

[51] Although builders have installed stained glass windows in edifices other than churches, they have placed more stained glass windows in church buildings than they have in have in other buildings, such as hospitals, office buildings, libraries, museums, houses, and the worship centers of other religions.

place those scenes in a serial narrative, and create a visual backdrop that enriches worship experiences of the priest, pastor, parishioner, and other participants.

The windows do not necessarily have to show recognizable pictures in order to complement or augment the worship service, the worship space. Abstract windows might rely on color, symbolism, size, shapes, and overall design instead of on traditional representational

Figure 5.3. A window in the sanctuary of Wesley U.M.C. in McKinney, TX. Photograph by author.

art, in which viewers can clearly see human figures, for instance. Figure 5.3 shows one of the two-foot high abstract windows that wrapped the sanctuary of Wesley U.M.C. in McKinney, Texas, with color. Church members, even those active in the congregation in 1976 when they built the sanctuary, could not identify the subjects of the windows, which extended around the top of the walls of the sanctuary. Stars remained the only clearly-identifiable symbols in the glass. However, the vibrant colors augmented the worship space. U.M. worship scholar James F. White makes the following assertion about stained glass windows:

> We have misunderstood the medium too often by trying to make it explicitly pictorial. Its nature is closer to instrumental music, an abstraction that says something that words and pictures cannot. There is no denying the emotive

> factors present in all worship and stained glass seems to make an almost universal appeal to these. (White 1990, 119-120)

An abstract window might tell a story without showing a story.

Seeing the beautiful visual art and the stories it tells has affected the Christian piety of the viewers over the centuries. Anne Harris (2014, 305) argues, "Extensive work on medieval vision theory has demonstrated the power of seeing to shape thought. Seeing a stained glass window was to be *induced* by its forms to think upon its content, thereby engaging with the devotional effect of stained glass." During the worship service and in their memory throughout the week as they involve themselves in devotional activity, worshipers have seen and have remembered the designs of the windows. Before the dawn of the printing press and the subsequent distribution of affordable books, Medieval Christians might not have seen graphical representations of biblical scenes or saints until they saw them displayed in the windows of the village church.

The sun's lighting enlivens, not only the scene represented in the window or its abstract design, but also, the sanctuary into which the light shines and the parishioners on whom the light falls. "Illuminated by transmitted rather than reflected light," the stained glass of church buildings of the Middle Ages and Renaissance "inspired a special sense of wonder and mystery that was rich in symbolism—heavenly light from the sun traversing matter to produce radiant images," contends J. Paul Getty Museum director Timothy Potts (Raguin 2013, 7). Unlike other sources of illumination, sunlight moves throughout the space during the day. Light and dark, colored and clear change locations throughout the day and even throughout the astronomical seasons. For example, as creatures of habit, churchgoers tend to sit in the same pews or chairs every weekend. Although boring, this seating habit has the potential benefit of allowing the

parishioners to notice how the sun's light moves around the sanctuary during the hour and throughout the year.

The sunlight's landing on a specific worshiper might illustrate the observation that the day's sermon or scripture applies to him or her, as if God is speaking directly to that person and is using the sunlight's shining on him or her through the stained glass to attract attention. Stained-glass artist Narcissus Quagliata of Judson Studios—which are creating "the largest single-image stained glass window ever made," for the Church of the Resurrection U.M.C. near Kansas City—proclaims, "The medium is so powerful because the light goes straight to the soul. That is why the stained glass windows of the Middle Ages were so effective" (Olsen 2017).

A stained glass window in a church exemplifies a true Christian medium for worshipers. This *medium* stands in the *median* between the sun on the outside and the parishioners on the inside, people for whom the window shares Christian *meaning*. When Nicolaus Copernicus relocated the earth in his cosmology, he moved the sun to the center of the solar system and had the earth revolve around the sun rather than vice versa. Although many people complained that earth—the home of God's greatest creation—no longer occupied the central location, Copernicus and others were pleased that the sun—representing God—took the preferred position (Koyré 1957). Therefore, stained glass windows have God as the power of illumination. God brings the colors of the windows to life. God illuminates the biblical characters as they stand and the parishioners as they seek to understand the stories of the Christian Bible.

Figure 5.4 shows a graphical preview of the next act. This stained glass window stands behind the chancel area at North Raleigh U.M.C. in North Carolina. A primary reason for the

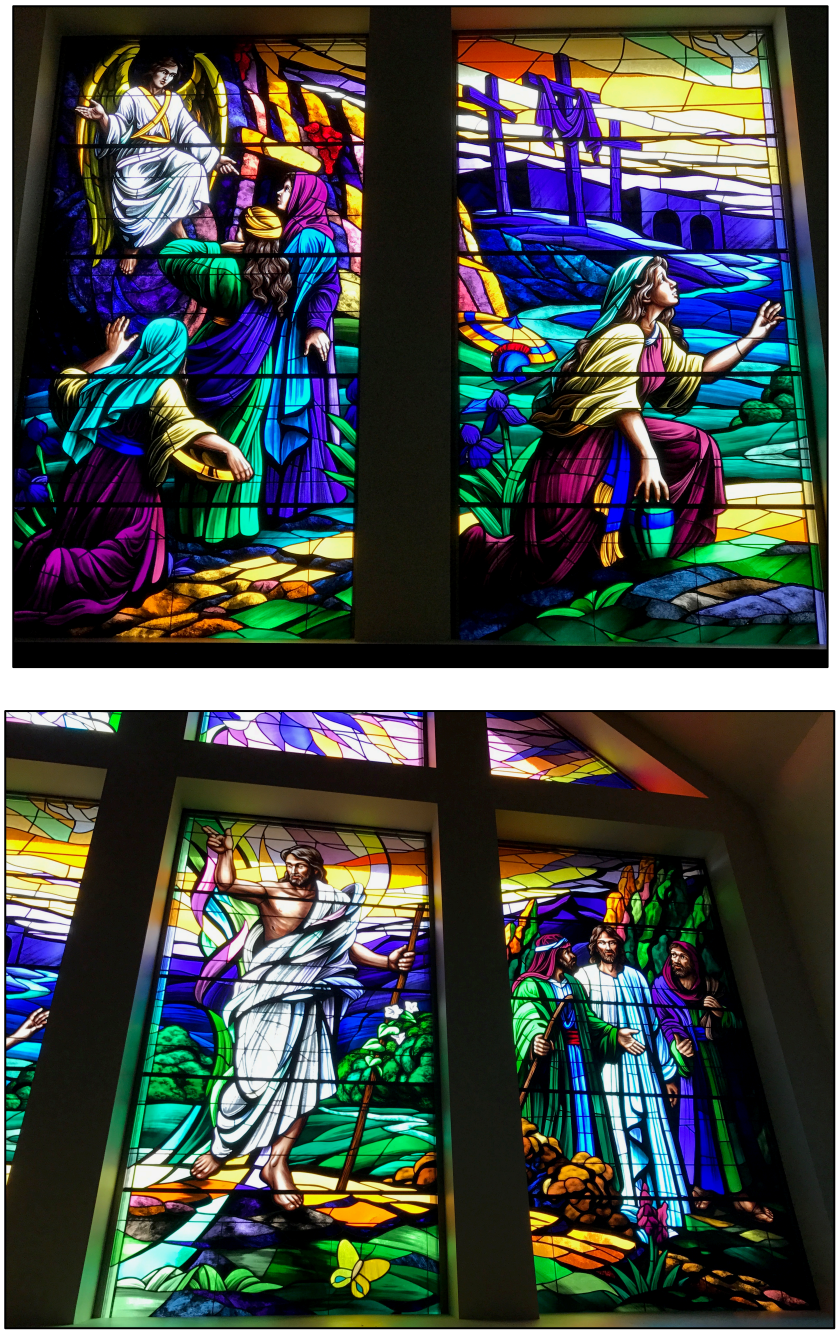

Figure 5.4. The left and right sides of the "Resurrection" window by Statesville Stained Glass, Inc. Installed in North Raleigh U.M.C. Photograph taken by the Reverend Eric Lindblade, Jr. Used with permission.

selection of this congregation for hosting of V.E.'s concerns this and other stained glass windows in their sanctuary. This picturesque window, entitled "Resurrection," stands in a highly-visible

and important physical location in the worship space because the subject matter holds such an important position in Christian theology. The interior frames of this window form three crosses like the pictured three crosses at Calvary. Since those windows hang on the eastern end of the sanctuary, the Sunday morning sun illuminates them for God stands behind the power of the resurrection.

Stained glass windows epitomize Christian media and serve as communication technologies of faith. This medium of dynamic light, situated between the Light Source on the outside of the nave and the worshipers on the inside, has aesthetically shared the message to an untold number of Christian worshipers for more than a millennium. "This is the message we have heard from him and proclaim to you," the author of the First Epistle of John (4:5) reminds the reader, "that God is light and in him there is no darkness at all." The hope of this research then is that virtual environments over the coming decades of the twenty-first century will improve in technological and theological fidelity, will become more widespread in use, and will, like stained glass windows, exemplify communication technologies of faith.

C. Printing

Centuries after the installation of the first stained glass windows in medieval cathedrals, the advent of printing became a key communication technology event. Following the lead of Elizabeth Eisentein (2005, 14) this project identifies *printing* "as a shorthand way of referring to a cluster of innovations (entailing the use of moveable metal type, oil-based ink, wooden handpress, and so forth)." Christian monks cloistered in scriptoria worked as scribes for centuries in Europe. They meticulously copied pages of books, mainly the Christian Bible. The time, effort, and cost invested in each handwritten book elevated the price of books beyond the

grasp of most people. The invention of printing substantially lowered the marginal costs of books and provided other affordances, such as the abilities to make almost-exact copies, to more-easily reproduce tables, complex illustrations, and scientific charts, and to have standardization. Eisenstein (2005) sees the key communication technology event of printing as demarcating the shift from scribal culture to print culture.

Before analyzing the social-cultural effects of printing, this research needs to contextualize the discussion. The Europeans were not the first people to invent printing. Irving Fang (2012, 47) argues that the Chinese invented xylography, i.e., "printing from carved wooden blocks," in 550, that they made the oldest existing printed book, *The Diamond Sutra*, in 868, and that the Europeans first used xylography to print a book in 1423. Adrian Johns (1998) alleges that later writers with competing agendas put forth various men as the inventors of European printing.[52] Johns (1999) and Eisenstein (2005) present Johann Gutenberg's priority in the invention of printing as the orthodox account. Ronald Deibert (1997, 64) maintains that the wide acceptance of Gutenberg, the goldsmith from Mainz, Germany, as the inventor stems from "a number of cryptic documents surrounding a series of lawsuits that date to 1439 in Strasbourg." Nine years after Mainz was sacked in 1462, William Caxton introduced England's first press in Westminster. Johns (1999, 378) summarizes the quest to identify and promote the European inventor of print: "Gutenberg and Caxton were now remembered and celebrated…. With the

[52] For example, rector and teacher Adrien de Jonghe in 1588 presented Laurens Coster of the Dutch town of Haarlem as the inventor in 1440 at that latest. Jonghe tells the story of Cornelius, an elderly man who worked for Coster. Cornelius identified another employee of Coster, Johann Faust, whom Cornelius claims betrayed Coster; moved to Mainz, Germany, the same town as Johann Gutenberg; set up a print-shop there; and promoted himself as the inventor of printing. Jonghe's sixteenth-century release of his book nearly coincided with the initial popular appearance of the legend of Doctor Faustus and his pact with the Devil. Johns (1998, 333) asserts that the near coincidence supports Jonghe's claims of Coster as the inventor, but he (Johns 1998, 378) laments, "Corsellis, Coster, and Faust suffered eclipse."

crystallization of certainty in [print's] inventors came a simultaneous crystallization of certainty in early print itself. And with that came the printing revolution." Rogers (1986, 2) contends that the fifteenth-century printing press did not become a *mass* communication technology not until the 1830's "with the advent of the 'penny press' in the United States."

The move to print culture highly impacted society in early modern Europe. With the invention of printing and the mass-production of books, "literate Europeans," claims Classen (2012, 153), "would come to rely less on such nonverbal means of accessing the Divine as touching relics and smelling odors of sanctity and more on reading the Word of God." Eisenstein (2005) and Johns (1999) consider the social-cultural effects as revolutionary. Print afforded the much-wider dissemination of books and thus of knowledge, which became more accurate with the standardization of printed texts. Literacy rates increased as teachers and students wanted and gained access to many more books, which were much cheaper and more widely available than earlier books copied by the hands of scribes. When readers could read about their country and other countries, they learned what it meant to be a German, for example. Patriotism thus increased. Printed novels allowed readers to read the thoughts of the characters and thus better understand the meaning of themselves as distinct individuals within societies. Such effects on society and culture proved revolutionary.

Although the invention of print did not cause the Protestant Reformation, print certainly assisted the Reformers. German monk Martin Luther compiled a list of what he considered abuses within the Western church of the early sixteenth century. As he supposedly posted his famous ninety-five theses on the door of the Castle Church in Wittenberg on All Hallow's Eve in 1517, a printer made copies of the document. Broadsheet copies were distributed throughout the

village and beyond. Although "the legend that he nailed them to a church door is, sadly, probably untrue," contends Eamon Duffy (2016, 51), "the theses themselves became the world's most improbable bestseller." Moreover, the distribution of copies had a stronger impact on the Church than would have his nailing it to the front doors of the village church. Luther later wrote to the Pope that the mass dissemination of the theses greatly surprised Luther, especially because he wrote them in academic Latin. "What Luther overlooked," writes Neil Postman (1993, 65), "was the sheer *portability* of printed books." Among his ninety-five theses were complaints that the Bible and hymns needed to appear in the vernacular of the people. Luther translated the Bible into German and wrote hymns, such as *Ein feste Burg ist unser Gott* in 1529. Frederick Hedge in 1853 translated the words as "A Mighty Fortress is our God" (*U.M.H.* 1989, 110).

To follow Luther's recommendations, Protestant pastors in Germany needed to have copies of German Bibles so that they could read them to their parishioners. German music directors needed to have copies of German hymnals in order to lead their choirs and their congregations. Protestant laity in Germany soon needed Bibles and hymnals in German. Scribal culture would have precluded the filling of these requirements. Print allowed standardized Bibles and hymnals and offered them at prices that amounted to fractions of what handwritten texts would have cost. Printers soon started printing other Christian texts, such as Thomas à Kempis' *The Imitation of Christ* (Kempis 2003), which was the best-selling book for hundreds of years after its initial publication in 1418 and was a favorite of John Wesley. Churches initially opened schools for children and taught adults to read so that the students could learn to read the Bible. The "transmission view of communication" (Carey 2009, 27-28) would say that print afforded evangelism because Protestant evangelists could take printed texts with them to distant

lands, while the "ritual view of communication" sees how the use of print affected German society and culture within and outside the church, as has been demonstrated. Looking at the positive effects of print culture, therefore, sixteenth-century English Protestant author John Foxe interpreted the invention of the printing as God ordained (Johns 1998, 329).

Although the invention of print in many ways helped Christianity and its growth, print has presented some challenges for the faith's adherents. Before print's genesis parishioners relied on the priests' spoken words during corporate worship. Ong (2012, 73) observes that spoken words effect unity among their hearers as an audience or a congregation, but he cautions that "Writing and print isolate" because they push readers into their private worlds of reading and thus disassemble interpersonal unity. James Carey (2009, 16) places individualism and culture, or psychology and sociology, at opposite ends of the spectrum of the understanding of human interaction when he writes that twentieth-century American communication scholars developed an "intellectual aversion to the idea of culture [that] derives in part from our obsessive individualism, which makes psychological life the paramount reality." Before the Reformation and the advent of printing, Christians relied on the oral word, while Protestants' reading their own Bibles have appealed to the written word and ironically have marred the corporate unity that the Bibles have championed.

Print culture influenced John Wesley and the early Methodists. Wesley rode more than a quarter-of-a-million miles on horseback around the country of England and the colony of Georgia. Riding or walking, he read books as he traveled. Figure 5.5 shows the outline of the generic Methodist circuit rider who followed John Wesley's lead of reading a book as he rode on horseback. Wesley had a life-changing spiritual experience when he walked down Aldersgate

Street in London on May 24, 1738, as he was reading a book, Martin Luther's preface to the Book of Romans. His circuit-riding coat featured deep pockets to hold numerous books. Although Wesley (1771, 3) could read English, Hebrew, Greek, Latin, and German and read

Figure 5.5. "Logo of The United Methodist Publishing House." (Church and Society n.d.)

many books, he desired to be, in the words of St. Thomas Aquinas, *"homo unius libri,"* a man of one book, i.e., the Bible (Outler 1975, 9). Reason, tradition, and experience informed scripture for Wesley. Moreover, Wesley viewed the Bible, which he knew in the form of a printed book, as primary in matters of faith. Official doctrine (*Book of Discipline* 2016, ¶ 104, 66) states, "The Holy Scripture containeth all things necessary to salvation."

Five years after the 1784 birth of the Methodist Episcopal Church, early leaders demonstrated Wesley's regard for printed books and their use in Christian education by establishing a publishing house for the denomination in Abingdon, Maryland. Now known as The United Methodist Publishing House, the organization was the first agency that the

denomination started in the United States. *The Book of Discipline* (2016, ¶ 1613, 690) identifies the first objective of the publishing house as "the advancement of the cause of Christianity throughout the world by disseminating religious knowledge and useful literary, scientific, and educational information in the form of books, tracts, multimedia, electronic media, and periodicals." This primary objective agrees with the argument of Johns (1998) that print has been used for the dissemination of knowledge.

D. Radio and television

The trek toward the virtual benefits from an appreciation of oral cultures along the way. Psychiatrist J. C. Carothers (1959) studied communication among rural tribes in Africa. He found many of them to be oral cultures. Commenting on Carothers' article, Marshall McLuhan (1962, 22) states, "The African child lives in the implicit magical world of the resonant oral words." Although McLuhan's description is culturally insensitive and condescending, his contention that those unseen oral words live and resonate in the seemingly-magical world of their imagination is compatible with the understanding that the virtual "is what we imagine" (Denegri-Knott 2013, 2). If members of oral cultures have highly developed their imaginations, then they can appreciate the virtual more than do people who have not enlarged their imaginations to the same extent.

Young listeners of commercials broadcast on radio and television enter this magical, virtual world. McLuhan (1962, 23) finds similarities between the children of oral cultures and a "Western child today [who] grows up in this kind of magical repetitive world as he hears advertisements on radio and TV." The aural message of those commercials exists while the listener hears them. McLuhan (1962, 37) summarizes that "our new electric culture provides our

lives again with a tribal base" because, after the conclusion of such ads, the sound of the earlier repeated message might remain briefly in the listening-child's memory but then like magic ceases to exist. While such an argument takes liberties with generalizations, merit is found in his idea that Western society in the twentieth-century supplemented print culture with electric culture as radio and television expanded their reaches. Electric culture did not replace print culture because print culture still exists *as the world and not just Western society* have stepped into digital culture.

Broadcast media have allowed people in this "electric culture" to perceive in both old and new ways. McLuhan (1962, 72) correctly postulates that Western people listening to the radio or watching television "interiorized the UNIFIED FIELD of electric all-at-onceness." In other words, television all at once delivers sounds, visual images, and messages as a package to TV viewers, who receive them as a "unified field." Radio all at once provides a unified "acoustic field" for the listener. Marshall McLuhan later (McLuhan, Eric, and Jacek Szklarek 1999) would describe the manner of his becoming a Catholic Christian in similar terms: he perceived the faith all at once.

