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A WORD FROM THE FACULTY FORUM PRESIDENT

Welcome to Union University's *Journal of the Union Faculty Forum (JUFF)*. As this year's Forum President, I am pleased to invite you to engage with Union University scholars in this latest volume, which showcases a remarkable sampling of the varied *gifts* of our University community. 1 Peter 4:10 says, "As each has received a *gift*, use it to serve one another, as good stewards of God's varied grace."

It is always such a joy and encouragement to hear about the outstanding scholarly work being done by the faculty at Union. Many thanks to the faculty members for their faithful work in leading us through this academic endeavor. I would also like to acknowledge Christine Bailey's service to the *JUFF* as Editor-in-Chief. Many thanks to her for her dedication to this publication along with her students in English 324: Professional Editing, Proofreading, and Publishing.

The purpose of the Union Faculty Forum is to advance the University's mission of Christ-centered higher education through the *JUFF* and through the Forum's role in faculty governance. I invite Union faculty members to participate in both pursuits.

BROOKE GLOVER EMERY
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A WORD FROM THE EDITOR-IN-CHIEF

As your Editor-in-Chief, I am thrilled to present the 38th volume of the *Journal of the Union Faculty Forum*. Truly, the credit belongs to an impressive team that worked so diligently to bring you this year's *JUFF*. Both faculty and students collaborated on the publication from start to finish. My Professional Editing, Proofreading, and Publishing class had the privilege of collaborating with Professor Melinda Posey's Typography class on the journal's design. Together, we are proud to present this quality publication that is both aesthetically pleasing and rich in content. Further, a special thank you goes to the faculty members who contributed to this issue. Their work serves as a representation of both the diversity of Union's faculty members and their commitment to be excellence-driven and future-directed.

CHRISTINE BAILEY, MFA, PH.D.
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A WORD FROM THE EDITORIAL BOARD

We, the students of the Professional Editing, Proofreading, and Publishing class, are proud to present the 2018 - 2019 *JUFF*. The very book you are holding in your hands right now is the result of our blood, sweat, and tears. We have endured long caffeinated nights, battles with Hitler, and the struggles of converting PDFs to Word to provide you with the excellent writing of Union's faculty. Every article in this journal is a result of the hard work of the editors and authors. Please enjoy these reflections on everything from Shakespeare to Michael Cera to World War I to Physics. We would like to thank Dr. Bailey for teaching and facilitating this class and for putting up with our constant banter.

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GENERAL SUBMISSION GUIDELINES

A new volume of *The Journal of the Union Faculty Forum* is published during each fall semester. The editors invite submissions of poetry, fiction, creative nonfiction, artwork, and scholarly articles in various academic disciplines.

Please note we have recently changed the submission guidelines. Submissions should be in a MS Word format with a 12-point font. The journal accepts MLA, APA, and Turabian documentation formats. Acceptance is determined by the quality of the work.

While the submission period for the Fall 2018 issue is now closed, you may submit your work for Vol. 39 (Fall 2019 issue). Please email submissions to cbailey@uu.edu.

SHAKESPEARE'S LITURGY OF ASSUMPTION[1]

JASON CRAWFORD

I

We all know how the story of King Lear ends. A repentant Lear flies to Cordelia in Gaul; she raises an army on his behalf; together they lead that army against his usurping daughters; and he takes the throne as king of Britain once more. As he returns to his former glory, the old king is invested with a renewed wisdom and moral authority. His restoration affirms the order of things, secures a rightful succession, and ushers in a season (though not a very long one) of general peace.

This, at least, is how the story is supposed to end. It's how the story does end in all the versions William Shakespeare would have known: Geoffrey of Monmouth's *History of the Kings of Britain*, Raphael Holinshed's *Historie of England*, and Elizabethan retellings such as Spenser's *Faerie Queene* and the anonymous play *The True Chronicle Historie of King Leir*. All these versions of the Lear legend figure the ancient king's ordeal as a narrative of folly, exile, repentance, and return. The story is a romance narrative, comic in its outlines, oriented toward the renewal of relationships and the triumph of justice.