This research contends that McLuhan, like the TV viewer or radio listener does not know everything about the programs he or she is watching or hearing, did not learn everything about that faith in an instant. Such an instantaneous faith education is impossible. If Christians *could suddenly* learn about the faith, the resulting faith would possess little depth and would resemble the shallow faith of those subjects of the fourth-century empire who suddenly became Christians simply because the emperor made Christianity the official religion; rather, he perceived that faith as a unified whole. Perceiving faith *as a totality* instead of *in disjointed parts* is helpful because

first knowing the faith as a whole provides a "base," to use McLuhan's word, from which to gradually and deeply learn about the parts. *Another, more profound reason for perceiving the Christian faith as a unified whole relates to the virtual*. Since the days of Moses, people have aspired to seek the Virtual Who is God. Since the Late Medieval days of Julian of Norwich, Teresa of Avila, Meister Eckhart, Julian of Norwich, and John of the Cross, *Christian mystics also have aspired to seek the Virtual that is unity with God*.

People in the electric age have perceived in old ways by reinventing "primitive art" after they have "interiorized the UNIFIED FIELD of electric all-at-onceness" (McLuhan 1962, 72). Charles Seltman (1960, 66) in his *Approach to Greek Art* argues that the "fifth-century Greeks, having experimented in realistic art, began to find it more to their taste than formal art because they acquired a liking for verisimilitude." Many American television viewers have preferred seemingly-real programs such as *The Jerry Springer Show* of the 1990's and *American Idol* of the 2000's to the numerous "formal art" programs of PBS. Similarly, seemingly-real Christian television programs such as *The 700 Club* and *Jack Van Impe Presents* have garnered ratings higher than those of televised concerts of symphonies playing Christian classical music.

The electronic culture of radio and television exemplified media that highlight the "time bias" of Harold Innis (1951). James Carey (2009) built his two views of communication on the foundation of his mentor Innis. Since most earlier communication scholars operated with a "transportation view of communication" according to Carey (2009), they saw communication as controlling over space, such as what the military means by "command and control." Such scholars had a "space bias," to quote Innis (1951). With the "ritual view of communication," on the other hand, Carey "[attributes] various benefits to a culturalism that understood

communication historically as ritual" (Hays 2006, 38). Understanding the people of history involves understanding their context, their particular time and place.

Radio and television highlight the differences between the two views by the media's accentuating the present time and thus having a "time bias" (Innis, 1951). Another, later follower of Innis, Lance Strate (2011, 92) observes, "Where oral cultures naturally look to the past, and literate cultures have the potential to turn around and look towards the future, electronic culture seems to be fixated on the present." Oswald Spengler (1934, 66) would describe such a fixation as a falling to "the tyranny of the present," in which temporality replaces importance. For example, students of radio and television learn to write stories in the present tense rather than in the past tense as print journalists traditionally wrote for newspapers. The goal of broadcast journalists has been to shine a light on broadcast's benefit of up-to-the-minute communication.

Time concerns radio and television, their advertisers, and their listeners in other ways. Stations charge various advertising rates depending on the expected audience. Ads on the radio during morning and evening drive-times cost more because more people are listening to the radio in their vehicles on the way to and from work than are listening at other times. Television stations charge more for ads played during primetime than at other times because many people relax at the end of the day by watching television. An original affordance of videocassette recorders (V.C.R.'s) was that they enabled time shifting. People working during the day could set their V.C.R.'s to tape their favorite daytime soap operas and then watch them in the evening after they came home from work.

These real-world media practices about time and space illustrate a philosophical truth about the ideas and the virtual. Time and space, not only pervade ideas, but also, help to shape

them. Since "the virtual … is the characteristic state of Ideas" and "it is on the basis of [the virtual's] reality that existence is produced, in accordance with a time and a space immanent in the Idea" (Deleuze 1994, 211), altering time and space would change the manifestation of the virtual. Therefore, varying the when and the where of an Idea would modify how the virtual could express or model that Idea.

In the years when broadcast stations reached most Americans, network executives realized that they had exhausted the frontier of space. They responded in a way similar to what faithful Jews did after A.D. 70. The Jews lost their beloved space—the locus of their cultic worship—after the Roman army destroyed the Temple in Jerusalem. The Jewish people responded to the demoralizing destruction of the Temple by emphasizing time rather than space. They accomplished such an emphasis by promoting the Sabbath rather than the holy hill in Jerusalem.

Similarly, AM and FM stations turned their ears from the frontier of space to the frontier of time. Stations, such as some Christian radio stations, began programming overnight, the time period that they heard was the new frontier (Carey 2009, 175) (Innis 1951). Listeners considered the night as offering a more-intimate setting for such radio stations; for example, the overnight radio announcer seemed to the listener, whether the over-the-road truck driver or the person who could not sleep, to be speaking through the dark directly to him or her. Some Christian radio programs such as the long-running *Praise in the Night* show with Steve Solomon effectively utilized the intimacy of overnight radio to make affective religious appeals to his listeners, many whom had battled loneliness, depression, and, of course, sleeplessness.

Decades earlier, the invention of radio allowed Methodist churches to broadcast their services and Methodist pastors to deliver their sermons to many more people than who could fill the pews. The socio-cultural significance of such affordances was that the sick, the elderly, the weather-trapped, and others could "go to church on the radio." Questions among church scholars were "Does listening to a church worship service on the radio count as attendance?" and "How does members' listening to the church on the radio affect the community of those people worshiping in person?" These questions will apply to possible V.E.'s of U.M. worship services. The communication technology event of the church's broadcasting worship services on the radio changed the faith community because many radio listeners thought that their intimate (Fang 2012) hearing of a pastor's voice emanating out of their Philco radio in the living room meant to them that they were actively participating in the church. Before the advent of radio, the only way to *hear* a sermon was to attend in person. Although not as intimate, televised church services led scholars to ask similar questions.

E. Internet

The study of the K.C.T.E. moves from the electronic age of radio and television to the digital age, starting with a cultural sociological analysis of the Internet. During the 1990's the Internet of Web 1.0 continued the mass media framework of one content producer's sending a message to many content receivers. Designers of computer software and hardware effectively harnessed traditional book-culture terms such as *address book, page,* and *bookmark* to proffer to consumers mental models for understanding the Internet. Seeing fiber optic cables as the new telegraph wires, Biocca and Levy (1995, 20) propose, "The electric transportation system did not just collapse space in Innis-McLuhan-like fashion, it expanded into a new parallel universe—

cyberspace," which they correctly identify as the location to which "human exchange is migrating." As with the print's goal of disseminating knowledge and similar to what a student would do by conducting research at a library, people went online to learn information. Methodist and other churches had computer programmers, either volunteers inside smaller-membership congregations or professionals paid by larger-membership congregations, design and build websites primarily as promotional media. Similar to how churches employed other media, churches with evangelistic mindsets used their websites as a way of reaching people. The manner by which people in society decided which church to attend changed from reading the local phone book to using an online search engine such as AltaVista, LookSmart, and later Google and Ask Jeeves. American culture turned the noun google into a verb, meaning to use a search engine such as Google to find information on the world wide web.

The first decade of a new millennium brought a paradigm shift from thinking that the direction of Internet proceeded from the one to the many to understanding that the Internet could go from the many to the many. Computer users and not just website developers easily could publish content on Web 2.0. The culture learned new words such as blog, wiki, and tweet. Pastors began writing on free blogs in order to disseminate knowledge and opinion; but unlike mass media, blogs allowed readers to immediately reply to the original author and other commenters. Cyberspace in essence came alive as people thought that they needed to "be" there, to have a web presence and online identities. Since people "were" in cyberspace and churches needed to "be" where the people are, pastors and churches further inhabited cyberspace by making their own Facebook pages and Twitter profiles. Social media allowed churches and their leaders to communicate with their members and other people and the members and other people

to communicate with each other and church leadership. Churches modified their websites so that people could upload content, such as by registering for church events and completing online training. The event of Web 2.0 has resembled the Protestant Reformation in that the lay people have had the ability and freedom to respond to ecclesiastical leadership or bypass official church leaders by taking uncensored communication directly to other laity and clergy.

Church leaders, parents, lawyers, ethicists, and communication scholars realized that social media requires some rules and etiquette for appropriate human interaction. As Christians may understand that they are citizens of the kingdom of God, Jonathan Zittrain (2008) proposes that users of the Internet need to understand that they are "Netizens," that is, citizens of the Net. Zittrain includes the following portion of a 1973 U.S. government privacy report:

> …the life of a small-town man, woman, or family is an open book compared to the more anonymous existence of urban dwellers. Yet the individual in a small town can retain his confidence because he can be surer of retaining control. He lives in a face-to-face world, in a social system where irresponsible behavior can be identified and called to account. (Zittrain 2008, 233)

He contends that net users need to have such an understanding that they are citizens of the Net and that the other users of the Net also are real people, too, people with faces, people who need to be treated fairly and not exploited. Net users need to take ownership of their online experiences and need to understand that the Internet is *their* online community, one in which they have to reside, even if they hurt other Netizens.

Although the Internet as a whole obviously is not ontologically sacred space, a desired goal for online human behavior appears in Gordon Lynch's (2012, 29) definition of the sacred: "*what people collectively experience as absolute, non-contingent realities which present normative claims over the meanings and conduct of social life.*" Lynch focuses on collective

experiences and "*normative claims over the … conduct of social life,*" here applied to people's conduct online. Like author Clay Shirky (2008), Jonathan Zittrain points to the success of the generative Wikipedia, which also has "claims … over the conduct of social life" (Lynch 2012, 29). As with users of that particular website, he recommends that Net users need to be held accountable for their online behavior and police each other. Sadly, Zittrain's recommendation sounds too Pollyannaish for the entire Internet and too hard to implement. Nonetheless, Zittrain points this vector in the right direction.

F. Non-Immersive Virtual Environment Technologies

The drive toward the Virtual reaches the Virtual's "city limits" with the K.C.T.E. of the creation and use of non-immersive virtual environments (N.I.V.E.'s). While the Internet has functioned as the highway bringing this research to this penultimate "stop" on the journey, the Internet has served as another highway—the "information super highway," to borrow a term from the 1990's, that connects congregations with themselves, each other, and the public. As the Internet has enabled congregations to communicate their messages, N.I.V.E.'s have and will afford the user opportunities for more-involved interaction.

As this project moves toward proposing how and why a specific U.M. congregation can become virtual, a case study of LifeChurch.tv's involvement on Linden Lab's Second Life proves instructive. An early adopter Linden Lab moved N.I.V.E.'s online with Second Life, but few churches have taken advantage of offering worship there. Even though Second Life (Linden Lab 2014) considers itself "The largest-ever 3D virtual world created entirely by its users" and even though The U.M.C. has eleven-million members worldwide, only ninety-one

Figure 5.6. "LifeChurch.tv in Second Life." (Linden Lab 2014).

people belonged to the U.M.C. group in Second Life in 2014. The largest Christian church on Second Life was LifeChurch.tv.[53] Avatars visited that church, which posted their times of worship. During worship services the avatars sat, stood, walked around, or flew around the worship space as a video showed a live-action sermon. People used their church-going experience on Second Life as a supplement to the physical church where they belong, whether that church is one of the twenty LifeChurch.tv locations in the United States or other churches, as their primary church, or in other ways.

A socio-cultural analysis of Second Life churches reveals some foundational changes in what "going to church" means. LifeChurch.tv and other churches have online churches as well. People can "go to church" by attending a church only online. They can watch a video of a worship service, submit prayer requests, and give their offerings online, but they probably use their real name. "Going to church" on Second Life takes the online worship experience to a

[53] The suffix ".tv" is part of the church's name.

more-involved level. People's avatars can enter the 3D V.E., turn around, see and hear all around them, and interact with other avatars and virtual agents. But having the ability to create their avatars as people or even things dissimilar to them provides them with different identities with which to interact in a virtual worship space.

Dr. Robert Crossman (2014) of the General Board of Discipleship Ministries of The U.M.C. notes that first-time visitors to brick-and-mortar church campuses as soon as they enter the parking lot look at the vehicles and the people walking and make comparisons. For instance, they might drive a sedan, while pickup trucks fill the parking lot. They might arrive in formal attire, while the people they see walking are wearing cowboy/girl boots and Wrangler jeans. Crossman says that visitors prefer to see vehicles and dress similar to theirs. With a church in Second Life, the visitors via their avatars might see avatars that dress like rock stars or have the head of a jaguar when the avatars of the visitors do not. The people behind the avatars might respond to these visual divergences by lowering their comfort level and questioning the seriousness with which they take the worship experience. LiveChurch.tv has discontinued their Second Life ministry (Geraci 2014), but a few dozen other churches still worship in that online V.E.

Christians over the centuries have been accused of wearing masks to church; for example, critics might see a seemingly-loving family at church but know that abuse occurs in the home. An avatar might provide a person with the ultimate mask for going to church. Sociologically, one might ask if a congregation of worshippers wearing the masks of avatars diminishes the possible construction of trust—an important quality in congregations—among the unknown people controlling the avatars. United Methodists and other Christians have viewed church as *the place*

where people may be themselves before God, that is, *the location where God relates to the true identity of the members of the community of faith.* Thinking theologically, this researcher contends that an avatar's wearing a mask, rather than displaying a self-recognizable representation, in a virtual worship space hinders one's relationship with God because the user is not representing his or her authentic self.

The first wide-spread use of N.I.V.E. technologies in churches has been with desktop digital games *without* H.M.D.'s. At the end of the twentieth century, some larger-membership U.M. congregations began organizing their Sunday School ministries around the rotational model. Instead of having children remain in one classroom during the Sunday School hour, children rotate among rooms from week to week. For example, third-graders might learn in the drama room one week; the next week, in the kitchen; and the following week, in the craft room.

Figure 5.7. "Peter Welcomes." A screen shot from the digital game. Used with permission. (MacQueen 2014)

Many of the churches following the rotational model installed personal computers in a classroom that serves as a computer lab. Children play the installed Christian digital games,

which use N.I.V.E.'s to portray biblical stories and teach life lessons. Figure 5.7 shows a screen shot of a N.I.V.E. game in which children interact with virtual agents representing disciples and other Gospel characters.

As "digital natives" (Prensky 2001), today's children who have rotated through such computer labs begin to expect that their next church also will have such N.I.V.E. games. These games influence their perceptions of church. They see churches with computer labs as being more relevant to their lives because they spend much time playing digital games. Although children may interact with story through a V.E., children who play a digital game may not change the biblical story. Unlike people who use a medical, military, aviation, or other type of simulator, children who play a N.I.V.E. Bible story game may not play "what if," such as by making Noah's flood last eighty days or having Pontius Pilate release Jesus on His own recognizance because church dogma and doctrine have not allowed for such altering of the biblical canon.

The idea of non-immersive augmented reality (N.I.A.R.) technologies illustrates important Christian truths. The idea that a communication technology now exists that allows users to know previously-unknown information about their environment or sense the previously-not-sensible stirs the thinker's imagination about the possible Christian truths that the technology could communication. While non-immersive V.R. and non-immersive V.E.'s show people other worlds, N.I.A.R. technologies provide more information about this world. N.I.A.R. technologies can or could allow people to recognize more dimensions of reality than they can humanly sense. Such capabilities complement the Christian understanding that two realms coexist: the spiritual realm lies over or next to the physical realm. As described earlier in this review, Christians

believe that they are not of this world because their Founder was not from this world. In John 17:14-15, the author of the F.G. writes a prayer that Jesus prayed for his disciples on the original Maundy Thursday: "I have given them your word, and the world has hated them because they do not belong to the world, just as I do not belong to the world. I am not asking you to take them out of the world, but I ask you to protect them from the evil one." Even though the disciples "do not belong to the world," Jesus did not want them to leave the world; rather, Jesus wanted to send them into it and thus continue his ministry after his death. A.R. gives its users located in this world the ability to see and/or hear information that humans cannot naturally sense.

The Church of the twenty-first century West needs to understand that Christians and others expect more from the Church's communication offerings. Guests of churches no longer lower the bar of expected excellence when they enter a church building or encounter the church online or in the community. For example, people have responded to N.I.A.R. mobile applications by their expecting more from a photograph on a mobile device than only a picture. Currently, N.I.A.R. mobile applications allow people to take a photograph with the camera on their smartphone, tablet, or other mobile device and superimpose on the photograph information about the photo's subject. The Church's designers of communication technologies need to understand that people are familiar with "hypermediation" (Bolter and Grusin 2000) whether they know that nomenclature or not and might wonder why the Church is not taking advantage of teaching through the additional material on screens. Appendix E provides more information about "hypermediation."

Figure 5.8. "Wikitude." (Citizens 2011)

The ubiquity of mobile digital devices and the reasonable cost and multiple affordances of N.I.A.R. technology offer the *church* many possible uses of N.I.A.R. People could take self-guided tours of church buildings. They could aim the phone's camera at the ruins of a cathedral in Europe and see on their screen a representation of how the building looked and how worshipers used it during the Middle Ages. They could aim at an empty piece of land today and see on their screens the architect's vision of a proposed church building. They could take it to the Holy Land and see and hear not only buildings as they appeared during the first century, but also, virtual reenactments of the Bible stories that occurred in the places. United Methodists could take A.R.-equipped devices to Epworth, England, and point them at the parsonage of Reverend Samuel and Susanna Wesley and see on their tablet a virtual reenactment of six-year-old son John Wesley's being rescued from the second-story window as the house burned. These uses of N.I.A.R. technology could assist people, especially those who prefer visual and auditory

styles of teaching, in their learning about the faith. Also, they could repeat the experiences in order to help them better remember and understand.

All of these N.I.A.R. possibilities could assist the user in virtualizing the faith, i.e. in conceptualizing the U.M. faith, not only in their heart and head, but also, in their imagination. This researcher agrees with what poet Mary Oliver pens regarding imagination and faith. Oliver (Long 2017) writes in the poem "The World that I Live In," "Only if there are angels in your head will you ever, possibly, see one." Written differently, we might have to imagine the ideas or things of faith before possibly sensing their manifestation. Communication technologies, such as these N.I.A.R. ones, help their users in virtualizing the faith in the imagination.

Critics could argue that N.I.A.R. technologies promote private engagements with places and things. If they were alive, Plato and Ong could levy the same complaint against written materials. N.I.A.R. technologies make possible self-guided tours and solitary learning. Their users turn to the printed characters on the screen or the simulated voice coming from the speakers rather than ask the docent in the museum, the fellow traveler on the sidewalk, or the religious leader in the church. However, they could look at the process in the reverse: the users of N.I.A.R. could become the ones who tell others what they have learned, what their human senses could not impart to them.

G. Immersive Virtual Environment Technologies

Churches have participated in the event of the creation and use of immersive virtual environment technologies (I.V.E.T.'s) less than they have in all of the other K.C.T.E. The high cost of earlier H.M.D.'s, the related-scarcity of immersive virtual reality (I.V.R.) equipment, and

the public's unfamiliarity with the application of the technologies have precluded churches and individual Christians from developing and using I.V.E.T.'s. However, the burgeoning of reasonably-priced and widely-available consumer H.M.D.'s such as the Oculus Rift should open the market for I.V.R. applications.

Widespread use of I.V.R. has yet to happen, but Western culture might stand ripe for the church to utilize I.V.R. when the technology is broadly available. Marie-Laure Ryan (2001, 1) observes, "The *idea* of V.R. is very much a part of our cultural landscape," such as witnessed in science fiction books and films and, as this research contends, in the church. Christians and even non-Christians, especially during times of crisis or turbulence, have sought solace, the sacred, and occasionally political asylum by entering a sanctuary. The worship services, prayer services, and even the room itself have provided spiritual meaning in an environment set apart for worship. Via a "cultural sociological approach," Lynch (2012, 87) argues, "Sacred meanings are not, therefore, free-floating signifiers but materially mediated."

While the physical sanctuary can serve as a material medium, I.V.R. can present a digital version of *sanctuary* because I.V.R. can be defined as "an immersive digital environment that is isolated from the real world" (Rhodes and Allen 2014). I.V.R. made for churches could serve as sanctuary by helping people, especially spiritual seekers, to temporarily escape from worrying about the problems of this world and to explore another world, such as a possible 3D depiction of heaven. Although the possibility exists that users might exchange a hunger for the future heaven for a desire for the immediate simulacrum (Baudrillard 2004), an I.V.E.T. representing a New Testament view of heaven could pique people's interest in the spiritual, provide a respite, and encourage people to learn more about the faith.

Churches could use I.V.R. developed for them so that people could "act within a world and experience it from the inside" (Ryan 2001, 20). Ryan's observation about activity within the virtual world is instructive for the church because her contention prepares a seedbed for ideas for possible future development. She (Ryan 2001, 20) writes, "In V.R. we act within a world and experience it from the inside." Animations on television and film show the viewer scenes, but I.V.R. allows the viewer to enter the inside of a digital scene and interact with that environment from a first-person perspective or as a third-person avatar in what Second Life (Johnson 2014) calls "the third-person object view." The Virtual Faith-Explorer (V.F.E.), which will be described in Chapter 6, could become technically immersive with the addition of H.M.D.'s. Users of the V.F.E. could "experience [the learning and cultic worship of various faiths] from the inside" (Ryan 2001, 20).

A possible additional feature of I.V.R. technologies, haptic ability could uniquely communicate dimensions of the faith. The "laying on of hands" appears throughout the New Testament, especially in the Book of Acts. In the history of the church, this impartation has signified important events, such as at baptisms, confirmations, ordinations, weddings, and healing services. For those receiving the touch, the "laying on of hands" indicates the congregation's affirmation and the Holy Spirit's activity. A user of I.V.R. could don not only a H.M.D. and headphones, but also, haptic sleeves and gloves, which would afford the sensations of touch. Kinesthetic learners especially might appreciate and/or benefit from using haptic technologies because touching helps facilitate their learning.

If a U.M. worship service were simulated in V.R. with haptic capabilities, the user could touch and feel a virtual holy-communion cup, a bound Bible, and the water of a baptismal fount.

Haptic clothing, such as vests, shirts, pants, boots, and hats could offer the wearer the abilities to feel a pat on the back, the hardness of a bare wooden pew, the softness of a pew or chair cushion, the water and towel of a foot-washing, and the imposition of ashes on the forehead. Christians believe that God entrusts humans to care for the divinely-created earth and that the Second Person of the Trinity put on flesh and bones in the person of Jesus of Nazareth. Such theologies of stewardship and incarnation respectively encourage United Methodists and other Christians to appreciate the physical realm, which we humans can lovingly touch. The use of I.V.R.'s haptic features thus could foster an appreciation for creation and the incarnation in ways that other K.C.T.E. cannot. Rachel Wagner (2012, 4) states, "Both religion and virtual reality can be viewed as manifestations of the desire for transcendence." United Methodists (*U.M.H.* 1989, 880) with other Christians recite the Nicene Creed, which at the end speaks of the hope for this transcendence: "We look for the resurrection of the dead, and the life of the world to come. Amen."

As with the relationship between non-immersive V.R. and I.V.R., immersive qualities can greatly enhance A.R. While the graphics of N.I.A.R. appear from only one point of view, graphics surround the user(s) in immersive A.R. (I.A.R.). Google Glass and other see-through H.M.D.'s are examples of I.A.R. Google Glass wearers can walk, drive, and operate in the world while seeing both the physical world and the virtual overlay of information. They can turn their heads, move their bodies, and see from different points of view.

Figure 5.9. "#Taull1123." An immersive A.R. installation in Church of Sant Climent de Taüll. (MW 2014).

The installation "#Taull1123" in the Romanesque church of Sant Climent de Taüll, Spain, literally exemplifies I.A.R. in a church building. Historians researched how the asp of the church appeared when new in 1123. Artists created digital graphics of the saints and other Christian figures. Powerful projectors cast those images on the walls of the asp, as seen in the far right photograph in Figure 5.9. Visitors to the "#Taull1123" installation in the church in 2014 then could see that part of the worship space as it appeared, minus the bright electric lights, in the twelfth century (MW 2014). Such examples of I.A.R. could teach people about the faith, promote tourism, cultivate the public's appreciation for Christian art and architecture, raise awareness about church-building preservation, and possibly encourage artists to utilize their gifts and graces to edify the people of the Church.

Churches could follow the lead of theatres in the use of I.A.R. Rhodes and Allen (2014) describe uses of Google Glass in theatre. Audience members wearing the glasses could look at the actors and have their biographical information on the lenses. Select actors could transmit

visual imagery from their Google Glass to audience members so that the patrons could experience the theatre from the actors' point of view. Theatre employees, such as those at the front of house, could wear Google Glass as ways to communicate with personnel behind the stage (Rhodes and Allen 2014). If a church equipped with I.A.R. capabilities had a drama about the nativity, members of the congregation wearing Google Glass could look at Mary and Joseph and on the lenses read biographical information about the actors and bible verses about the characters. If that church presented a play about Christian life lessons, those with Google Glass could focus on actors and read their thoughts and scripture verses that might apply to their situation.

Religious uses of I.A.R. might act as hierophanies within the culture. History of Religions Professor Mircea Eliade (1987, 7) identifies a hierophany as happening when "something sacred shows itself to us." In other words, a hierophany is a "manifestation of sacred realities" (Eliade 1987, 11). Lynch (2012) disagrees with the sacrality's being an ontological reality. For him a group in the culture, rather that the thing itself, determines sacredness; however, that collective could identify a religious use of I.A.R. as a hierophany. Wagner (2012) asks if an I.A.R. projection of Christ into a room coupled with an A.I. interface could be labeled as a hierophany. She (Wagner 2012, 91) contends, "With augmented reality, the virtual world steps out of the computer 'box' and into our lives with incredibly powerful implications for religious experience."

I.A.R. serves well as a metaphor for a Christian understanding of reality. The Apostle Paul wrote to the church at Corinth, Greece, "…we look not at what can be seen but at what cannot be seen; for what can be seen is temporary, but what cannot be seen is eternal" (II

Corinthians 4:18). In other words, the seen physical world is temporary in comparison to the unseen eternal realm of God. As the H.M.D.'s of I.A.R. allow the wearers to look *through* the lens into the physical world while reading the writing *on* the lens, a person of faith can look at the physical realm but know that the unseen spiritual realm overlaps what he or she naturally sees. Faith is required to see what cannot be seen.

VIII. Conclusion to key communication technology events

This chapter has examined communication technology events that have been key for the people of The U.M.C. and its historical precedents. The "ritual view of communication" of James Carey (2009) and the "mediation of sacred forms" of Gordon Lynch (2012) have provided frameworks for a socio-cultural analysis of K.C.T.E. The chronological journey through K.C.T.E. began with the alphabet and writing and continued through V.E.'s in the hopes of laying a foundation for the later analysis of new communication technologies.

Knut Lundby (2013, 226) realizes, "Religions are to a large extent shaped by their dominant means of communication." For most of church history, especially for The U.M.C., that medium has been the book. Will the faith of the future pin such high importance on the bound book? This research will examine in detail the new communication technologies of I.V.E.'s. The primary research and its analysis will uncover additional affordances. The first-hand study of I.V.R., I.A.R., and desktop V.E.'s with H.M.D.'s, although not the "dominant means of communication," might be able to reveal that V.E.'s can communicate dimensions of the faith that other technologies have been unable to do.

CHAPTER 6

DESIGN OF V.E.'S FOR FAITH COMMUNICATION

> Among the contemporary avenues of artistic exploration, one of the most interesting is the discovery and exploration of the new forms of truth that accompany, although obscurely, the dynamic of virtualization. (Lévy 1998, 184)

I. Introduction

A way to demonstrate how V.E.'s could communicate the faith would entail the virtual simulation of a corporate worship service, but which kind of service would adequately represent a "typical" U. M. service and in which setting should the worship occur? Possible worship *settings* include Gothic cathedrals in urban areas, colonial brick buildings in county-seat cities, white-framed wooden structures in rural areas, store fronts in growing suburban areas, coffee houses in transitional neighborhoods, fellowship halls, rented school cafeterias, and even converted lofts downtown. Rather than trying to amalgamate these settings into one

Figure 6.1. The sanctuary of N.R.U.M.C. during Advent. Photograph taken by the Reverend Eric Lindblade, Jr. Used with permission.

hodgepodge, this project will select one U.M. church's sanctuary to serve as the referent to model with a deep description.

For the setting this project will consider the sanctuary of North Raleigh U.M.C. (N.R.U.M.C.) in North Carolina for a number of reasons. Figures 6.1 and 6.2 show photographs of their beautiful sanctuary. The first reason for this selection is that contractors built the sanctuary within the last ten years. The building's "newness" affords its having an up-to-date-yet-traditional architectural style. Second, the architects designed the sanctuary for traditional worship, as will be explained. Third, the architectural style includes important Christian symbolism. Fourth, builders constructed two columbaria[54], one columbarium on either side of the sanctuary's exterior. Fifth, the floor plan allows for multiple worship elements, such as dramatic presentations and liturgical dance. Sixth, architects oriented the sanctuary's footprint so that the chancel area sits on the east side of the building. Such a traditional orientation[55] garners support from numerous biblical passages (Peters 2012b). And seventh, the exquisite stained glass windows precisely and aesthetically display biblical narratives and flood the sanctuary with colorful light.

Possible worship *styles* include traditional and contemporary, but those labels paint with too broad a stroke. For example, high-church Anglican services full of written liturgies and offering holy communion every Sunday, classic Protestant services with a robed choir and an organ, and casual country services with hymns and an upright piano all might fall into the

[54] A columbarium has niches to hold cremated remains, usually of deceased people who belonged to the church when they were alive.

[55] Bosco Peters (2012a) notes, "The word 'orientation' itself means facing East."

category of having “traditional” worship styles. Moreover, people of various races, ethnicities, and languages bring their unique contributions and preferences to the designs of worship

Figure 6.2. The chancel of N.R.U.M.C. during Advent. Photograph taken by the Reverend Eric Lindblade, Jr. Used with permission.

services. With so many possibilities and variables, the identification of a “typical U. M. worship service” might remain elusive or be impossible to do. For its worship style, this project will study a traditional one because a service in a traditional style appears in the front of the official hymnal and because contemporary services vary too widely, both longitudinally and trans-congregationally (i.e., over the years and among congregations). Instead of attempting to create a “typical” service, this project will employ “An Order of Sunday Worship Using the Basic Pattern” as found in *The United Methodist Hymnal* (*U.M.H.* 1989, 3-5) as the framework for presenting subjects for communication with V.E.’s.

The order offered in the 1989 hymnal reflects an ancient and ecumenical Christian order of worship. Until the publication of this hymnal, the recommended order resembled the popular order emerging from the frontier revival movement. Methodists, Baptists, Presbyterians, Campbellites, and others in the late eighteenth century and early nineteenth century in America

experienced the Second Great Awakening, a time of spiritual revival, evangelistic conversion, and "a sudden earnestness in Christian devotion and living" (González 1984b, 244). The Second Great Awakening began in New England but spread to the western American frontier. A Presbyterian minister decided to have a massive revival in 1801 in Cane Ridge, Kentucky. The Cane Ridge Revival attracted tens of thousands of people and lasted a week.[56] Methodists and Baptists took the lead in preaching. The tripartite order of the service included the extended sermon in the middle and "the harvest of the souls" after the sermon (Feille 1994). Actually coming first, the third part consisted of singing, praying, and everything else before the sermon. James F. White (1993, 161), formerly of Perkins School of Theology, contends that this three-part service "has proved remarkably durable. It still forms the outline of most Protestant worship in North America." The order in the 1989 hymnal seeks to move away from the frontier revival style and return to an ancient and ecumenical Christian order of worship, which the hymnal (1989, 3) calls "The Basic Pattern of Worship." Regarding U.M. worship since 1989, Hickman (1991, 25) notices, "Today the trend is … back to our roots…. We are discovering that in many ways the church today has more in common with the early church than with established Christendom of the centuries in between."

"The Basic Pattern of Worship" consists of four main parts[57]: "Entrance, Proclamation and Response, Thanksgiving and Communion, and Sending Forth" (*U.M.H.* 1989, 2). Worshippers enter the service, pray, and sing. God's Word is proclaimed with the public reading

[56] Not everyone on this early-nineteenth-century-Kentucky version of the dairy-farmland near the Woodstock, New York, practiced Christian behavior that week. Justo González (1984b, 245-246) quips, "A critic of the awakening later declared that, at Cane Ridge, as many souls were conceived as were converted."

[57] "Entrance, Proclamation and Response, Thanksgiving and Communion, and Sending Forth" roughly correspond to "Introductory Rites, Liturgy of the Word, Liturgy of the Eucharist, and Concluding Rites" of "The Order of the Mass" as recommended by the United States Conference of Catholic Bishops (N.d.).

of scripture and a sermon based on that text. The response to the Word includes affirmations of faith, offerings, baptisms, and professions of faith. The worship leaders give God thanks for divine blessings. In most U.M. churches, the congregation receives Holy Communion once a month, i.e., on the first Sunday of the month. The pastor concludes the service by sending worshippers out into the world with words of blessing and music. The rubrics for "The Basic Pattern of Worship" provide the following background information:

> A recommended order of worship for United Methodists is presented on this and the following pages. This order for proclaiming God's Word and celebrating the Lord's Supper expresses the biblical, historical, and theological integrity of Christian worship. The several formats demonstrate its flexibility for different situations, but in its essentials it is one order. (*U.M.H.* 1989, 2)

"An Order of Sunday Worship Using the Basic Pattern" then expands upon "The Basic Pattern of Worship." This "Order" appears in both *The United Methodist Hymnal* (*U.M.H.* 1989) and in *The United Methodist Book of Worship* (*U.M.B.O.W.*1992), an official text used primarily by pastors and other worship planners. The "Order" serves here as the **framework** for presenting subjects for communication with V.R., A.R., and/or M.R.

A. Entrance

The religious imagination helps the worshiper to understand the acts or rituals of worship. Imagine then a U.M. worship service in V.R. Designers could use the Unity or Unreal game engines to construct a 3D V.E. in V.R. for a desktop computer with an H.M.D. They could upload the software to the internet so that multiple people could simultaneously access it live, as this section will explain. This chapter will describe the other technical features as they arise.

Imagine having fresh worship services every week in V.R. at no charge to the user. Instead of watching a vodcast of a worship service or even a live stream of one, users could

interact and immerse themselves[58] in this V.E. Charles Arn (1997) recommends that churches who desire to start an additional worship service need to treat the new service as having a separate congregation. For example, a church moving from offering one service to offering two services needs to treat them as separate *congregations* of people in order for the new service to grow in attendance. Therefore, the human worship leaders could dedicate themselves to SUMMA SERVE and thus lead the online services and minister to and with the users. The SUMMA SERVE project would require the financial backing of agencies of The U.M.C., namely U.M. Communications and Discipleship Ministries—two general commissions or boards of the denomination, along with N.R.U.M.C. and possibly other grant-giving sources.

The name SUMMA SERVE stands for a "Simulated United Methodist Model of A Worship SERvice in a Virtual Environment." Nancy A. Hardesty (1986), who taught at The U.M.C.'s Candler School of Theology at Emory University in Atlanta, defines the Latin word ***summa*** as "originally the medieval title of any compendium of a subject such as theology, philosophy, or canon law," all of which this project addresses. She adds that summas, such as *Summa Theologiae* by the scholastic theologian and philosopher Thomas Aquinas, replaced sentences "as handbooks for schools." Ostensibly, both **summa** and **serve** occupy places of importance in Christian scholarship. Since the days of John Wesley, United Methodists and members of The U.M.C.'s historical precedents, like other Christians, have stressed the need for Christians to **serve** other people in Christ's name. And the worship service receives its name from the understanding that worshippers do not attend a worship *concert* or a worship *ceremony*; rather, people serve God also through our corporate worship of Him during a worship *service*.

[58] "Immerse themselves" refers to the psychological definition of immersion; however, the SUMMA SERVE is immersive technology.

Hopefully, SUMMA SERVE functions as an appropriate name for a proposed V.E. of a U.M. worship service.

Worshippers attend worship services in the physical world. Avatars and agents would populate a worship service in the virtual world. Users of SUMMA SERVE would interact with the V.E. via avatars, similar to those of the V.E. Second Life. They would assume the same roles that they would in a physical worship service so that they do not confuse other worship participants, because the quality of the service probably would decline if people assumed roles for which they did not have training, and because the purpose of SUMMA SERVE does not involve *what-if* scenarios.[59] Most interaction would take place from the first-person perspective, but users occasionally could switch to the third-person perspective in order to see themselves in space and thus facilitate the avatar's "wayfinding" (Lidwell, Holden and Butler 2010) and proprioception.

Since traditional worship services usually take place within a sanctuary, a V.R. sanctuary will function as the locus of activity. As an incarnational faith, Christianity values place, particularly sacred space, made sacred by human consecration. Worshippers who regularly attend services in the same worship space develop a habit via such praxis. They allow their entrance into such familiar sacred space to signal to them their desired purpose, that is, to worship God. In other words, when they enter the sanctuary, they know that they have entered the space for the purpose of worship as opposed to some other activity. Since such a habit reinforces the connection between sacred space and what happens in that space, worshipers may

[59] Designers could create other V.E.'s for the purpose of *what-if* scenarios. Such simulation might help young people's discerning of a divine call to professional ministry. The upcoming Virtual Faith-Explorer discussion will explain how churches could use an online V.E. for evangelistic purposes.

allow themselves to focus on the tasks at hand; therefore, the V.E. for a traditional worship service needs to look like a sanctuary, in this case, the sanctuary of N.R.U.M.C. Simulating the building and sanctuary, the V.E. would show the interior architecture, including the picturesque stained glass windows. Like the physical viewers, the virtual viewers could look at the biblical scenes depicted in the glass and thus expect that the upcoming liturgy and worship rituals will reference the Christian Bible.

The worship service in SUMMA SERVE would begin with a gathering of people via their avatars. As with worship *space*, dedicated and demarcated worship *time* helps worshipers to know that they have entered sacred time. *The Book of Worship* (*U.M.B.O.W. 1992*, 16) states, "This time is both an outward and visible gathering of the people and an inward and spiritual gathering—a focusing of awareness that they are a people gathering in the presence of the God known to us through Jesus Christ in the power of the Holy Spirit."

The start times and web address of SUMMA SERVE require publicity so that worshipers would know when and where to gather live online, but several factors would come into play when deciding the time and day of the week. Following the fact that Christians meet for worship on Sunday mornings because the first disciples learned "early on the first day of the week, while it was still dark" (John 20:1) that God had raised Jesus from the dead that morning, the service could take place on a Sunday morning. Although the ubiquitous 11:00 a.m. start-time originated with the need of American farmers in previous centuries to have time to milk the cows and otherwise tend to the animals *before* morning church, SUMMA SERVE could begin at 10:00 a.m. Eastern Time. Ten o'clock could act has a friendly compromise between those who prefer

9:00—too early a start time for many people on a Sunday—and those who like 11:00—too late an end time, especially during the N.F.L. season, when games start at noon.

Since the traditional services of N.R.U.M.C. currently begin at 8:30, 10:00, and 11:15 on Sunday mornings, the middle service could become the one for SUMMA SERVE; however, the very-extensive set-up and take-down logistics, especially for a middle service, rule out the 10:00 service as the one for SUMMA SERVE. This project recommends that N.R.U.M.C. start a new service and thus a new congregation (Arn 1997) at the campus at an alternative time, 5:30 p.m. on Saturdays. Like some Roman Catholic churches, some large-membership U.M. congregations have discovered that guests and members like a Saturday-evening service because they can include worship in their Saturday-evening activities and follow worship with a Saturday-night dinner and because some of them work on Sunday mornings or enjoy sleeping late on Sunday mornings.

The hybrid SUMMA SERVE congregation would include those people who attend and lead the SUMMA SERVE service on Saturday evenings at N.R.U.M.C. and the hopefully-many people who would participate online, who would need internet access, a desktop computer, H.M.D.'s, headphones, and microphones. Important questions to answer include, "Are those parishioners who physically attend N.R.U.M.C.'s SUMMA SERVE service going to participate *only* in person and thus not have V.R. access and avatars? Or are they going to participate somehow in the V.E. as users with their avatars while they physically sit in the wooden pews? If so, how would that arrangement happen?" *This research recommends a M.R. approach*.