Shakespeare builds his version of the Lear story from these materials, and his play, too, seems to promise a version of this comic end. Though his reunited Lear and Cordelia are captured in battle, there are signs of hope all around. Edgar returns from his exile and defeats Edmund in combat. Goneril and Regan die by their own

1 What follows is the text of a talk I gave at Duke University in fall 2017, at a conference called "Tragedy, Recognition, Conversion." An expanded and revised version of this piece is forthcoming in *The Journal of Medieval and Early Modern Studies* (January 2019).

treachery. Edmund predicts that Edgar's noble actions "shall perchance do good" (5.3.192) and then fulfills that promise by sending a messenger to stop the murder of Lear and Cordelia. All shall soon be well: "haste thee for thy life" (5.3.226), Edgar urges the messenger. Albany adds a prayer for Cordelia: "the gods defend her."(5.3.231).[2]

And then the hammer falls. Lear bursts in "*with Queen Cordelia in his arms*," as the folio stage directions say, convulsing with an anguish that shatters language and renews the tempest of the play's middle acts: "Howl, howl, howl, howl! O, you are men of stones," he cries; "Had I your tongues and eyes, I would use them so, / That heaven's vault should crack. She's gone for ever. / I know when one is dead and when one lives. / She's dead as earth" (5.3.232-36). *Dead as earth*: the moment is made to shock, to devastate any expectation that Cordelia, of all characters in this play, should be the one who lives. Kent's enigmatic reply to Lear's howling—"is this the promised end?" (5.3.238)—seems almost to give voice to the stunned disbelief of Shakespeare's first audiences; certainly it anticipates the response of many audiences to come. For this is not the promised end at all: not, at least, the end promised by a narrative tradition in which Lear and Cordelia overcome their enemies and live.

Why has Shakespeare done it? Why choose to break so deliberately from the promised satisfaction in order to murder Cordelia and kill her father with grief? What does this play have to gain from its tragic catastrophe? As we begin thinking together about that question, I want to dwell briefly on the image of Lear with the dead Cordelia in his arms. This image has become, for many readers and audiences, a kind of icon, a distillation of this play's violence into a single visible form. In the visual arts, the history of the image begins at least as early as the 1780s, when James Barry paints his enormous canvas *King Lear Weeping over the Dead Body of Cordelia*. Illustrators of Shakespeare have often returned to the image. But what's more important than these visual translations, for our purposes, is that Shakespeare's stage direction establishes this moment as an icon to be renewed, in performance, again and again. *Enter King Lear with Queen Cordelia in his arms*: let there be an enactment, a rendering of this image of tragic suffering into living flesh.

To ask what Shakespeare's tragic catastrophe means, then, is also to ask this: what does Shakespeare invite us to *see* in the image of Lear with Cordelia in his arms? The critical tradition has found this question famously difficult to answer. By the end of the seventeenth century, Nahum Tate had eradicated the image altogether. In his 1681 revision of *King Lear*, Cordelia ends up betrothed to Edgar and Lear heads off with Gloucester and Kent to a quiet retirement. This version dominated the performance history of the play for well over a century. Samuel Johnson himself confesses that he prefers it.[3] A. C. Bradley insists that a more mature Shakespeare,

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2 All quotations of Shakespeare's plays come from *William Shakespeare: The Complete Works*, second edition, ed. John Jowett, William Montgomery, Gary Taylor, and Stanley Wells (Oxford: Oxford University Press, 2005). *King Lear* I cite from the folio text.

3 See Johnson's notes on *King Lear*, in Johnson on Shakespeare, ed. Arthur Sherbo, vol. 8 of *The Yale Edition of the Works of Samuel Johnson* (New Haven and London: Yale University Press, 1968), p. 704.