The people in the pews would participate in SUMMA SERVE primarily within the V.E. by wearing connected equipment and at times, as will be shown, by disconnecting the equipment

and physically participating. A precedent exists for parishioners' connecting to electronic equipment during worship services, but SUMMA SERVE embarks on a journey into new territory for churches. For decades, churches in the backs of some of the pews have had input boxes into which hard-of-hearing parishioners could plug male headphone jacks and listen through the headphones. N.R.U.M.C. would have to remodel the pew backs and floors of their sanctuary to make the following accommodations: (1) the backs of all of the pews could have hooks on which to hang H.M.D.'s, headphone/microphone headsets, and combination keyboard/touch pads; (2) the backs of the pews would include inputs for plugging in the H.M.D.'s, headsets, and combination keyboard/touch pads; (3) aesthetically-pleasing conduits holding the wires would run along the backs of the pews, down to the floor, and under the floor to computers in another nearby room.

Before each SUMMA SERVE service, church staff would bring the hundreds of H.M.D.'s, headsets, and keyboard/touch pads out of storage—where they hung in carts, hang them on the backs of the pews, and plug the jacks into the outlets. After the service the congregants would return the equipment to the carts, which staff would roll into the secured closet. Another possibility would involve forgoing the wires in favor of using wireless H.M.D.'s, headsets, and keyboard/touch pads. Ideally, a one-to-one ratio of users to avatars would exist. Therefore, a human user would stand behind every avatar. Each of the dedicated SUMMA SERVE congregation and worship leaders and the online users from around the world would operate his or her avatar.

The "Entrance" progresses with a greeting to the congregation in the name of Jesus Christ by an avatar of a pastor or other worship leader. Marva Dawn (1995) complains that too many

services exclude this invocation of the divine. They welcome members and guests to worship as homeowners would welcome guests in their living room, such as by saying only "Good morning" or "Welcome to our Church." Congregants could hear an instrumental piece played on an organ or piano, a piece that "the musician(s) [offer] to God on behalf of the entire congregation" (*U.M.B.O.W.* 1992, 17). The V.E. could show the avatars of the musicians as they play or of the choir as they sing an Introit, that is, a sung "Christian greeting to the congregation" (18).

The avatar of a liturgist or other worship leader could invite the avatars sitting in the nave to stand as they responsively recite the written call to worship. Since users would not have an order of worship printed on a piece of paper to reference, any words that congregants need to say, sing, or read could appear as an overlay on the users' screens. The physical sanctuary of N.R.U.M.C. does not have screens or projectors; instead in the sanctuary, they distribute printed bulletins before the start of their worship services. SUMMA SERVE would require that users have microphones and headphones, preferably as combined headsets, so that users could speak and sing and also hear the speech and singing of other users.

The opening hymn follows the call to worship. With a traditional style of worship, the SUMMA SERVE congregation would sing traditional hymns from *The United Methodist Hymnal* (*U.M.H.* 1989), while the choir would sing traditional choral pieces. Avatars of choir members would appear to sing. After the hymn as the avatars sit in their pews, the avatar of the pastor would lead a collect, that is, a prayer for the day. The choir would lead the congregational singing of the Gloria Patri (71) before singing an anthem, which would conclude the "Entrance" portion of the service.

B. Proclamation and Response

1. Berryman's "Godly Play" as a theoretical model for V.E.'s

The proclamation of the Word of God as found in scripture serves as a point in the framework for an extended address about "Godly Play." Jerome Berryman (1991)(2006) created "Godly Play" as "an imaginative method for presenting scripture stories to children," although youth and adults also may benefit from this approach. Teachers of Sunday school, weekday schools, and catechetical classes and even pastors who provide care in hospitals such as Children's Medical Center in Dallas have employed "Godly Play." Instead of simply reading scripture and saying what the texts mean, a teacher of "Godly Play" invites children to wonder and imagine as the teacher uses manipulatives[60] to dramatically show them the story. A handful of children, usually sitting in a circle on a carpeted classroom floor, on a rug, or on rectangular carpet-samples, watch the storyteller move the manipulatives and listen as she or he describes a biblical account, at times without saying a word. Rebecca McClain (2017) explains how to adapt "Godly Play" for adults, such as in "preparing adults for baptism, confirmation, and reaffirmation of vows."

Even though Berryman (2006) calls the presenter *the story<u>teller</u>*, he would prefer that the presenter apply the proposal of David Rosenwasser and Jill Stephen (2008, 5) to "shift from evaluative adjectives and explicit statement to concrete detail." While these English professors in their recommendation refer to writing rather than to oral or dramatic proclamation or to virtual simulation, presenters of "Godly Play" and designers of V.E.'s incorporating "Godly Play" ideas

[60] Usually made of wood or plastic, manipulatives are pieces that teachers or students handle; for example, pieces might represent biblical characters or props. Teachers might move them while acting out a biblical story. Three-dimensional manipulatives of human characters, such as in the familiar nativity scene at Christmas, usually measure two-to-six-inches high.

and methods may provide "concrete detail" in their descriptions in order to help their audience visualize and understand the sacred stories. *This project presents "Godly Play" as a way to conceptualize how V.E.'s could communicate scripture for pedagogical and worshipful purposes*.

"Godly Play" invites adults, youth, and children to enter into biblical stories. "In ancient times, the Bible was not a book," as Berryman (2006, 53) informs the reader. "It was stories, often told around a campfire." Before the codex and even before the papyrus sheets of manuscripts of what would become the New Testament, oral transmission communicated biblical stories. Early Christians could remember and retell narratives more easily than they could explicit statements. The Apostle Paul indirectly addresses oral transmission in his correspondence with the Christians in Corinth, Greece. For example, Werner Kelber (1983) comments on the following media passage of Paul to the Church at Corinth:

> You yourselves are our letter, written on our hearts, to be known and read by all; …written not with ink but with the Spirit of the living God, not on tablets of stone but on tablets of human hearts…; our competence is from God, Who has made us competent to be ministers of a new covenant, not of letter but of spirit; for the letter kills, but the Spirit gives life. (II Corinthians 3:2-7)

The Corinthian Christians serve as Paul's letter of recommendation. Kelber identifies Paul's "letter" that "kills," surprisingly not as the Mosaic law, but as the writing (*gramma* in Greek) in ink.

Paul here sounds like Plato (1892), who developed a disdain for writing. While Plato dislikes writing because the written words know neither their audience nor their reception and

thus cannot make any necessary adjustments to improve clarity[61] and because writing leads to a reliance on the written word at the expense of memory, Paul thinks unfavorably toward writing, according to Kelber and Berryman (1991, 66), because the written word "confines…, reduces…, [and] enslaves the power of oral, direct communication." Kelber finds in Paul a concern about Christians' objectifying the written word and thus worshiping the Bible. In other words, Paul worries that Christians will turn the communication technology of the written word into an idol. Regrettably, Paul's fear at times, especially since the Protestant Reformation, has become a reality in which too many Christians worship the Bible in codex form rather than, or along with, the God revealed in its pages.

"Godly Play" seeks to recapture the communication of the story in forms outside the written text. Specifically, Berryman (1991, 67) wants to recapture the gospel's orality, which the writer of Mark wants the hearer to hear, as evidenced by Mark's first verse—"The beginning of the good news of Jesus Christ," in which the good news, that is, the gospel, "is an oral announcement." Affording when needed both silence and audience tailoring, oral communication requires effort on behalf of the listener to pay attention and remember the words of the speaker. "To enter into a story or oral message," contends Berryman (1991, 70-71), "one needs to give up control. One actively orients within the spoken story's time and space during the conveying of the communication. This stirs the imagination in a more right-brained way." Imagination and wonder remain hallmarks of "Godly Play."

As the name implies, "Godly Play" invites children to play. This project, recognizing that many researchers have studied play, especially the play of digital games, will briefly look at

[61] Unlike an American-football quarterback at the line of scrimmage, the written word cannot call an audible and thus change the play to one more suitable for succeeding against the presenting defense.

a seminal figure in play studies, Johan Huizinga. In the 1930's while researching the culture of medieval Christendom, this Dutch historian realized that play has sacred origins, which must not be forgotten, he says. In *Homo Ludens* ("Human the Player"), Huizinga (1949, 104) argues, "In history, art and literature everything that we perceive as beautiful and noble play was once sacred play." He boldly concludes that play serves as the basis of culture and that most of the cultural activities that he studied have their origins in play, whether recognized or not by the players.

"Huizinga's argument is fascinating and compelling," posits Donald Miller (1970, 19): "It compels one to view culture *sub specie ludi*, from the point of view of play. And this does not mean 'not seriously.'" Since play has such cultural import and since sacred play has such historical precedent, the invitation to "Godly Play" seems more than appropriate, even honorific. Jerome Berryman (2006, 18-19) asserts, "Godly Play helps resacralize the everyday things of the world, such as bread, wine, candles, oil, wood, linens and clay" and "teaches reliance upon a gracious God who is real and accessible in all the mystery of life." The play of "Godly Play" consists of guided activities rather than freeform recess; for example, after watching and hearing a biblical story in a group setting, students play through a craft activity. They individually "enter the story, wonder about it and *then* create meaning for their own lives" (19). Thus, sacred play functions both as the appropriate activity of "Godly Play" and as a way to understand what "Godly Play" tries to accomplish.

"Godly Play" provides people of all ages the opportunity to deliberately approach scripture from the ecumenical spiritual practice of *lectio divina* (divine or holy reading). Since ancient days adult Christians have practiced this form of deliberate, holy reading of the Bible. According to David Benner (2010, 52), "the twelfth-century Carthusian monk Guigo II …

identified four stages of monastic prayer…. He taught that prayer is a journey from the biblical text (*lectio*) to inquiry (*meditatio*) to response (*oratio*) and finally to the gift of God's presence (*contemplatio*)." These four stages have described the vector of prayer in *lectio divina*. Richard Foster (1992, 149) describes *lectio divina* as "a kind of reading in which the mind descends into the heart"; therefore, *lectio divina* seeks to allow the words of scripture to communicate deeply to the seat of the will, emotions, and conscience (McRay 1984b). In his summary of two medieval epistemologies associated with biblical stories, that is, the monastic and scholastic approaches, Berryman writes the following description of the former approach:

> Two primary ways of using stories were outlined by Jean LeClerq in his description of the differences between monastic and scholastic uses of scripture in the twelfth century. The monastic approach, known as *lectio divina*, or holy reading, emphasized the act of reading as an act of meditation and prayer. The reader came to the text to seek an intuitive understanding, to grow in wisdom, to savor the aesthetic value of the words and, ultimately, to encounter God. This monastic approach to stories is similar to the way we begin in Godly Play. (Berryman 2006, 21)

Berryman (19) contends that with "Godly Play" he has written a child-accessible version of *lectio divina* and asserts, "Godly Play helps children know God and the Bible instead of simply knowing *about* God or *about* the Bible." Nineteen-century South African missionary Andrew Murray (1888, 55) phrases the idea as an admonishment: "Study much to know the written Word; but study more to know the living Word," that is, Christ. Murray (1888, 6) calls this mystically knowing God, "the abiding in Christ, the living union with Him."

Berryman (2006, 19) intriguingly announces, "Instead of analyzing God's word, the children meditate in an artistic and kinesthetic way." Judeo-Christian meditation on scripture involves focusing on usually-short biblical passages, praying on them, and reflecting on them. John Wesley encouraged his pastors and other Methodists to meditate on scripture as a spiritual

discipline. While wanting to differentiate the devotional *meditation* of scripture from the analytical *study* of it, Richard Foster (1998, 20) classifies meditation on scripture as an "inner discipline" in which "we create the emotional and spiritual space which allows Christ to construct an inner sanctuary in the heart."

After the "Godly Play" storyteller/shower leads the children through the biblical story and each child reflects on the story, Berryman wants each child to respond by "meditat[ing] in an artistic and kinesthetic way." Such meditation differs from the usual mental activity of adult meditation over the centuries because Berryman seeks to offer the children's version of *lectio divina*. He may describe such meditation as artistic because he wants each child to dive deeply into his or her imagination to create a unique artistic design; as kinesthetic, because children physically move, especially their hands, when they make artistic creations.

Berryman's "Godly Play" offers important insights for the communication of scripture. He highlights the fact that the first communication of biblical stories happened via oral transmission, in which Christians of the first century told others the stories of the faith. Berryman wants Christians to recapture the orality of early Christianity.

2. Application of Berryman's "Godly Play" to V.E.'s

Designers could apply the above elements of "Godly Play" for the proclamation of scripture to the creation of V.E.'s. First, V.E.'s lend themselves well to the communication of stories, in this case, biblical stories. Marie-Laure Ryan in her two key texts (2001) (2015) expounds upon their similar titles *Narrative as Virtual Reality*. While she refers to narratives in written form and how they function as V.R., this literary scholar also considers stories in electronic media such as V.R. The Bible contains a variety of literary forms, including poetry

(such as found in the Psalter and scattered throughout both testaments) and prose (such as short stories and parables). The four gospels contain stories and parables. A V.E. could show biblical characters as virtual agents acting in immersive 3D versions of those stories and parables.

The biblical world could become virtual worlds that act as the setting for the stories of the Bible. Rather than show a static scene such as in a painting, a V.E. could include stories with dynamic plots, characters, and inciting incidents. The interactivity of V.R. would allow the user to change scenes and witness backstories. Plots could advance to what Eugene Lowry (2001, 49) in his "homiletical plot" calls the "Aha!" moment, which reveals "the clue to resolution." "Aha!" summarizes the story for Berryman (2006, 25) and provides, he hopes, a glimpse of the divine.

In an interview during the primary research, Dr. David Krum (2014) of U.S.C.'s I.C.T. describes a "Christmas Carol" effect in relation to the simulation of biblical stories. In Charles Dickens's novel *A Christmas Carol*, three ghosts individually accompany Ebenezer Scrooge on third-person-perspective visionary trips showing his past, the present, and his future. He could see and hear himself and others in these visions, but neither he at that age nor anyone else in the three scenes could see or hear him or the ghosts. Similar to how Ebenezer may not change the outcome of what he sees or hears in his three nighttime Christmas visions but may simply observe, Krum agrees with this research that the user of a V.E. simulating a biblical story may not change the outcome of a story in the Bible *and remain faithful to the canon*. A V.E. simulating biblical stories, however, may afford the user's freely walking around the scene and seeing and hearing the scene from vantage points not described in the written Bible. Users literally could approach familiar biblical stories from new perspectives and thus gain new

meanings for themselves.

V.E.'s can cultivate orality, the second selected element of "Godly Play" for biblical storytelling/showing. In *The Oral and the Written Gospel*, Werner Kelber (1983, xv) begins, "I have written this book out of a concern for what seemed to me a disproportionately print-oriented hermeneutic in our study of the Bible. Walter J. Ong … has termed it the 'chirographic bias' of Western intellectuals," that is, a preference for the written or handwritten over the oral (Ong 2000, 189). V.E.'s of digital culture provide, if not an alternative, at least a supplement, to the codex of print culture. V.E.'s for the proclamation of scripture can help expand people's limiting the Word to only the Bible as a printed book. In other words, such use of V.E.'s can help congregations to see that the stories and message of the Bible may be communicated through communication technologies other than, or in addition to, the usual printed codex. As a result, V.E.'s with their audio and interactivity can assist with the recapturing of the orality of the very early church.

Third, V.E.'s can foster play. The literature review mentions how many Protestant churches, namely those using the rotation model of Sunday School, currently host computer labs in which children can play digital video games. Students are called "players" rather than "users." The game "Peter Welcomes" (MacQueen 2014), for instance, shows the biblical story of the four friends who lowered a sick man through the tiles in the roof of a house so that Jesus could meet and heal him. Designed for ages 9 through 18, the game requires that the player find a stretcher and carry the man "on the stretcher through the town and find Peter's house." But the incorporation of the "Godly Play" element of play into a V.E.'s proclamation of scripture can produce a more spiritually-profound experience than can a commercial video game for children's

Sunday School. "Godly Play" invites the child, youth, or adult to tap into his or her imagination and wonder. Regarding this invitation, Berryman (2006) makes the following resolute assertion about what happens in "Godly Play":

> In Godly Play the invitation is given not for play in general but for play with the language of God and God's people: our sacred stories, parables, liturgical actions and silences. Through this powerful language, through our wondering, through the community of players gathered together, we hear the deepest invitation to all: an invitation to come play with God. (12)

That last sentence introduces a key point. *A V.E. for the proclamation of scripture can deliver an opportunity for an experience with God*. With such a V.E., more can happen than a user's donning of a V.R. H.M.D., wearing headphones, putting on haptic gloves, and viewing/hearing stories from the Bible as if the user were watching Sunday morning cartoons or fictitious stories; rather, with a V.E. designed with high-resolution 3D graphics, realistic-looking characters and backgrounds, clear audio, and most importantly, solid theology and fidelity to the biblical narratives, the user could sense both God's abiding presence and even God's speaking to him or her.

A V.E. could model the fourth element, *lectio divina*. Since a V.E. can regulate time, a V.E. could deliberately slow the rate of the telling of scripture so that users have time to allow the scripture to sink into their souls. Meditative or pastoral graphics and music could enrich the experience. Incorporating times of silence could afford opportunities for the user to pray and meditate. *Meditation, medium, media* and other related words share the first four letters. Meditation, such as *lectio divina*, acts a medium between the meditator and God. In different words, the medium of meditation enables the meditator to commune with God.

The meditation could become kinesthetic meditation, a fifth element taken from "Godly

Play." Berryman (2006) contends that all ages benefit from the monastic approach to scripture meditation; but if children do not familiarize themselves with it by the time that they reach middle school, then they will not have laid a foundation for the critical thinking of the scholastic approach. Berryman argues, "Too often these analytical skills [of the scholastic approach] develop without a deep grounding in the monastic approach, which rests on an appropriation of the oral transmission, known with the body" (22). Not only does physical movement accompany the oral transmission, such as the movement of hands when talking and gesturing, but also, *physical* organs of the human body sense touch, sight, hearing, taste, and smell.

Unlike most other communication technologies, V.E.'s can promote physical bodily movement. Donned with H.M.D.'s and sensors, users can physically walk around the physical space as they virtually traverse the virtual one. The motion-capture labs explored at U.T.S.A. and U.T.D. provide enough physical space for a researcher to safely walk around the gym-like rooms without running into physical obstacles. Covering the eyes with H.M.D.'s resembles closing the eyes in prayer. Christians usually close their eyes when they pray in order to focus (Jones 2015) on the unseen God and to practice humility. Medieval monarchs required that subjects not look at them or face a severe penalty if they did. That practice transferred to Christians' closing their eyes in prayer. Therefore, putting on H.M.D.'s bears a resemblance to closing the eyes in prayer: both visually block the surrounding, potentially-distracting physical environment and thus improve concentration. Both open other worlds, e.g., the V.E. and the interior world of the mind, respectively.

Although closing the eyes accompanies most prayers and meditation, some kinesthetic meditation requires the person to keep his or her eyes open. The ancient labyrinth provides a flat

walking path, usually consisting of concentric circles, for users to follow as they kinesthetically meditate. Figure 6.3 shows two people as they walk on an outdoor labyrinth in Edinburgh, Scotland. The campus of Perkins School of Theology at Southern Methodist University features a similar outdoor labyrinth, located in a courtyard between two buildings. Modeled after a famous labyrinth located inside Chartres Cathedral near Paris, France, the Ruben L. F. Habito Labyrinth at Perkins consists of "one single-coiled pathway leading toward a center and then

Figure 6.3. "Edinburgh labyrinth, George Square Gardens, Edinburgh, UK." Photo by Di Williams (2005), uploaded at her request, CC BY-SA 3.0. Accessed January 10, 2017. https://commons.wikimedia.org/w/index.php?curid=5233507.

back to the world again. To follow the way of faith in a labyrinth is to journey to the sacred center and then return, renewed, to the world" (Perkins).

A V.E. could simulate such a labyrinth. A user could wear an H.M.D., proprioceptive sensors, and stereophonic headphones, with which to hear meditative instrumental music. Ideally, a clear double-car-garage-sized room such as a motion-capture lab would offer enough floor space for physically walking around the room, while motion-capture sensors mounted in

the corners of the floor and the ceiling would locate the user and follow his or her movement. The V.E. would picture the labyrinth, which does not necessarily have to be on a flat surface. For example, the terrain of the virtual labyrinth could remain flat or could vary in height, à la a hilly road course[62] like Road Atlanta or Watkins Glen International.

While Christian labyrinths do not equate to mazes, a virtual labyrinth could take advantage of V.R.'s three-dimensionality by turning the path into hallways, the walls and ceilings of which could display paintings, photographs, or other pastoral graphics conducive to fostering Christian meditation. Also, the V.E. could simulate various labyrinths, such as the indoor ones in Chartes Cathedral in France, in Saint-Omer in northern France (Wright 2001), and in the Trappist Abbey of Our Lady of Saint-Rémy in Rochefort, Belgium (Van De Poel 2016), and the outdoor labyrinths at Edinburgh, at Perkins School of Theology, on the lawn of University Park U.M.C. in Dallas, and at First U.M.C. of Coppell, Texas. Users of the V.E. possibly could have different spiritual experiences by switching among these labyrinths.

V.E.'s could model labyrinths for kinesthetic meditation and artistic meditation. Both of these types of meditation on scripture fall under the umbrella of nonverbal communication. Berryman (2016, 19) contends that the spirituality of adults who watch "children meditate in an artistic and kinesthetic way" in "Godly Play" benefits from the adults' sensing the children's nonverbal communication. The symbiotic relationship between these age groups helps adults achieve a needed "renewal of their nonverbal powers of communication" (131). A sixth highlighted element of "Godly Play," artistic meditation on scripture lends itself to virtual

[62] Road courses differ from oval racetracks like the Indianapolis Motor Speedway and the Texas Motor Speedway. Instead of always turning left, racecars on road courses turn left and right, speed up and down, and climb and descend. These variations add interesting elements for both the drivers and the fans.

simulation. Such a V.E. would assist adults with recapturing the nonverbal communicative skills that they might have exercised as children.

Consider apocalypse, one of the four literary genres that Conzelmann and Lindemann (1988, 26) identify in the New Testament: "gospel, letter, historical monograph, and apocalypse." Eugene Boring (1989, 55) of Brite Divinity School at Texas Christian University states, "*apocalypse* means literally 'removing the veil.'" When the V.E. simulates the apocalyptic biblical literature found in the Book of Revelation, the V.E. would deliver a canvas on which to paint the vivid imagery of John's apocalypse; for example, the first three chapters consist of seven letters to the churches of Asia Minor, and then chapter four suddenly bursts on the scene with a heavenly voice's inviting him to, "Come up here, and I will show you what must take place after this" (Revelation 4:1). Seven seals' opening, seven trumpets' blasting, creatures' worshiping, angels' appearing, choirs' singing, beasts' rising, Babylon's falling, battles' waging, God's judging, and the New Jerusalem's descending all await their simulation. Imagine a V.E. for the artistic meditation on the Book of Revelation in which some of the virtual walls either (1) remain blank except for the instructions for the users to paint them or (2) display the outline as in a printed coloring book and the instructions to paint among the lines. That V.E. would require the ability to allow each user to virtually paint within the V.E. The users could artistically meditate through their creative expression.

The Proclamation and Response part of a worship service framework offers an appropriate place to extensively address Jerome Berryman's "Godly Play" and to make the central claim that *"Godly Play" serves as a way to conceptualize how V.E.'s could communicate scripture for pedagogical and worshipful purposes*. While Berryman has written dozens of

books on "Godly Play" and related topics, this research identifies six elements—stories, orality, play, *lectio divina*, kinesthetic meditation, and artistic meditation—as especially applying to V.E.'s created for the proclamation of scripture. Congregational leaders could turn to these V.E.'s for the biblical proclamation for both worship and educational purposes. Some of these recommendations could occur in church buildings, while others would require other settings, such as motion-capture laboratories. Either way, exploration of "Godly Play" helps to conceptualize how V.E.'s could communicate scripture.

3. Application of "Proclamation and Response" to SUMMA SERVE

As this chapter returns to "Proclamation and Response," the question remains as to how the "Simulated United Methodist Model of A Worship SERvice in a Virtual Environment" (SUMMA SERVE) would model the proclamation of and response to the Word. "Proclamation and Response" immediately follows the "Entrance." In SUMMA SERVE an avatar of a worship leader prays a "Prayer for Illumination" asks God the Holy Spirit to illuminate the upcoming public reading of the text(s) for the day, the following preaching, and the congregation's hearing and understanding of both. An avatar of the preacher delivers the sermon, which interprets the biblical reading(s).

Since Christians consider the Word of God as a gracious gift of God, Christians live in response to that divine gift. The avatar of the preacher or other worship leader in the "Response to the Word" section invites congregants to respond to the call to become or grow as a Christian disciple while the congregation sings a hymn of invitation. Baptisms would take place as a response to the Word. Parishioners seated in the pews would remove their equipment and step toward the baptismal font at N.R.U.M.C. for baptism. Users participating in the service online

from distant locations could indicate their desire for baptism by using their mouse or touch pad to touch the virtual font. That touch would open a pop-up screen where they could indicate with their desires for baptism, joining the church, or making any other Christian commitments by typing in the blanks. Since an avatar of a pastor's baptizing the avatar of a parishioner would not count as a real baptism, especially since Christ incarnated Himself, the pop-up window could explain how the person could receive baptism into the Christian faith.[63] The "Response to the Word" section concludes with the recitation of a creed if not said already as part of the Baptismal Covenant.

Users could type their prayer concerns and joys when a screen appears in the V.E. with blanks in which to write them. A scroll of names of people for whom to pray could run on the left side of the screen in the H.M.D. An avatar of a pastor could invite the congregation to assume an attitude of prayer, to silent pray as music plays, and to listen to the pastoral prayer. Although a virtual baptism does not suffice as a real baptism, prayers in the V.E. count as real prayers. As demonstrated in the "Godly Play" section of this chapter, prayers and meditations in the V.E. can benefit from the described affordances of V.E.'s.

Avatars of congregants could shake the hands of nearby avatars during the passing of the peace. Users could type greetings to them as well. An involved technical option would consist of all of the users' wearing haptic gloves. When the users switched from third-person avatars to first-person perspectives, they could see their own virtual arm as they shook the hand of the other avatar. Their haptic glove would allow the user to feel the handshake. For people confined to

[63] The clergy of The United Methodist Church officially baptize people, not into a local congregation, but into the Church universal. The U.M.C. accepts the baptisms of people earlier baptized in other Christian denominations. United Methodists believe that the baptism of a baby is equally as valid as the baptism of an adult; therefore, United Methodists do not re-baptize people.

their homes for sickness or other reasons, the handshake with the haptic glove might come as one of the few contacts that they have with other people.

During the offering portion, people give money and other appropriate gifts for dedication. Worship designers over the centuries have placed the offering in the "Response to the Word" portion because Christians give in response to what Christ has done for them.[64] Many churches have added online financial giving to their possible avenues of giving. Users could direct their cursor to the offering plates in the chancel area. Clicking the offering plates would cause the pop-up window to appear. They could then select how they want to give. Of course, users in person could give checks or cash before or after the service. Passing the physical plate during the service while the people are wearing all their equipment might cause problems because H.M.D.s block their vision, headphones block their hearing, and wires and combination keyboards/touch pads fill their laps, leaving little room for the smooth passage of an offering plate. On Saturdays when the congregation celebrates Holy Communion, both avatars representing communion stewards and physical people in N.R.U.M.C.'s sanctuary could bring the bread and grape juice to the communion table. The keyboardist would play and the congregation would sing the doxology of "Praise God from Whom all Blessings Flow" (*U.M.H.* 1989, 95) as a musical response.

C. Thanksgiving and Communion

Although some U.M. congregations offer communion every weekend—usually in only one of their multiple services, most have communion only once a month. They select the *first*

[64] Some Protestants have joked that the reason why they locate the offering *before* the sermon, as occurs in the popular Frontier Revival order, is due to their observation that financial giving *after* the sermon indicates how well the pastor did or did not preach, and they want to avoid that possibility.

weekend of the month to indicate that they value communion because we humans value what we put first and because scripture, such as Romans 11:16, models the giving of *first* fruits. On the other weekends of the month, the avatar of the pastor would deliver a prayer of thanksgiving, after which the congregation would recite the Lord's Prayer.

Baptism and communion serve as the two sacraments of The U.M.C. and all other Christian denominations except the Salvation Army (Murdoch 1996, 66). The Roman Catholic Church and the Orthodox Church count baptism, Eucharist, and five others as sacraments. As with baptism virtual communion does not suffice as real Holy Communion. The avatar of the pastor would lead the congregation in the liturgy of "A Service of Word and Table II" (*U.M.H.* 1989, 12-15). The users would speak into the microphones the parts of the liturgy that they are to recite. The physical pastor would consecrate the elements. After the Lord's Prayer, the avatar of the pastor and the physical pastor would break the bread. The physical pastor would ask those users in the physical sanctuary to hang up their gear, stand, and carefully walk toward the center aisle. They would receive communion either by intinction[65] or by kneeling at the communion rail and having communion assistants carrying half loaves of bread and trays of grape juice give them a piece of bread and allow them to select a small glass of grape juice from the tray. If the pastor and assistants serve communion by intinction, that is, by handing the parishioners broken-off pieces of bread and having them dip the bread into a chalice of grape juice, then the congregants may walk over to the communion rail and kneel for prayer or head directly back to their pews. The users not located in the sanctuary may participate by contacting N.R.U.M.C. a week or two before the first weekend of the month and requesting that a currently-available

[65] Clergy who serve communion by intinction stand at the front of the sanctuary and offer a common chalice, into which parishioners dip a piece of bread, a communion wafer, or a cracker.

communion packet, which includes a cup section holding grape juice and another section containing a communion wafer. The church would ship the single-serving packet to them ahead of time. When the people in the physical sanctuary receive communion, the people at home may open their communion packets, eat the wafer, and drink the juice. At the conclusion of communion, the pastor asks everyone to return and don his or her equipment in preparation for the sending forth.

D. Sending Forth

The avatar of a worship leader invites the avatars to stand for the closing hymn, after which the avatar of the pastor stands at the front of the sanctuary, faces the people, and declares God's blessing with a benediction. The congregation goes forth as the musicians play a voluntary on the organ or other instruments or as everyone sings a recessional song. The church gathered—in a virtual space for all and in a physical space for some—becomes the church scattered. *The Book of Worship* (1992, 32) declares, "Like the Gathering, the Going Forth is an act of corporate worship as long as people are still with other people in the place of worship." As the service began when the people arrived for worship, the service ends when the people finish their informal conversations and fellowship.

SUMMA SERVE would benefit people in the pews and the users online. The people in the pews, for instance, could benefit from the affordances of V.R., as this chapter will explain. SUMMA SERVE would provide a 21st-century way for a church to expand their reach to beyond their walls, even beyond their country. Rather than offer a one-time only evangelistic experience, SUMMA SERVE would continue every weekend because SUMMA SERVE is a real congregation. This hybrid of the virtual and the physical offers the possibilities of Christian

relationships developing in the physical world. Moreover, N.R.U.M.C. could offer online Bible studies and other classes and could arrange meet-ups for study, missions, and fellowship. The environment of SUMMA SERVICE might be virtual, but the faith is real.

II. The Virtual Faith-Explorer

This research recommends the creation of the Virtual Faith-Explorer (V.F.E.) as an evangelistic tool to reach 18-to-35-year-olds with the message of The U.M.C. and other faiths. That age group is missing among many churches. Jolene Cassellius Erlacher (2014, 10) claims that young adults rarely *join* churches or other formal organizations and prefer loose affiliation. As the Gallup research indicates by their inclusion of "universal spirit" and "higher power" in their questions about belief in God, Westerners have broadened their definition, if not of God, then at least of spirituality (Barrick 2011). Similarly, Gordon Lynch (2012, 16) prefers to apply his socio-cultural approach to "sacrality" rather than to religiosity. The V.F.E. thus correlates with his "mediation of sacred forms" framework, which employs a definition broader than that of religion. Otherwise stated, Lynch (2012, 16) advocates the "sacred" over "religion."

Today's members of the millennial generation desire to involve themselves in causes whether or not those causes are associated with particular faiths; therefore, their definitions of the sacred might or might not align with traditional descriptions of God. John Charles Cooper (1986) defines *spirituality* as "the condition of spiritual-mindedness, or devotion to God and the things of the spirit." Such a definition complements V.R. Rachel Wagner (2012) notes that spirituality and V.R. have common goals: to build other desired worlds, to afford the opportunity to play, to enact performance via ritual, to connect with the other, to create order, and to seek transcendence. Hinrichs and Wankel (2011, xiii) contend, "Virtual worlds are indeed

worlds." The V.F.E. would consist of a website with a combination of virtual worlds or V.E.'s representing many faiths. Users could select which faith that they want to explore and then on the screen enter a virtual classroom representing how each faith would teach newcomers about the faith and also enter a virtual worship space to show each faith conducts worship.

By using V.R. the V.F.E. could provide experiences in virtual worlds. Web 1.0 allowed Internet users to learn through text, photographs, videos, sounds, and hyperlinks. Web 2.0 increased interactive learning by allowing the users to upload content. But V.R. offers more interactivity. Since the V.F.E. has the ultimate goal of increasing not only knowledge of, but also, active participation in, organized religion, the V.F.E. needs to deliver levels of interactivity greater than what other technologies can give. Most powerfully experienced on a desktop computer, the V.F.E. would become immersive technology by the use of H.M.D.'s. Headphones would help users to clearly hear and to focus on what they hear. This research's desire is for the V.F.E. to serve as an evangelistic tool that would not leave people in cyberspace but would help them to find a local congregation in the physical world and encourage their involvement in that grounded house of worship. *Since the V.F.E. would exemplify a journey into the virtual, which could lead to a new trip in the physical, the V.F.E. thus could help the user avoid the temptation to settle for a Gnostic faith; instead, the V.F.E. would demonstrate the importance of an incarnational one.*

The V.F.E. would allow people, especially young adults, to anonymously explore various faiths. Instead of investing the time and energy to research numerous faiths and to visit physical churches, temples, mosques, and synagogues, users could enter, not their cars, but the online world to find the majority of faiths conveniently located on one site. No one would know which

faiths they select. In comparison to what would happen on a physical campus, no one would see them enter or exit the facilities because they did not physically visit them. In comparison to what would happen in an online church in Second Life or at SUMMA SERVE, no one would see their avatars because the other virtual characters would be agents rather than avatars. Such anonymity could lower the user's social anxiety level about visiting a new house of worship in either the physical or virtual world. Similar to how college students who are less anxious in class are more receptive to learning in Garner's (2006) studies, V.F.E. users with lower anxiety probably will be more receptive to learning about faiths.

Although *The Handbook of Denominations* (Atwood 2010) identifies more than two-hundred religious groups in the United States, this research recommends a more-manageable number of choices: thirty three. This research recommends that the V.F.E. represent major world religions, seventeen Protestant Christian denominations, other popular faith groups, and even atheism. The inclusion of atheism allows users to learn what atheism proposes and to compare it to other belief systems. Sixteenth-century German reformer Martin Luther saw the value of having more than one choice of possible Christian churches because he believed that having denominations and thus more choices afforded a worshiping community for every German Christian (Duke 1992). Twenty-first-century Europeans (Davie 2010, 172) and Americans also value having choices, including choices of where to worship.

The V.F.E. would allow religious faiths to meet 18-to-35-year olds where these young adults are: in front of a screen. Young adults have lived in a time shaped by digital technologies and media, which have shaped especially them. Young people "perceive and interpret reality through screens" (Kinnaman 2011), such as those of laptop computers, tablets,

overhead projectors, televisions, desktop computers, cell phones, and other mobile electronic devices. Religious leaders from each faith could write the narratives and design the virtual environments of their respective faiths so that users hear and see messages that those faiths want to present on the screen. Martin Luther utilized the printing press to disseminate his message; for example, he had a printer make copies of his "95 Theses" on a press. He distributed those copies to the German people. Eighteenth-century English reformer John Wesley personally took his message to the coal miners of Bristol and the villagers of Epworth. In the 21st-century, religious leaders can utilize newly-invented media technologies and follow the examples of Luther and Wesley to respectively take their messages to where the people are.

This research contends that the faith of The U.M.C. can withstand comparison to the faiths of other religions and other Christian denominations. Faith groups need not compete with each other; instead, denominations need to communicate a message that truthfully attracts people unaffiliated with any church. Moreover, having a Kingdom of God mindset, in which the edification of the universal Church overcomes the building of a local church or denomination, proves beneficial for Christians. College students and other young adults want to explore various faiths without high pressure to believe and/or join. By knowing their options, they can make informed decisions. Thomas Berger (2014) recommends that churches need to overcome the "juvenilization" of the presentation of the Christian faith and the resulting immature spiritual traits by guiding young people toward spiritual maturity, which he defines as "basic competence in the Christian life." Since the V.F.E. directs interested users out of cyberspace and into local congregations, those churches can guide them along the path of discipleship.

III. Summary

The ancient four-part order of Christian worship services act as this chapter's framework for presenting the application of V.E.'s for faith communication. The analysis of Jerome Berryman's "Godly Play" appears during the Proclamation and Response section of that framework. "Godly Play" itself serves as a theoretical model for understanding how V.E. designers could utilize V.E.'s for presenting scripture in the context of worship and pedagogical settings. As with the features of "Godly Play," V.E.'s, particularly those made in V.R., have the advantage of showing and not just telling biblical stories. Children, youth, and adults could enjoy the resulting benefits of understanding, remembering, and gaining new insights, "new forms of truth that accompany, although obscurely, the dynamic of virtualization" (Lévy 1998, 184).

This chapter deeply describes SUMMA SERVE and the V.F.E. as two recommended V.E.'s for faith communication. SUMMA SERVE fits James Carey's (2009, 15) "ritual view of communication" with that framework's "representation of shared beliefs," while the V.F.E. suits Gordon Lynch's (2012) "mediation of sacred forms." The physical sanctuary of N.R.U.M.C. would act as the referent for the modeling of SUMMA SERVE, while a new Saturday-evening SUMMA SERVE worship service would provide congregants both online and offline with a service of worship. In other words, members and leaders of a physical congregation in North Carolina would control their own avatars and thus enable the synchronous online participation of other people through additional avatars. While the people sitting in the pews of N.R.U.M.C. could garner the already-described benefits of V.E.'s for faith communication, they would serve others online by acting as the people behind the avatars. Potentially, the online congregation

could grow to reach hundreds or thousands of new people and thus, like the V.F.E., enlarge the Kingdom of God.[66] SUMMA SERVE and the V.F.E. not only could enable people respectively to participate in an online worship service and to explore faiths online, but also, correspondingly to return to the physical space and to exit the virtual world for a physical local congregation.

Such hybrid approaches lead to an M.R. framework of the physical and the virtual; moreover, *this research recommends an M.R. framework that combines the physical and the virtual*, *what this project calls the SUMMA SERVE framework*. Virtuality affords extended reach, new spiritual insights, and other benefits, while physicality allows for the reception of the sacraments and interpersonal and tangible interaction in-person. This M.R. framework has its supreme expression in the doctrine of Christ's incarnation, which states that the Second Person of the Trinity took on human physicality in Jesus of Nazareth. "For us and for our salvation," declares the Nicene Creed, "He came down from heaven, was incarnate of the Holy Spirit and the Virgin Mary and became truly human" (U.M.H. 1989, 880).

[66] To "enlarge the Kingdom of God" involves the conversion of non-Christians to Christianity. The universal Church and thus the Kingdom of God grow through such evangelistic professions of faith.