a better Shakespeare, would have let Cordelia live.[4] And never mind that these indignant responses to *King Lear* now seem prudish or sentimental; the past century of criticism has tended just as persistently to regard the dead Cordelia as merely perverse, an image of meaningless violence. An intuition of *King Lear*'s absurdity informs the pessimistic strains of the critical tradition, according to which the play either exposes the despair of an ancient pagan theology or indulges in the despair of an emerging modern skepticism. In a less apparent way, this intuition of absurdity informs even the efforts of various "Christian" schools of reading to alchemize the play into a drama of redemption. To say, as one influential critic has, that the spectacle of the dead Cordelia "is not the real ending of the play, though in the view of human bystanders it may seem to be so," is to suppose that Cordelia's death is vacant of moral possibility, and that the only way to redeem the play is to efface the reality of that death.[5] Even contemporary historicist readings have tended to read the play's catastrophe as a kind of fall from a promised satisfaction. Claire McEachern regards the deaths of Lear and Cordelia as "utterly without reason or redeeming value," incapable of satisfying any logic of justice or expiation.[6] Stephen Greenblatt has famously argued that, in the tragic action of *Lear*, the promise of redemption is "empty and vain," "drained of its institutional and doctrinal significance."[7]

These recent readings, in particular, will be in the background of my analysis here. In their reckoning of things, the image of the dead Cordelia represents a specific crisis of historical and spiritual loss. McEachern sums up this loss when she claims that, in medieval Christian texts such as the mystery cycles and the tales of the *de casibus* tradition, "there are no real tragedies."[8] This is so, she goes on to explain, because Christian narrative is necessarily comic, oriented toward a promised end that cancels the wrongs of the present age. Shakespeare's turn to tragedy amounts, then, to what McEachern calls a "striking departure from both Christian orthodoxy and native literary tradition."[9] Tragedy is available to him because he lives at a moment of cultural loss, a moment at which the medieval economy of sacramental presence and eschatological hope is falling into ruin. These readings figure tragedy, in other words, as peculiarly modern; and they figure modernity as a form of departure, of disenchantment, repudiation, and secularization. Within the terms of these readings, the tragic Shakespeare is caught up in the emergence of a new order, and it's possible to find him, as the theologian Graham Ward does, "strung

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4 "I will take my courage in both hands," Bradley confesses, "and say that I share it," the wish that Lear and Cordelia should escape; "I find that my feelings call for this 'happy ending.'" He goes on to clarify that by "feelings" he means not his philanthropic or "human" feelings but rather his "dramatic sense," the expectations engendered in him by everything else in the play. *Shakespearean Tragedy* (London: MacMillan, 1905), p. 252.

5 I quote from Peter Milward, *Biblical Influences in Shakespeare's Great Tragedies* (Bloomington and Indianapolis: Indiana University Press, 1987), p. 157.

6 Claire McEachern, "Religion and Shakespearean Tragedy," in *The Cambridge Companion to Shakespearean Tragedy*, second edition (Cambridge: Cambridge University Press, 2013), p. 102.

7 *Shakespearean Negotiations: The Circulation of Social Energy in Renaissance England* (Berkeley: The University of California Press, 1988), p. 125.

8 "Religion and Shakespearean Tragedy," p. 93.

9 "Religion and Shakespearean Tragedy," p. 94.

between an older sense of divine comedy and a more modern sense of the tragic."[10] By identifying comedy with medieval belief and tragedy with modern disenchantment, these readings find a kind of meaning in the spectacle of Lear and his dead Cordelia: here is an image of dashed eschatological hope, of old redemptive narratives and mechanisms evacuated of their power. It is the reflex of an emerging modernity, and it represents the possibility of a tragic drama that has no genealogies, no history in the medieval past it mourns, supplants, or dimly recollects.

Against these narratives of tragedy as departure, I want to ask whether there are other ways of seeing Shakespeare's tragic catastrophe. Is it possible to read his images of loss not *against* but *with* their cultural genealogies? Is it possible that Shakespeare's lexicon of suffering is itself deeply embedded in a pre-Reformation past? And is it possible, in asking what *King Lear* invites us to *see*, to ask also what the play invites us to *do* at the moment of its enactment?