CHAPTER 7

CONCLUSION

> Among the contemporary avenues of artistic exploration, one of the most interesting is the discovery and exploration of the new forms of truth that accompany, although obscurely, the dynamic of virtualization. (Lévy 1998, 184)

I. Introduction

This project has sought to answer the research question, "Do inherent qualities of virtual environments offer additional faith communication dimensions that are different from other media types?" Originally, the research question and the dissertation's title referred to "immersive computer-based media," but secondary research soon revealed that V.R. scholars presently write of "virtual environments." Thus, the research question and the title soon replaced the nomenclature of "immersive computer-based media" to that of V.E.'s.[67]

In seeking to answer the research question, this investigation examines the elements of the dissertation's title, *Virtual Environments as Communication Technologies of Faith*. For example, the literature review goes into depth with the scholarly understandings of *virtual*. The introduction, the primary research, and the applications all focus on V.E.'s. The literature review, the socio-cultural analysis of K.C.T.E., and applications look at *communication technologies of faith*, while the Methodist history, literature review, and applications center on the *faith* of The U.M.C. and its historical antecedents. Along the way frameworks shape the

[67]Another, minor reason for the preference of the nomenclature "virtual environments" over "immersive computer-based media" is that the latter creates the abbreviation "I.C.B.M." Ironically, a project concerning the peace-promoting U.M.C. would want to avoid the unintended promotion of "Inter-Continental Ballistic Missiles" as communication technologies of faith.

organization, presentation, and analysis. This qualitative study benefits from the opportunity to draw on (1) more-than-3,200 years of history of related disciplines and (2) the current research of V.E.'s.

II. Potential drawbacks and pitfalls of using V.E.'s for religion

Before traveling any farther down the roads of V.E. technology, readers need to tap the brakes and orient themselves with the map of possible concerns regarding communication technologies. Jerry Mander[68] (Lieser and Savage 1995) worries about the effects that electronic media have on the people who consume them. He writes, "By the mode of interaction that modern technologies impose, users slowly evolve into people who relate to these instruments and have adjusted to them" (25). Such evolutionary modifications take the form of changes to the person, and Mander wants to resist these alterations. He contends, "Many people do not question technologies as they are introduced, and do absorb them and do turn into a kind of machine person, serving the larger machine to a much greater extent than in prior times. That is a tragedy, and [is] what we need to organize against" (25).

While the extremist Mander resides in the Neo-Luddite[69] camp, according to Jan Harrington (2009, 79), Mander's admonition to question new technologies remains a valid one because society needs to know the socio-cultural, psychological, and even physical effects, whether beneficial, harmful, or somewhere in between, associated with the use of new technologies. A difficulty arises from the fact that the developers of the new communication and

[68]Although the words and terms sound the same, his formal name, "Jerry Mander," differs from the political term "gerrymander."

[69]Harrington (2009, 79) argues, "Neo-Luddites are by and large nonviolent. They write books and articles and make speeches to interested audiences. They hope to influence others, resulting in a groundswell of popular opinion against the use of technology."

other technologies, let alone society, cannot fully know all of those possible effects at a product's introduction to the market. In famously declaring, "Questioning is the piety of thought," philosopher Martin Heidegger (1977, 35) highlights the importance of deeply examining "our sheer preoccupation with technology," which would encompass technologies used to communicate. The subjects related to communication technologies touch on concerns to United Methodists and other orthodox Christians.

An important concern for readers of the Bible in codex form is what they might lose if or when Christianity moves away from the book to other technologies. Seeing the Bible as a book helps to instill the unity of the Bible in its readers. By seeing the front and back covers, they see the bounds of the canon, something more difficult to see in a digital Bible. As the world's least-read bestselling book, the Bible has sat on many living-room coffee tables. The family knew its location. Guests noticing it when visiting could surmise that they had entered a Christian home; therefore, the living-room Bible supported the family's identity as a Christian one. The family probably would not publicly display a digital Bible, such as on a Kindle or iPad, on the coffee table. U.M. and other churches traditionally have given people of all ages gift Bibles. The transition to giving digital Bibles has been slow in coming and possibly awkward.

Other pitfalls center on the possibility of negative experiences with the technologies. Users of I.V.R. for religious reasons, especially if not comfortable with I.V.R. for other purposes, might encounter cyber-sickness, such as researched at S.A.V.E. Dizzy users might attribute their negative experience to the technology, the Bible, religion, or even God. Also, a possible pitfall of beautifully looking V.E.'s might be that users allow the aesthetics to distract them from their intended task, according to Ryan McMahan (2017). The end user and the designer would rate

the experience as negative because the user went there for religious purposes but failed, for example, to learn about prayer as he or she wanted to do.

While observing virtual agents rather than beholding heavenly backgrounds, Ring, Utami, and Bickmore (2014) found in their study that virtual agent appearance affected how users related to them. Study participants viewed the cartoon-shaded agents as friendlier, more likeable, and more caring than the realistically shaded agents. These results were desirable for designers who wanted such qualities in their agents. But when the agents were helping in medical simulations, the study participants wanted the more realistic-looking agents to help them. Applying these study results to V.E.'s for faith communication would mean that virtual agents in them would need to be more-realistic looking, at least for adults and youth. Children might prefer the cartoon-shaded agents.

A similar study by Volante (et al. 2016) and colleagues "shows that interactions with stylized virtual humans in virtual reality systems can also potentially suppress levels of emotional bonding and alter affective reactions to the virtual humans in simulated interpersonal trainers." Designers applying these results might have the goal of making their agents appear realistic in order to increase emotional bonding, which would help users trust what they experience in the virtual setting for faith communication.

A theological apprehension centers on the wish to avoid the heresy of Gnosticism, which will be explained. Biocca, Kim and Levy (1995, 7) propose, "The drive powering the creation of many of these media [i.e., painting, photography, film, television, and V.R.] has included … the ancient desire for *physical transcendence*," the seeking of which "is nothing less than the desire to free the mind from the 'prison' of the body." Freeing the mind from incarceration in the

physical body describes a goal of Gnosticism. This ancient religious thought champions a dualism between the spiritual or ideal and the earthly, with the former's outranking the latter (Placher 1983).

Deemed heretical by the non-affirmation of the "Apostles' Creed" (González 1984a, 63), Gnosticism believes that divine sparks, wisdom, or knowledge (*gnosis*) resides in a human, not just any human, but those exclusively endowed with the secret knowledge. Salvation entails liberation of the secret knowledge from the prison of physicality (Harvey 1964, 105). Historical examples too numerous to list have demonstrated how not only the preference of the spiritual over the earthly, but also, the consideration of the physical as evil have resulted in animal cruelty, environmental devastation, human marginalization, and even genocide. Therefore, a recommendation of V.R. needs to avoid the subjugation of the physical.

The precautionary pendulum can swing too far toward not only Gnosticism to the left, but also, materialism to the right. In *Holiness of Heart and Life*, Stephen Seamands (1990, 37) writes, "We live in a culture that worships at the altars of consumerism," from which we humans need to separate ourselves. Consumer electronics become outdated quickly with the obsolescence planned by the manufacturers. Always wanting to stay current by upgrading mobile phones, computer operating systems and software, and computer hardware comes at a cost, not only to our pocket books, but also, to our lives. "For what will it profit them," asks Jesus, "if they gain the whole world but forfeit their life?" (Matthew 16:26). People can allow their material pursuit of attaining the latest technology to become idolatrous, that is, they, often unknowingly, position technology in the place of what they value most highly in life. In his letter to the Romans, Paul warns, "[Humanity] exchanged the truth about God for a lie and worshipped and served the

creature rather than the Creator" (Romans 1:25).

Church tradition dating back to the Apostolic Fathers[70] includes greed among the seven deadly sins (Dunnam and Dunnam-Reisman 1997). In a parable of Jesus, God advises the rich fool, "Take care! Be on your guard against all kinds of greed; for one's life does not consist in the abundance of possessions" (Luke 12:15). Jesus tells the crowd gathered on the hill, "Do not store up for yourselves treasures on earth…; but store up for yourselves treasures in heaven…. For where your treasure is, there your heart will be also" (Matthew 6:19-21). Three verses later, Jesus adds, "No one can serve two masters…. You cannot serve God and wealth" (Matthew 6:24). The Psalmist declares, "[The other nations'] idols are silver and gold, the work of human hands" and "Those who make them are like them; so are all who trust in them" (Psalm 115:4, 8). In *Stewards Shaped by Grace: The Church's Gift to a Troubled World*, Rhodes Thompson (1990, 41) reasonably admonishes, "We must identify those idols and the ways they squeeze us—their makers—into their molds. Without such painful diagnosis, there is no healing for us and our world." Clearly, scripture, tradition, reason, and experience (Outler 1991) have something to say against materialism and greed.

What kind of attitudes toward communication technology and art would benefit people of faith? The author of the twentieth Psalm speaks of the relationship of people with technology: "Some take pride in chariots, and some in horses, but our pride is in the name of the Lord our God" (Psalm 20:7). Other translations such as the *New International Version* replace "take pride in" with "trust." Instead of trusting in the communication technology for our physical and spiritual salvation and thus idolizing it, people can trust in God. Instead of worshiping the

[70] The Apostolic Fathers wrote between about A.D. 50 and 150. Such writings include the *Didache* and those of Clement of Rome, Ignatius of Antioch, and Polycarp (Tugwell 1989).

creation, people can worship the Creator. Considering God the "Supreme Artist" in a "theistic universe," Clyde Kilby (2016, 107, 124, 125) proposes that a theistic view of aesthetics "precludes the substitution of art for religion" and "enables one to love art without worshiping it." Jesus provides the best model to emulate regarding our attitude toward technology. Instead of worshiping the *technē* or allowing the *technē* to deterministically shape Him, Jesus, the ultimate *tektōn,* makes and uses *technē*; therefore, His followers do well to make and use technology to communicate the faith.

III. Summary of Findings

In order to answer its research question, this project began by introducing and defining terms associated with V.E.'s and laid out the historical path from the early church of the New Testament to The U.M.C. of the 21st-century. The extensive literature review looked at what other scholars have claimed about numerous subjects related to the intersection of communication technology and the faith of The U.M.C. This longitudinal review included socio-cultural analyses of K.C.T.E. from the creation of the alphabet to the invention of V.E.'s.

A. Findings from the socio-cultural analysis of K.C.T.E.

The alphabet and writing made possible the writing of what-Christians-call "the Old Testament," the New Testament, and every other text that Methodists have read. They also afforded a journey into and toward the virtual, especially regarding the Bible and God. The two stone tablets on which Exodus claims that God wrote the Ten Commandments with His finger, for example, can conceptually become virtual communication technologies for Jews and Christians because the worshippers can mentally place themselves "almost there" (Denegri-Knott

and Molesworth 2013, 2) in the biblical scene in particular and can more abstractly see *themselves* as recipients of the benefits of Moses' encounter with the Lord. As a result the two stone tablets in this mental model ultimately become a virtual portal that opens into God's presence.

Emanating from God the Holy Spirit, passion among Christians acted as the cement that unified and forwarded the belief into the virtual. The virtual then is a seeking, an aspiring to an abstracted unity. The Bible considered virtually is a spiritual form enabled by technology. The human creation of the communication technology of the Bible as a book or codex produced for God the Holy Spirit a communication medium, one that He otherwise might not have had. Since the days of Moses, people have aspired to seek the Virtual Who is God. Christian mystics also have aspired to seek the Virtual that is unity with God.

Installed first in medieval church buildings, the stained glass windows of sanctuaries have communicated the faith and told stories of their creation in sunlit artistic visual imagery to both literate and illiterate worshipers. The literature review demonstrated that stained glass windows can serve as a metaphor for technologies that communicate the faith. Although not the cause, printing benefitted the Protestant Reformation by enabling the dissemination of knowledge via reasonably-priced, mass-produced Bibles, books, and other texts in the shift from scribal culture to print culture.

Broadcasting allowed Methodists and others to "go to church on the radio or television" when they did not attend worship services in person for whatever reason. The event of Web 1.0 continued the one-to-many broadcasting of the faith like radio and television and the metaphors of print culture, as evidenced by the use of such terms as *webpage*, *bookmark*, and *desktop*. The

event of Web 2.0 has captured the spirit of reformation by allowing the decentralized dissemination of knowledge because both clergy and laity could produce content and comment on the subject matter of other producers. These key events demonstrate Marshall McLuhan's (1962) insistence that new communication technologies do not replace old ones; rather, new ones add to the repertoire of possible technologies that people, in this case the people of The U.M.C. and its historical antecedents, may use to communicate the faith.

The use of the newest communication technologies, V.E.'s, affords communication of dimensions of the faith not possible with earlier technologies. Non-immersive virtual environment technologies such as N.I.V.R., N.I.A.R., and desktop digital games offer high amounts of interactivity for users, such as students in Sunday School. Since the 3D-graphical representation of Bible accounts, historical events, worship services, and possibly abstract theological concepts in V.E.'s allows them to be experienced "from the inside" (Ryan 2001, 20), students can glean a first-person perspective of the faith. A.R., especially I.A.R., can uniquely represent the Christian understanding that people of faith simultaneously reside in the physical and spiritual realms. As "an immersive digital environment that is isolated from the real world" (Rhodes and Allen 2014), I.V.R. uniquely makes possible the creation of a virtual sanctuary and the representation of the otherworldliness of heaven. All of these possible uses of V.E.'s could assist the user in virtualizing the faith, i.e. in conceptualizing the U.M. faith, not only in their heart and head, but also, in their imagination.

B. Findings from the primary research of latest developments

Primary-research trips to eight university labs around America revealed the latest developments in the V.E.'s related to V.R., A.R., and M.R. This investigation found *both*

historical technological predecessors along a path leading forward to today's V.R. *and* V.E. projects reaching backwards. The Atlanta Cyclorama, which opened in 1885, housed *The Battle of Atlanta* panoramic painting and aimed toward V.R. (Bolter 2015). The prayer nuts installation at Georgia Tech pointed in both directions, that is, the medieval devotional accessory had the viewable artistry, the scents, and the tangibility future researchers would simulate with mixed reality, *and* the museum installation employing N.I.V.R., audio, touchable 3D printing, and olfactory cues enabled patrons to experience the devotional usage of the prayer nuts and thus better understand what they were and how Dutch Christians integrated them into their prayer life. Other V.E. technologies that reach backwards include the V.R. *Virtual Rome* and A.R. *Battle of Atlanta* project at Emory University, the 1964-1965 New York World's Fair project at I.S.T., and the Sweet Auburn Digital Initiative's A.R. technologies at Georgia Tech. These V.E. technologies provide new perspectives for looking at history and thus afford new appreciations for cultural heritage and for historical figures, events, artifacts, and places. They also open and widen access to history for new students and researchers.

While this dual directionality demonstrates that V.E. technologies can provide fresh examinations of history and can act as the endpoints of vectors begun dozens or even hundreds of years ago, labs currently researching V.R. are using V.R. technologies to teach, train, promote, monitor, control, design, work, assist, connect, and even explore possibilities and raise money. For example, developers at L.I.T.E. created their version of the CAVE™, in which users can inspect virtual damaged oil derricks from under water—a feat very dangerous and difficult to accomplish in the real Gulf of Mexico.

The largest V.E. visited, the three-story-tall AlloSphere at U.C.S.B. allows researchers to visualize big data and gives artists an enormous new medium with which to create. With funding from the United States Department of Veteran's Affairs, which run a major nearby hospital, U.C.F.'s I.S.T. constructed the V.A.'s Virtual Medical Center as a collaborative learning V.E. that employs N.I.V.R. to enable veteran patients, providers, and staff to interact, conduct research, and offer clinical care. Developers designed the V.R. projects at the U.T.S.A.'s S.A.V.E. lab in an effort to teach medical school students critical decision-making skills, assist the physically handicapped, raise money for M.S. research and patient care, and connect homebound patients with walkers on the city's M.S. Walk.

People peering through or at the screens of A.R. technologies see enhancements to the physical world. Homeowners can stand in front of the Intelligent Home Intuitive Mirror system developed by M.E.T.I.L., which is a vertically-oriented, hypermediated, flat-screen television, and see more than their image: they can observe and monitor their vitals, control their house, and keep up with social media. M.E.T.I.L.'s Combat Hunter learning game augments reality by providing additional visual and auditory information on mobile devices for Marines in training. Visitors to the McNay Art Museum in San Antonio can augment the museum's collection with additional information on the "Reality Check" A.R. app and game designed by researchers at the nearby U.I.W.

As the name implies, M.R. technologies bring together multiple V.E. technologies and sometimes add physical components. For instance, the MxR Lab at U.S.C.'s I.C.T. trains sailors with the Blueshark installation, which combines I.V.R., haptic components, audio, and a physical captain's chair. At U.C.F.'s I.S.T., a V.E. on a personal computer extends into the physical

realm with a device that emits battlefield odors and with a realistic looking and feeling human arm that trains Army field medics to apply tourniquets. As mentioned, the multisensory prayer nuts installation of Georgia Tech's S.M.L. exemplifies M.R. The installation appeals to the senses of sight, smell, hearing, and touch respectively via visible prototypes and projected V.R, scented oils, recorded sounds, and 3D-printed tangibles that patrons can open, close, and hold.

Trips to some of the leading V.E. labs in America resulted in witnessing and experiencing the V.R., A.R., and M.R. technologies that they are developing. Only two of the universities have church affiliation: U.I.W. with the Roman Catholic Church and Emory University with The U.M.C. Interestingly, this researcher found the most-religiously-oriented project, i.e., the multisensory prayer nuts exhibit, at one of the state universities—Georgia Tech.

IV. Conclusions

This investigation answers in the affirmative its research question, "Do inherent qualities of virtual environments offer additional faith communication dimensions that are different from other media types?" Simply put, *V.E.'s do offer additional faith communication dimensions that are different from other media types*. Christians have communicated the faith through oral transmission, scrolls, papyrus sheets, handwritten codices, printed books especially, radio, television, recordings, and the internet. With the advent of V.E.'s, United Methodists and other Christians can communicate additional faith dimensions.

First, V.E.'s can impart the Aesthetic dimension of biblical accounts. Kilby (2016, 85) observes, "A theory of scriptural inspiration which does not acknowledge God in His aesthetic aspect is obliged either to deny the Bible as literature or else suppose that the artistic element belongs not to the inspiration proper but only to the humanity of the writers." Christianity has a

2,000-year relationship with the arts. Through literature, painting, sculpting, music, drama, film, and architecture, artists have creatively communicated the stories of the Bible. V.E.'s can show biblical stories as has been described. However, V.E.'s, especially immersive V.R., produced with high-quality graphics, sound, and movement and designed with the faithful-to-the-text storyline can envelop the user in such a way that he or she uniquely senses the aesthetics of the biblical stories. For example, a V.E. showing the creation narratives of Genesis might elicit feelings of awe when the users find themselves transported to the beginning, standing on the shoreline, and looking at the crystal-blueness of the oceans ahead, at the greenest trees behind, and at the finest particles of sand underneath. Since God created beauty and advocates for it, such an immersive V.E. helps users to profoundly notice His beauty.

Second, V.E.'s can uniquely impart the truth of the inclusion of Christians in the biblical narrative. When some rabbis today tell their congregations stories of the Hebrew Bible, they replace *Israelites* and *they* with *we*. They might say, "When *we* escaped bondage in Egypt" or "When *we* entered the Promised Land." Members of the synagogue might respond with feelings of inclusion with the biblical narrative. In other words, they are seeking the Virtual, that is, a unity with God and their formational history.

The twentieth and twenty-first-century fascination with eschatology by many fundamentalist Christians demonstrates their wish to extend the biblical storyline to today and to give themselves front-row seats. Thus, they too are seeking the Virtual, Who is the God Who is bringing the story to them. V.E.'s of biblical stories could offer a necessary corrective by going in the opposite direction in time by showing how Christians fit into the biblical narrative. V.E.'s could virtually place users within the biblical stories of the ancient Near East, where they could

see, hear, and touch. For example, the V.E. could virtually place the user on the hill to hear the Sermon on the Mount. From a first-person perspective, the user could clearly determine that Jesus is addressing him or her. Since Jesus in the Gospels and the Acts of the Apostles repeatedly communicates His desire to include His disciples in the Christian narrative and mission, a V.E. in I.V.R. could back up and show users that, yes, they fit into those stories.