To think about Shakespeare's play as a provocation to responsive work is to read its tragic dynamics as a kind of liturgy. The term "liturgy" includes within itself the notion of work, and of working together (the Greek *leitourgia* means something like "public service" or the "work of the people"). Especially in the context of a dramatic performance, attending to the work *King Lear* does means asking what sort of liturgy the play performs, what sort of suffering it enacts, what sort of power, expiation, or affect it invites its audience to participate in. And attending to this play's liturgical work means raising questions about the world of ritual forms to which Shakespeare's drama belongs. I want in this essay both to explore the liturgical poetics of *King Lear* and to search for the genealogies of that poetics in the Christian liturgies of the English church across the divide of the Reformation. Where are the traces of those liturgies, in a tragic play such as *King Lear*, to be found? More importantly: how do those liturgies direct this play's own work of ritual enactment and contemplation?

II

Let me approach this question by suggesting, first, that there is a kind of liturgical grammar in *King Lear*. This grammar becomes particularly audible in the scenes of confrontation and reconciliation between Lear and Cordelia. The last of these scenes finds the pair in the custody of Edmund, who tells them that Goneril and Regan will decide their fate. Lear is in the afterglow of his madness; Cordelia asks, with stoic grimness, "shall we not see these daughters and these sisters?" His reply is worth quoting in full:

> No, no, no, no. Come, let's away to prison.
>
> We two alone will sing like birds i'th' cage.

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10 Graham Ward, *True Religion* (Malden, Mass.: Blackwell, 2003), p. 19.

When thou dost ask me blessing, I'll kneel down

And ask of thee forgiveness; so we'll live,

And pray, and sing, and tell old tales, and laugh

At gilded butterflies, and hear poor rogues

Talk of court news, and we'll talk with them too—

Who loses and who wins, who's in, who's out,

And take upon 's the mystery of things

As if we were God's spies; and we'll wear out

In a walled prison packs and sects of great ones

That ebb and flow by th' moon. (5.3.8-19)

This fantasy unfolds in a poetry of ebbs and flows. It isn't just the sects of great ones who win and lose, wax and wane, are in and out. Lear and Cordelia, too, seem to move in a roundel of contrarieties: she kneels to receive from him, and he kneels to receive from her; they hear news, and they tell news. There's a rhythm of giving and receiving, of presiding and submitting. Lear's gathering parataxis—we'll live, and pray, and sing, and tell, and laugh, and hear, and talk—invests this rhythm with an ecstatic energy, and the movements of this rhythm are contained by the cage itself, the long stasis of wearing out in a walled prison, what seem to be generations and generations of the courtiers of mutability.

No accident that this passage is thick with the language of Christian ritual. Against the ebbing and flowing of the great ones Lear asserts a kind of counter-liturgy, a new rite within the walled enclosure of his cage. Here, in their cloister, he and Cordelia will sing, kneel, bless, forgive, pray, hear, and tell. The vocabulary here derives from vernacular Christian practice, and the language of "wearing out," of an everlasting life untouched by change, suggests an alternative ritual temporality, apart from the regime of the play's metamorphic deities. It is as if Lear has begun to withdraw from the cosmos in which he lives, a cosmos of plurality, into an eschaton of singularity, at the still point of the turning world. In imagining himself and Cordelia as their own tiny religious sect, hidden away in an enclave at the heart of the moon's empire, he activates a whole world of Christian narratives: Paul and Silas singing in their prison, martyrs in catacombs, hermits and monks in desert communities, recusant priests among underground congregations. And he lays harness to the renunciatory force of those narratives, the upside-down victories of those who cast themselves onto an altar and overcome the world. "Upon such sacrifices, my Cordelia," he goes on to say, "the gods themselves throw incense."

At the culmination of Lear's litany of ritual activities, and comprehending them all, is the strange promise that he and Cordelia will, in their prison liturgies, "take upon us the mystery of things / As if we were God's spies." Take upon us the mystery of things: what does this mean? In Shakespeare, when the word *mystery* does not denote a craft or a trade, it tends to be associated with a desire to know, to discover, or to pluck out. The word indicates an object of apprehension, a hidden thing to be laid hold of or found out. It is strange, then, that the failing King Lear, when he rhapsodizes to Cordelia about the "the mystery of things," turns to a wholly different sort of metaphor: we'll "take upon us" the mystery of things. He figures mystery here not as a thing to be apprehended but as a thing to be assumed. In doing so, he speaks a language that operates all over this play, a language of assumption.