Third, V.E.'s can uniquely communicate the teachings that Christians reside in the world but are not of the world. In the F.G. (John 17:16), Jesus prays for His disciples, "They do not belong to the world, just as I do not belong to the world." An A.R. program with geo-tagging for Google Glass could afford the user's looking at physical realities "in the world" and seeing on the glass lens images and textual information about the unseen spiritual realities "not of the world," that is, the spiritual realities behind the physical objects, such as parts of a church building or the operating room of a hospital. Regarding "not of the world," a V.E. made in I.V.R. could provide a sanctuary experience by enveloping the user's vision and hearing in a scene of heaven. The ease and speed of putting on or removing V.R. H.M.D.'s could communicate the Christian belief that heaven surrounds us, even if we do not sense its proximity. A V.E. of the first-century Jerusalem could virtually place a user in the Temple, which N. T. Wright (2011, 132-133) contends "was the vital expression of a worldview in which 'heaven' and 'earth' are not far apart, as most people assume, but actually overlap and interlock."

Fourth, V.E.'s with haptic technologies can uniquely communicate the faith's incarnational elements, namely touch and its importance, and thus convey the Sensible dimension. Christians believe that the Son of God incarnated Himself in the person of Jesus of Nazareth. Not an abstract Idea but a personal God made Himself known to humans, whom He

created *imago Dei*, by taking on flesh and bones. The incarnation demonstrates that God values the body and touch; therefore, a V.E. that could incorporate touch would uniquely teach the incarnation. United Methodists and other Christians believe that during the last forty days of the incarnation, the risen Christ appeared to the disciples, except Thomas, in the upper room on the day of resurrection. The disciples told Thomas upon his return to the room that the risen Christ had come to them. Thomas argued, "Unless I see the mark of the nails in his hands, and put my finger in the mark of the nails and my hand in his side, I will not believe" (John 20:25). Thomas needed to touch his Lord to believe.

Imagine a V.E., made in I.V.R., of that scene of doubting Thomas and Jesus. A user wearing haptic gloves along with an H.M.D. and headphones could experience that scene. He or she could reach out with a haptic glove to the virtual body of Jesus and feel what Thomas felt, that is, the scars from holes of the nails that painfully had attached the body of Jesus to the cross of Golgotha. Such a virtual experience could profoundly affect the user's understanding and faith. Kilby (2016, 124) summarizes, "If [humanity] and nature derive their meaning from God, they need more a true representation than an explicit explanation."

Fifth, a V.E. can distinctively communicate the Virtual dimension. While reading the Bible in codex form can lead into God's presence because God's Holy Spirit can speak through the words of its pages, the benefits of I.V.R. with headphones can distinctively convey the Virtual dimension. Those benefits include focused visual and auditory attention, interactivity with a V.E., immersion in a V.E., the ability to turn the head and body to see 360 degrees, the capability to physically walk through a virtual space in real time, the achieving a sense of

presence, and endless possible simulations, of locales, times, scenes, narratives, characters, events, and objects.

And *sixth, a V.E. for the proclamation of scripture could communicate the Experience dimension by delivering an opportunity for an experience with God*. As described, the user of a V.E. of a Biblical scene made to the highest production, theological, and aesthetic standards in I.V.R. could sense both God's abiding presence and even God's speaking to him or her. Such a genuine religious encounter would demonstrate that a *virtual* environment could offer an opportunity for a *real* experience of the divine.

V.E.'s can uniquely communicate dimensions of the Christian faith that previous communication technologies have not been able to communicate as well. Christianity has passed through the pages of the book, the Bible, but the first communications about the faith came in the form of stories transmitted by oral transmission. V.E.'s can uniquely show those stories, virtually place people within those narratives, and allow people to virtually touch the characters, objects, and settings of those stories.

V. Discussion of frameworks

This research has presented Jerome Berryman's "Godly Play" as a unique way to conceptualize how V.E.'s could communicate scripture for pedagogical and worshipful purposes. An integrated collection of rituals, a corporate worship service brings together the community of faith in communion with God and one another. John Dewey (2004, 5) reminds the reader: "There is more than a verbal tie between the words common, community, and communication. Men live in a community in virtue of the things which they have in common; and communication is the way in which they come to possess things in common." Carey (2009, 15) identifies that

"thing" as "a common faith." Berryman's "Godly Play" employs multi-sensory approaches to teach and interact with that "common faith." Berryman (1991, 8) declares, "The *goal* of Godly play is to play the ultimate game," that is, of interacting directly with our Creator. With an interest in aesthetics, sequences, and game mechanics, V.E.'s afford interesting interaction with whatever the designers creatively want to simulate, including simulations of worship services, biblical stories, catechetical sessions, and even abstract theological concepts. V.E.'s thus can become communication technologies of faith. In organizing, presenting, and analyzing V.E.'s for such purposes, this qualitative project has called on, repurposed, and developed various frameworks.

James Carey's "ritual view of communication" and Gordon Lynch's "mediation of sacred forms" served as the primary frameworks for socio-cultural analysis, not only of the K.C.T.E. described in Chapter 5, but also, of the latest V.E. projects investigated in Chapter 6. The "ritual view" applies to more of these projects than does Lynch's framework because only some of the projects reference sacred forms. Although this researcher had not selected Carey's other view, the "transmission view of communication," as a possible framework, the "transmission view" pertains only to the few military projects and others that demand command and control over distances rather than the "extension of society in time" (Carey 2009, 15), as does the "ritual view." Otherwise, Carey's "ritual view" serves as an appropriate framework for a socio-cultural analysis of the latest V.E. developments because the *uses of the technologies*, instead of the technologies themselves, interest this investigation. The overlay of Lynch's "mediation of sacred forms" serves as an appropriate framework when the V.E. concerns sacred forms. Sometimes, such as with the Sweet Auburn Digital Initiative and *The Battle of Atlanta* app, the sacred forms

did not immediately reveal themselves because they were events and ideas instead of technologies or other things.

This project uniquely repurposes Albert Outler's (1991) "Wesleyan Quadrilateral" to frame the analysis of knowing about God and knowing God. While Outler grouped John Wesley's understandings of scripture itself, tradition, reason, and Christian experience in a quadrilateral of the sources to which Wesley appealed in biblical interpretation, this project uses that quadrilateral to present and analyze Christian epistemology. The use of the "Wesleyan Quadrilateral" for this purpose demands that this research consult scripture, tradition, reason, and Christian experience and examine how each side seeks to illuminate how people of faith have understood religious epistemology.

In Chapter 6, "Design of V.E.'s for Faith Communication," this study presents three frameworks. As described above the chapter repurposes Berryman's "Godly Play" as way to explain how V.E.'s could communicate the faith as found in scripture in both teaching sessions and worship services. Such use of the framework moves the proclamation of scripture away from simply telling to multi-sensory, artistic experiencing. Students and worshipers profit from experiencing scripture in new, memorable ways, and thus gaining new insights. V.E.'s seek such benefits as V.E.'s simulate scripture virtually. Pierre Lévy (1998, 184) would agree, as evidenced by his supposition, "Among the contemporary avenues of artistic exploration, one of the most interesting is the discovery and exploration of the new forms of truth that accompany, although obscurely, the dynamic of virtualization."

The second framework of Chapter 6, the ancient four-part order of worship frames the presentation of subjects for communication with V.R., A.R., and/or M.R. The order refers to the

ancient structure of worship: Entrance, Proclamation and Response, Thanksgiving and Communion, and Sending Forth." The U.M. architects of "An Order of Sunday Worship Using the Basic Pattern" in the *U.M.H.* (1989, 3-5) and the *U.M.B.O.W.* (1994, 16-32) sought to return to this ancient order. Hoyt Hickman (1991, 25) writes the following contention:

> United Methodists, together with other Christians today, are working to recover both the Service of the Word and Holy Communion, and to find a balance and interrelationship between the two that strengthens both. We have been realizing how we let the Service of the Word deteriorate and how we have neglected Holy Communion. Resources such as *The United Methodist Hymnal* have been designed to help us recover our heritage. (Hickman 1991, 25)

Hickman correctly foresaw that the services described in the 1989 U.M.H. would provide a necessary improvement over those of the 1964 *Hymnal of The Methodist Church*, which leaned more on Thomas Cranmer's (Rob Shields 2003, 3-6) order than on the ancient order.

As the name indicates, the *ancient* four-part order has existed since the days of the early Church; therefore, for almost two millennia, scholars could have turned it into an analytical framework, one that emphasizes physicality. Flesh-and-bone humans have gathered for worship in various physical settings. They have sung hymns with their physical voices. Musicians have touched organs, pianos, and other instruments to provide accompaniment or make other music. Liturgists have spoken with their tongues, while parishioners have responded with their voices and their physical actions. Leaders have read scripture, which congregants have heard with their ears. Clergy have placed ounces of water on the heads of baptismal candidates and wafers or bread of the tongues of those receiving holy communion. Parishioners have tasted the bread and the juice/wine. Leaders have stood to send forth the gathered community of faith into the world to serve the physical needs of others. All of these physical acts related to a worship service could come together to frame analysis.

This project takes the physicality of the framework of the ancient four-part order, adds the element of virtuality, and creates a third framework that achieves six benefits of V.E.'s for faith communication. This third framework of Chapter 6, called the SUMMA SERVE framework, adds virtuality to physicality to produce mixed reality. This M.R. framework describes how the physical and virtual coexist and relate to one another. The SUMMA SERVE framework shows that the addition of the virtual to the physicality of the ancient four-part-order framework achieves the following benefits or additional faith dimensions, already described in this chapter:

- The communication of the Aesthetic F.C.D. of biblical accounts,
- The unique impartation of the truth of the inclusion of Christians in the biblical narrative,
- The distinctive conveyance of the teachings that Christians reside in the world but are not of the world,
- The unique communication with the help of haptic technologies of the faith's incarnational elements such as touch and its importance and thus the conveyance of part of the Sensible F.C.D.,
- The distinctive communication of the Virtual F.C.D. and
- The deliverance of an opportunity for a real experience with God.

The SUMMA SERVE framework balances the virtual and the physical. Participants in the sanctuary reside in the virtual world for parts of the worship service, but they do not stay there; rather, they exit the virtual world and return to the physical world for the sacraments. Later, the pastor sends them forth into the physical world to serve others. This M.R. framework values both virtuality and physicality and thus complements the incarnational doctrine that Jesus was fully divine and fully human.

VI. Limitations and Suggestions for Future Research

As the approved research proposal describes, this research has been qualitative. The reviewer can determine that this project's qualitative research, rather than acting as a limitation, resembles more of a first step. Quantitative research can begin with a qualitative investigation. To argue that V.E.'s could help United Methodists and other Christians have a genuine experience of the Divine begs the question of how to quantify those experiences. New types of experiences could create new data types, which could be explored. Data types, such as big data on knowing God, could be available.

The building of prototypes of SUMMA SERVE, the V.F.E., or scaled-down versions or parts could generate specific opportunities to conduct experiments measuring the users' experiences with the V.E. technology. UX[71] evaluation of the user experience of the technologies could accompany these experiments. McMahan provides the following description of UX measures and benchmark tasks:

> UX Measure is a user experience characteristic to be measured with regard to using an interaction design of interest [and is] normally collected through benchmark tasks. Benchmark Task is a description of a task performed by a participant so that UX measures, such as time-on-task and error rates, can be obtained and compared to a baseline value across performances of multiple participants. (McMahan 2014, 6)

As part of the UX evaluation, the analysis of these results could lead to improvements in the design of these V.E.'s. The user's experience of the technologies would be easier to objectively measure than would the quality of the user's experience of God.

Future research could include an investigation to locate or create quantifiable measures of faith development. With such a measure, researchers could perform experiments to quantify the change in the level of faith of the user as a result of using I.V.R., for example, to meet with God

[71] UX stands for "user experience."

in the virtual space. Since the early 1980's, scholars of Christian education have valued the *Stages of Faith* of James Fowler (1981) as a way to identify the faith development of people of all ages, but Dykstra (Dykstra and Parks 1991, 62) cautions, "Theories of human development cannot themselves be the framework on which theories of faith development are hung."

This section needs to emphasize that this qualitative research is deeply exploratory. What has been presented is not tantamount to the latest program to stop the attendance decline among United Methodist and other American denominations. The development costs might factor in for a congregation wanting to create SUMMA SERVE or general agencies wanting to make the V.F.E. However, this project hopefully will give the Church a vector to consider for the future and the Academy an example of a worthwhile interdisciplinary endeavor.

VII. Conclusion

Many disciplines have come together in the sojourn to answer the research question of this project. The journey has taken the research into the writings of scholars for more than three millennia, into eight universities across America to discover the latest developments in V.E's., into the socio-cultural analysis of both those developments and key communication technology events, into the study of stained glass windows, and into the design of a church building in North Raleigh, North Carolina. The research became creative with recommendation for the creation of two possible V.E.'s: SUMMA SERVE and the V.F.E.

This project has employed the analytical frameworks of James Carey, Gordon Lynch, Albert Outler, Jerome Berryman, and the ancient four-part order of a worship service, while creating and recommending the M.R. framework called SUMMA SERVE. Although the research proposal considered the use of Heidi Campbell's R-SST framework, subsequent

research revealed that the R-SST methodology limits its research subjects to specific small religious groups and applies to already-mass-produced-and-distributed technologies. Lynch's "mediation of sacred forms" framework has served as an appropriate and effective replacement.

This dissertation began with its dedication to today's youth and to "the next generation…, the children yet unborn" (Psalm 78:6). Two major reasons why the Christian faith has survived two millennia involve adults' opening themselves to Holy-Spirit passion and their passing the faith to the next generation. At first, stories of Jesus circulated orally. Once those stories and letters appeared in writing, communication technologies became the means by which the faith spread. For most of Christian history, even to today, the Bible has taken the form of a codex. As culture shifts from print to digital, the Bible must keep up with the changes. United Methodists and other Christians must view such changes, not as threats, but as opportunities to reach the next generation.

The hope of this research is that V.E.'s for faith communication will captivate young people, prompt them to accept Christ, encourage them to find and actively participate in a local physical church, and grow as disciples. The denomination's mission is to make disciples of Jesus Christ for the transformation of the world. That world can include not only the physical world, but also, the virtual one. As those worlds overlap in Jesus Christ—the Word made flesh, Christians will see that life actually is mixed reality.

From the earliest days of this multiyear project, this researcher when contemplating whether or not "the inherent qualities of virtual environments offer additional faith communication dimensions that are different from other media types" hypothesized that V.E.'s would offer additional communication dimensions but that they would be minimal. This

research in the end, however, discovered significant additional faith communication dimensions, most notably that a high quality V.E. made in I.V.R. for the proclamation of scripture could present occasions for experiences of the Divine. A genuine religious encounter would demonstrate that a *virtual* environment could offer an opportunity for a *real* experience with God.

APPENDIX A

Possible frameworks for socio-cultural analysis of K.C.E.T.

A. James Carey's two views of communication

1. "Transmission view of communication"

Carey in his book *Communication as Culture* provides a very helpful analysis of two ways that scholars have understood communication. Carey (2009, 15) says that most media scholars have seen communication through the "transmission view," which "is directed … toward the extension of messages in space" and sees communication as "the act of imparting information." People have had messages that they have needed to transmit or transport over distances. Biocca and Levy (1995, 20) note, "transmission and transportation share more than a root word"; in fact, they propose that the parallel physical proximity of the nineteenth-century train tracks and telegraph wires to each other demonstrated that the railroads and the telegraph companies competed with each other to transport information.

In this transmission view, senders have transmitted the messages through space in order to control the receivers. Examples of such senders include government officials, such as European leaders wanting to conquer a New World, religious leaders, evangelists, business leaders, salespeople, advertisers, entertainers, scientists, educators, supervisors, and even family members who tell the person on the other end of the telephone, "I'll let you go in a minute, but…." Carey gives the following summary of the transmission view:

> Communication was viewed as a process and a technology that would, sometimes for religious purposes, spread, transmit, and disseminate knowledge, ideas, and information farther and faster with the goal of controlling space and people. (Carey 2009, 14)

With the exception of Henry David Thoreau, John C. Calhoun, and few others, most scholars of communication have held this view, and many hold it today, claims Carey. Cartier and Harwood (1953, 72) caution, "It is too easy to think of communication as a process or analogous to a process of the transportation of something from one place to another." In a paper about immersion and presence in the play of digital games, Laura Ermi and Frans Mäyrä (2005) note that *presence* "relies heavily on the metaphor of transportation" because the word "was originally developed in the context of teleoperations." The transportation view thus continues to live.

2. "Ritual view of communication"

This research supports Carey's second view of communication. The technologies that Christians have used and are using to communicate the faith can be analyzed from a "ritual view of communication" framework (Carey 2009). Most such studies have looked at communication technologies from the "transmission view" and thus have focused on the content of the message. In "Religious Perspectives on Communication Technology," Clifford Christians (2002, 38) sees technology as a "distinct cultural activity." A Jesuit priest, Father Walter J. Ong in his classic text *Orality and Literacy* (2012) describes communication technologies and their social effects. He synthesizes theology into the discussion, and he appeals to psychology with his chapter "Writing Restructures Consciousness." Marshall McLuhan wrote about communication technologies, even ones used for faith communication, and their societal effects.

Compared to the "transmission view of communication," the "ritual view of communication" has fewer adherents in America, where Carey (2009, 15) insists that the emphasis on individualism, the Calvinist work ethic, and science's demand for "culture-free

truth" have led to the downplaying of cultural influences. Such a bold assertion by this former Dean of the College of Communication at the University of Illinois has merit because feminist and other scholars recognize the importance of cultural considerations (Harding and Norberg 2005, 2009-2010). Instead of directing attention to the message content or transmission lines, this view focuses on communication as a cultural phenomenon.

Neil Postman (1993, 19) also compares the "transmission view" and the "ritual view," when he says, "A preacher who confines himself to considering how a medium can increase his audience will miss the significant question: In what sense do new media alter what is meant by religion, by church, even by God?" Even though preachers might not knowingly think along these lines, the preachers who consider how many more listeners they can garner by using a new medium is considering the control-through-space that Carey claims happens in the "transmission view." Carey (2009, 15) explains, "A ritual view of communication is directed … toward the extension of society in time" and is "the representation of shared beliefs"; therefore, Postman's preacher who asks "In what sense do new media alter what is meant by religion, by church, even by God?" is taking the "ritual view."

Carey finds support for this view in John Dewey's 1916 text *Democracy and Education*. Dewey celebrates communication and affirms an understanding similar to that of Carey. Dewey creates the following brilliant explanation:

> There is more than a verbal tie between the words common, community, and communication. Men live in a community in virtue of the things which they have in common; and communication is the way in which they come to possess things in common. (Dewey 2004, 5)

Dewey here demonstrates how "common" and "community" afford "communication" in the "ritual view."

B. Knut Lundby's five "Theoretical Frameworks for Approaching Religion and New Media"

In addition to considering Carey's "ritual view of communication," Knut Lundby (2013, 227) examines "five approaches to media and religion." This Norwegian Professor of Media Studies analyzes how these theoretical frameworks apply to new media and religion. Lundby's chapter appears in Heidi Campbell's (2013, 3-4) edited book *Digital Religion,* which "describes the technological and cultural space that is evoked when we talk about how online and offline religious spheres have become blended or integrated." The authors or proponents, in the case of the late Marshall McLuhan (1911-1980), of these five frameworks have applied them to digital media.

1. Stig Hjarvard's "mediatization of religion"

Danish media sociologist Stig Hjarvard applies "mediatization" to religion. Within the last decade, Scandinavian media scholars have championed "mediatization." Hjarvard (2008b, 113) defines the mediatization of society as "the process whereby society to an increasing degree is submitted to, or becomes dependent on, the media and their logic." Hjarvard changes mediatization of society to mediatization of religion. This research will not utilize this approach because Lundby (2013, 229) identifies Hjarvard's communication media of interest as film and television and because "Hjarvard has not yet explicated his theory in the domain of digital media."