To assume (Latin *ad*, "to" + *sumere*, "to take") is to take a thing upon or into oneself. In early modern English usage, one can assume a garment, an appearance, an identity, a title, a task, a habit, another person, a portion of food or drink, a puff of tobacco smoke. And one can also be assumed, into an office, into a dispute, into a company of people. In *King Lear*, something like a grammar of assuming is already at work when Gloucester first enters and addresses the question of whether he is willing to "acknowledge" the bastard Edmund as his own. This grammar remains in play when, in the central episode of the play's first scene, Lear initiates his daughters into a complex game of putting on, casting off, conferring, professing, adopting, divesting, and disowning. Lear's climactic ritual gesture in this scene comes when, to confirm that Goneril and Regan have taken upon themselves his kingdom, his authority, and his royal identity, he declares, "this coronet part between you" (1.1.139). This moment is, perhaps, the play's primal scene of assumption, and likewise of assumption's opposite, the old king's act of casting off everything in order that he might "unburdened crawl toward death."

This language of taking on charges and casting off burdens will trouble *King Lear*'s many acts of assumption. To assume is to bear something, to take upon oneself a responsibility or a burden. The critical question of the play's opening scene, as Lear casts Cordelia off, is whether anyone else will consent to take her up. It is the same question Gloucester has already raised, the question of claiming another person as one's own. "The whoreson must be acknowledged" (1.1.23), Gloucester says of Edmund, and Lear turns this statement upside down when he declares, to the daughter "whom nature is ashamed / Almost t'acknowledge hers," that he will, henceforth, "disclaim all my paternal care" and regard her as a stranger (1.1.211-12, 113). He then puts the question to Burgundy directly:

> Will you with those infirmities she owes,
>
> Unfriended, new adopted to our hate,
>
> Dowered with our curse and strangered with our oath,
>
> Take her or leave her? (1.1.201-4)

She is a heavy burden indeed, this child adopted into hate and dowered with curses. She bears, and constitutes, the weight of many assumptions. Burgundy cannot bear the weight: it is France who steps forward and declares, to Cordelia, "I take up what's cast away" (1.1.253). If Goneril and Regan assume the royal identity Lear has thrown off, France assumes the daughter he has cast out. His taking up of Cordelia is the play's other primal scene of assumption, and the one, perhaps, that most haunts Lear's reveries as he and Cordelia are led off to prison.

Some commentators have observed that Lear, in his prison discourse, alludes to a common early modern domestic ritual in which a child kneels to ask blessing of her parents. Lear and Cordelia have already enacted this ritual in their first scene of reunion, when she kneels and pleads, "O look upon me sir, / And hold your hands in benediction o'er me" and he responds by kneeling himself and saying, "you must bear with me. Pray, now, forget / And forgive" (4.6.50-51, 76-77). This is their first encounter since France carried Cordelia off into her exile, and they enact again here the primal ritual moment in which Lear commanded his daughters to take a knee and beg. But here the dynamics of bearing and bestowing have been complexly reoriented. "Bear with me," Lear begs her. It is a language he has not spoken to her before, an invitation to an act of mutual kneeling and mutual bearing. In his prison discourse, he issues this invitation again: "When thou dost ask me blessing, I'll kneel down / And ask of thee forgiveness." The liturgy of this passage does not just end, then, but also begins with the promise of a participatory assumption. In this ritual exchange, father and daughter together take upon themselves the sins, fortunes, and benedictions—the whole vast burden—of the other.

III

Where are the genealogies of this language of assumption? I want to answer this question in two ways by looking to two streams of pre-Reformation Christian discourse. The first of these streams is quietly evident when Lear names his great burden as "the mystery of things." The word "mystery," after all, refers in medieval and early modern usage not just to the deep secrets of nature or the decrees of God, but also to the liturgical rites of the Christian church. In the English Communion service inaugurated by the *Book of Common Prayer*, the people give thanks that they have "received these holy misteries."[11] This language adapts a long tradition of Latin liturgies in which *mysterium* refers to the material forms and elements of the Eucharistic ritual, as when, in the Sarum rite so widely used in England before the Reformation, the partaker prays "by the most sweet Sacrament of Thy Body and Blood, the mystery which I unworthy have received."[12] And the use of "mystery" to

11 *The Book of Common Prayer: The Texts of 1549, 1559, and 1662,* ed. Brian Cummings (Oxford: Oxford University Press, 2011), p. 138. All my quotations come from the 1559 text.