2. Stewart Hoover's "mediation of meaning"

Some of the qualities of the "mediation of meaning" framework of Stewart M. Hoover (2006) might benefit this research. His "ethnographic methodology offers rich insights into what

meaning people make out of the media in contexts of use" (Lundby 2013, 230). Hoover employs the definition of religion of Glifford Geertz, "who sees religion as a system of symbols or a cultural system" (Lundby 2013, 230). Such a definition complements that of James Carey (Lundby 2013, 229). Somewhat analogous to how French philosopher of technology Gilbert Simondon (1980, 42) focuses on the lived-out "technicity" of "elements," Hoover looks at media as lived-out "practices" (Hoover 2006, 23-24). This research will pass on Hoover's "mediation of meaning" as a framework, despite the above qualities, because this project is more interested in the communication technology and what it can represent than in a survey of people's daily use of "the media in terms of meaning-making" (Lundby 2013, 230).

3. Heidi Campbell's "religious social shaping of technology methodology"

Heidi A. Campbell's "religious-social shaping of technology" (R-SST) methodology as found in her text *When Religion Meets New Media* (2010) originally seemed like a framework suitable for this research because it makes cultural considerations and because Knut Lundby (2013) recommends it for the analysis of new digital media for religious use. Building upon the Social Shaping of Technology (SST) methodology, the R-SST framework of Campbell (2010, 41) examines "A religious community's historical life practice, interpretive tradition, and the contemporary outworking of their values [that] inform their choices about the adoption and adaptation of technology." In other words, her analysis looks at how a specific religious community, such as the Amish in a particular county, approach new media, such as telephones in the early twentieth century or cell phones in the late twentieth century.

Campbell considers how the new technology might square with their beliefs and moral codes. She examines decisions they make about fully accepting, fully rejecting, partially

accepting, or partially rejecting the technology. She then looks at how that group adapts and even affects the technology; for example, do the makers of the technology modify it in response to its use by that group? Since the R-SST methodology limits its research subjects to specific small religious groups, such as congregations, and since it studies the adoption/rejection/ adaptation of already-mass-produced-and-distributed technologies, this research will select another framework for the analysis of emerging virtual environments for faith communication.

4. Marshall McLuhan's technological determinism

The technological determinism of Marshall McLuhan (McLuhan and Fiore 1967; 1999) also seemed like a contender for consideration as an analytical framework because his recognition of the perception of faith possibly applies to the representation of faith in V.E.'s. He follows "the 'father' of medium theory" (Deibert 1997, 6) at the University of Toronto, Harold Innis (1964; 1986), in the development of that theory. McLuhan takes seriously the ontology of technology; for example, Knut Lundby (2013, 227) states that McLuhan's "'medium theory,' a term coined after his death… observes influences of communication technologies in addition to, and also separately from, the content they deliver." On communication technology he reflects philosophically, particularly through the lens of Thomas Aquinas. McLuhan follows Jacques Ellul (1964) in recognizing technology's effects on society and culture. Although the above characteristics benefit the study of the religious use of technology, technological determinism's downplaying of the individual and group agency of people, especially for free-will-championing followers of John Wesley, disqualify McLuhan's framework for this study.

5. Gordon Lynch's "mediation of sacred forms"

This research will use Gordon Lynch's (2012, 87) "mediation of sacred forms" as a theoretical framework for analyzing digital religion. This British theologian and sociologist of religion follows Émile Durkheim (2012, 41) in framing a religion as "a unified system of beliefs and practices relative to sacred things, that is to say, things set apart and forbidden—beliefs and practices which unite into one single moral community called a Church, all those who adhere to them." However, Lynch wants to move beyond Durkheim and beyond the ontological theories of the sacred of Mircea Eliade (1987), Rudolph Otto (1923), and other scholars to "a cultural sociological approach to the sacred" (Lynch 2012, 29); for example, Lynch does not conflate religion and the sacred. Lynch (2012, 29) re-reads Durkheim and defines the sacred "*by what people collectively experience as absolute, non-contingent realities which present normative claims over the meanings and conduct of social life.*" The cultural sociological approach to the sacred uses this definition (15). Lynch (29) then defines sacred forms as "*specific, historically contingent, instances of the sacred.*"

APPENDIX B

"The *Nomina Sacra* (Sacred Names)"

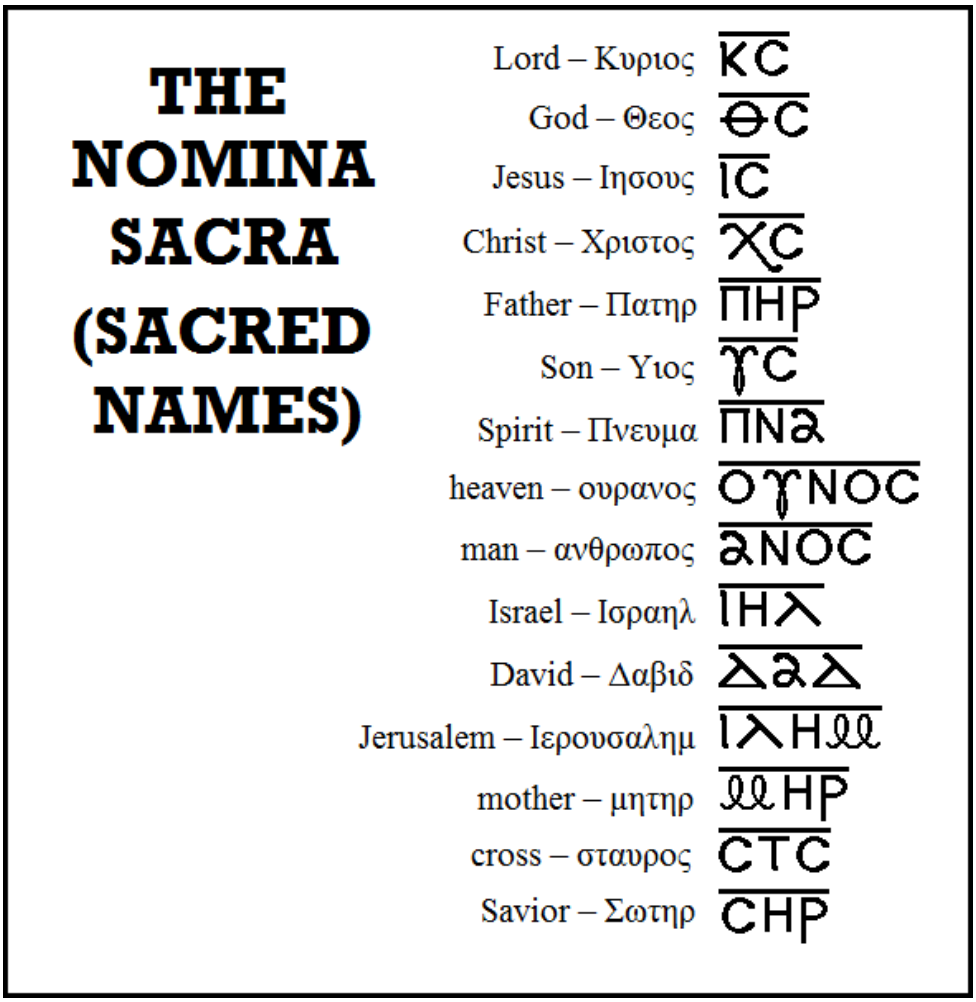

Figure B.1. *Source:* Snapp, James. 2015. "The Nomina Sacra: Their Origin and Usefulness." Accessed April 1, 2017. http://www.thetextofthegospels.com/2015/03/nomina-sacra-their-origin-and-usefulness.html. Used with permission.

APPENDIX C

Abbot Suger and the Windows of the Abbey Church

Anne Harris and other writers about the stained glass of cathedrals consistently mention Abbot Suger. "The Father of the French monarchy," Suger served as Abbot of the Gothic Abbey Church of St.-Denis from 1122 until his death in 1151 (Panofsky-Soergel 1979, 1). Sharon Gouwens (2014) of the School of Art at T.C.U. asserts that Suger's ideas "transformed the architecture and articulated how they expressed the Divine presence of God." Building on the much earlier idea of Pseudo-Dionysius the Areopagite that God is pure Light, Suger elaborates on how the sunlight's coming through the jeweled glass of the many stained glass windows flood the sanctuary with light and thus with the Divine.

Gouwens and others notice the theologian Suger's thought that light functions anagogically. In his *Summa Theologiae*, another theologian, Thomas Aquinas (2016) counts four senses or levels of meaning regarding biblical interpretation: "historical or literal, allegorical, tropological or moral…. But so far as they signify what relates to eternal glory, there is the anagogical sense." In other words, anagogically means relating to eternal glory. Therefore, light works anagogically when it points to God's everlasting glory.

On the three windows at St.-Denis about which Abbot Suger comments,[72] the vertically-oriented "Anagogical Window" shows five roundels.[73] Greda Panofsky-Soergel (1979, 204) notes that the order of these circles was rearranged in 1946-1947. The second roundel, i.e., the

[72] Suger writes specifically about three windows at St.-Denis: the "Anagogical Window," the "Tree of Jesse Window," and the "Moses Window" (Panofsky-Soergel 1979, 203).

[73] To see color photographs of the "Anagogical Window," visit the University of Pittsburgh's website: http://www.medart.pitt.edu/image/france/st-denis/windows/Anagogical/Sdenwind-Anagog.html.

medallion just above the bottom one, features Moses with an unveiled face. About the third circle showing the Apostle Paul and a flour mill, Suger writes in his *De Administratione*, "By working the mill, thou, Paul, takest the flour out of the bran. Thou makest known the inmost meaning of the Law of Moses" (Panofsky-Soergel 1979, 75). The fourth circle displays the Lion and the Lamb as the Book is unsealed, while in the top roundel a green cross appears superimposed over the Ark of the Covenant. Looking at the five roundels from the bottom medallion to the top one reveals that the background glass of each circle moves from dark blue to light blue. Since light belongs to the immaterial, Suger summarizes that the anagogical movement from the bottom to the top "[urges] us onward from the material to the immaterial" (75). The "Anagogical Window" of St.-Denis not only communicates the Christian faith, but also, calls the viewer to consider the eye's movement up the window; therefore, by its design the window encourages the worshiper to raise his or her thoughts from thinking about what the Bible describes in this life to contemplating the eternal glory of God, Whom Suger describes as pure light.

APPENDIX D

"*Falda - Isola Tiberina* 1676"

Figure D.1. *Source:* Falda, Giovanni Battista. 1676. "*Isola Tiberina*." Accessed April 1, 2017. https://commons.wikimedia.org/wiki/File:Falda_-_Isola_Tiberina_1676.jpg.

APPENDIX E

Hypermediation and Augmented Reality

Bolter and Grusin (2000) coined the term "hypermediation," in which the medium of the screen—such as ESPN's *Sports Center* with their presentation of text and graphics on the periphery of the screen—calls attention to itself. The mobile device knows its location from triangulation among cell towers and/or from a global positioning system (G.P.S.). The A.R. app identifies the subject in the photograph by knowing the geotag of the camera's subject. This identification coupled with connectivity to the Internet give the A.R. app the online information related to that geotag. As a result people with A.R.-equipped mobile devices might have less social interaction with local people because they can read their "hypermediated" smartphones rather than ask people for information.

The information provided by A.R. includes audio as well as video. In fact, Sony introduced the Walkman portable cassette audio-player in July, 1979 (Verma n.d.). Museums began loaning them to their patrons so that the guests could take guided tours and stop at paintings and listen to descriptions of what they were seeing. That technological system worked well as long as the patrons traveled through the museum along the proscribed path because the Walkman did not know its location. Auditory A.R. on a digital mobile device, on the other hand, knows its location. Applications can say more information about museum items in any order of presentation, direct the blind where to walk, alert drivers, and speak in the dark.

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BIOGRAPHICAL SKETCH

Born in Atlanta, Georgia, three days after the Reverend Dr. Martin Luther King, Jr., delivered his *I Have a Dream* speech, John F. Kay eventually moved to Dallas, Texas. Richardson High School graduated him with honors in 1982. Baylor University also graduated him with honors, when in 1986 he earned a Bachelor of Business Administration degree with a double major in Business-Broadcasting. The following year, he received a Master of Business Administration degree with a concentration in Marketing from the M. J. Neeley School of Business at Texas Christian University, where he earned a Master of Divinity degree from Brite Divinity School in 1994. He has served as pastor of various United Methodist parishes in north Texas since 1990. Bishops of the North Texas Conference of The United Methodist Church ordained him as a transitional Deacon in 1996 and as an Elder in 1998. At The University of Texas at Dallas, he began graduate work in August 2009 in what would grow to become the School of Arts, Technology, and Emerging Communication (ATEC). He taught ATEC 2384 Basic Design Principles and Practices for four semesters, served as a Teaching Assistant for two graduate courses—Cyberpsychology and Creating Autonomous Technology, and worked as a Research Assistant in the Virtual Humans and Synthetic Society Lab, in which he wrote a design document for a virtual simulator to train law enforcement officers how to conduct standardized field sobriety tests.

CURRICULUM VITAE

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https://portfolio.interfolio.com/JFKLogos
https://chroniclevitae.com/people/13987-john-kay/profile

Education

Doctor of Philosophy Arts, Technology, and Emerging Communication (ATEC)
School of Arts, Technology, and Emerging Communication, The University of Texas at Dallas (Richardson, TX). August, 2017. Dissertation Title: "Virtual Environments as Communication Technologies of Faith."

Master of Divinity
Brite Divinity School, Texas Christian University (Fort Worth, TX).

Master of Business Administration Marketing concentration
M.J. Neeley School of Business, Texas Christian University (Fort Worth, TX).

Bachelor in Business Administration Business/Broadcasting double major
Baylor University (Waco, TX).
Graduation with honors.

Teaching Experience

Teaching Assistant, Arts and Technology, The University of Texas at Dallas. Fall, 2013, to Spring, 2014.
I worked as a T.A. for Dr. Marjorie Zielke in two graduate classes:
ATEC 6375: **Cyberpsychology**
ATEC 6375: **Creating Autonomous Technology**
I selected most of the curriculum, developed reading lists, graded, and led some lessons.

Instructor/Teaching Assistant, Arts and Technology, The University of Texas at Dallas. Fall, 2011, to Spring, 2013.
I taught ATEC 2384: **Basic Design Principles and Practices** for four semesters as an Instructor.

Graduate Assistant, Marketing and Marketing Research, M.J. Neeley School of Business at Texas Christian University. Summer, 1986, to Summer, 1987.
I graded undergraduate tests, proctored exams, tutored marketing students, and conducted research about vice presidents in marketing.

Research Experience

Research Assistant, Arts and Technology, The University of Texas at Dallas. Summer 2013 and Summer 2014.
Dr. Marjorie Zielke's Virtual Humans and Synthetic Society Lab.

- I wrote a design document for a virtual simulator to train law enforcement officers on how to conduct nystagmus tests as part of the standardized field sobriety test battery.
- I handed the design document to modelers, artists, and computer programmers who made the virtual simulator, called INSITE (Individual Nystagmus Simulated Training Experience).
- I worked with subject matter experts to validate the nystagmus trainer.
- We tested INSITE on recruits at the Dallas Police Academy.

Graduate Assistant, Marketing and Marketing Research, M.J. Neeley School of Business at Texas Christian University.
I administered the preparation of a massive marketing research project concerning Vice Presidents of Marketing for dozens of major corporations.

Teaching/Research Interests

Design Principles and Practices, Virtual Environments and Faith Exploration, Cyber-Philosophy/Theology, Cyberpsychology, Church and New Media Studies, Emergent Media and Mass Communications, and Emergent Media and Mass Communications in the Church.

Professional Memberships

American Academy of Religion
Current student member.

Association for the Scientific Study of Religion
Current student member.

Institute for the Bio-Cultural Study of Religion (who created the current Modeling Religion Project)
Current member.

National Communication Association
Current student member.

Academic Honors / Awards

Arts and Technology Program at U.T.D.
Full-tuition merit Graduate Student Scholarship.

Brite Divinity School at T.C.U.
Every-semester full-tuition merit scholarship.
Book award for best student in all sections of Worship course.

M.J. Neeley School of Business at T.C.U.
Every-semester full-tuition merit Graduate Assistantship in Marketing and Marketing Research.

Baylor University
Every-semester partial-tuition merit scholarship.
Dean's List. Graduation with honors.

Conference Presentations

"How to Paint a Philosopher According to Andrea Bonaiuti." **RAW: Research, Art, Writing** (An Interdisciplinary Graduate Student Symposium). School of Arts and Humanities. University of Texas at Dallas. March, 2014.

"Virtual Environments as Communication Technologies of Faith." **Association for the Scientific Study of Religion at the Southwest Commission on Religious Studies.** Irving, Texas. March, 2015.

"Virtual Environments as Communication Technologies of Faith." **18th International Conference on Human-Computer Interaction.** Toronto, Ontario. July, 2016.

Vocational Credentials

Ministerial Ordination
Elder in Full Connection.
North Texas Conference of The United Methodist Church.

Experience

Pastoral Appointments, Various United Methodist congregations in North Texas. 1990 to Present.

Bishops appointed me to Kavanaugh U.M.C. of Greenville, Wesley U.M.C. of McKinney, Sabbatical/Voluntary Leave of Absence (during which I served quarter time at Stony U.M.C. in Denton County), First U.M.C. of Iowa Park, First U.M.C. of DeSoto, First U.M.C. of Tom Bean, Avery/Williams Chapel U.M.C.'s in Red River County, First U.M.C. of Sherman (Associate Pastor), and Oak Grove U.M.C. in Denton County.

Professional Service

Commission on Communications, North Texas Conference (N.T.C.)
The United Methodist Church. June, 2000 - June, 2010.

- Service area: Commission on Communications
- I taught workshops on church communications, especially newsletter design.
- I taught the committee some of what I was learning at U.T.D. in regards to emerging media and communication.
- We provided leadership for the communications of more-than 300 churches of N.T.C.

Community Organizer*,* Greenville, TX. September 2016 - Present

- Service area: For The City
- Ken Money and I organized an immense ecumenical week of mission projects in Greenville.
- Twenty-four congregations and 320 volunteers signed up to participate in June, 2017.
- We modeled F.T.C. after Great Days of Service in Iowa Park, DeSoto, and Sherman.

Community Organizer*,* Ministerial Alliance, Iowa Park, TX. January 2009 - July 2009.

- Service area: Great Days of Service
- I organized 300 people for an ecumenical week of mission projects.
- Five percent of Iowa Park's residents participated.
- We repaired houses, trimmed bushes and trees at homes, had a "thank-you" luncheon for government workers, collected food for the hungry, worshiped together, and visited and read to every resident of the nursing home.
- On my last Sunday in the pulpit, the mayor named the day in my honor for my successful organization of Great Days of Service, which continued for years.

Community Organizer, Ministerial Alliance, DeSoto, TX. January 2005 - June 2005

- Service area: Great Days of Service
- As I later did in Iowa Park, I organized a massive ecumenical week of mission projects in DeSoto.
- Hundreds of the suburb's residents participated.
- G.D.S. had the desired effects of improving relationships among churches of different denominations and races and of helping hundreds of people.
- Great Days of Service has continued for years.

Skills

Caring with compassion for others, teaching, public speaking, community organizing, writing, leading staffs, leading nonprofit organizations, fundraising, publicizing, and graphic designing.

Computer programs: Microsoft Office suite, MS Publisher, Internet Explorer/Safari/Chrome/Firefox, EndNotes, Final Cut Pro, Keynote, Pages, PageMaker, Smultron (digital-graphics manipulation).

Computer languages: HTML.

Social Media

Linked In: http://www.linkedin.com/pub/john-kay/11/487/511/
Twitter: http://twitter.com/jfklogos
Facebook: http://www.facebook.com/jfklogos