12 English quotations of the Sarum rite come from *The Sarum Missal*, trans. A. Harford Pearson (London, 1884), here at p. 325.

indicate the materials of the sacrament retains a broad currency in the discourses of English reform. "The breade and wine are," as the reformed bishop John Jewel says, "holy and heavenly misteries."[13]

The sacrament is, of course, violently contested in the sixteenth and seventeenth centuries; Jewel's polemical discourse, from which I've just quoted, is a vivid reminder of that. But the terms of his account, like the terms of the English Communion service itself, also make audible the reverberations of the old Eucharistic language in the new, and the continuities in ritual practice across the ruptures of the Reformation. These reverberations and continuities can be heard in the language of *King Lear* as well. If Lear pivots from his invocation of "the mystery of things" to an affirmation that "upon these sacrifices, my Cordelia, the gods themselves throw incense," both Catholics and Protestants use the language of sacrifice to name and explicate the mysteries of the Eucharist. Behind their discourses, again, is the language of both the Sarum rite—in which the communicants ask God to "sanctify the Sacrifice which is offered to Thee"—and the *Book of Common Prayer*, which directs the people likewise to ask God to accept "this our sacrifice of praise and thankesgevinge."[14] In a turn that matters to the language of *King Lear*, both the old rite and the new go further than this, calling not only the Eucharistic elements but even the communicants themselves a sacrifice: "accept our selves, our soules and bodies, to be a reasonable, holy, and lively sacrifice unto thee," the communicants pray in the reformed liturgy.

By figuring himself and Cordelia as sacrificial victims offering their flesh upon an altar, Lear activates just this Eucharistic language: not quite "this is my bodie, which is geven for you," but another ritual economy of taking on and giving over. At the heart of both these ritual economies lies a certain promise of union. "Mystery," in Christian liturgies both before and after the Reformation, can indeed refer not just to the sacrament itself but also to the communicant's miraculous union, via the sacrament, with the incarnate body of Christ. Christopher Sutton, in his 1601 meditation on the Eucharist, describes the sacrament as the place "where, wee hounour him in the misterie of humane redemption, where by a spirituall vnion with Christ himselfe wee become partakers of our greatest good."[15] Here is the language of assumption—"we become partakers"—figured not just as an act of taking in food but also an act of taking on, and being taken into, the very body of another. The *Book of Common Prayer* says it plainly enough: "we be very membres incorporate in thy mystical body," and Sutton goes on to confess to the incarnate Christ that "thou hast taken our fraile nature vpon thee, and giuen vs thy diuine… by this… most

13 *An Apologie, or Aunswer in Defence of the Church of England* (London, 1562), fols. 14v-15r. I have consulted this edition in facsimile at *Early English Books Online*. For all early modern editions, I have regularized the capitalization of titles.

14 *Sarum Missal*, p. 309; *Book of Common Prayer*, p. 137.

15 Sutton, *Godly Meditations upon the Most Holy Sacrament of the Lordes Supper* (London, 1601), pp. 1-2. See also the Scottish reformer Robert Bruce, who says that "as the sacrament is a mysterie, so the coniunction that is in the Sacrament, no doubt must be a mysticall secret, and spirituall coniunction." *The Mysterie of the Lords Supper Cleerely Manifested* (London, 1614), fol. 2r, 14v. Both in facsimile at Early English Books Online.

diuine Sacrament, by this blessed, pure, and venerable misterie."[16] The "mystery" of the Eucharistic sacrament grounds an economy of taking another upon oneself and bestowing oneself upon another. The call of the sacrament is to assume, after the pattern of the great assumer who "toke our infirmities" into his own flesh and identity. Christ issues the call himself: on the one hand, "take up the crosse"; and on the other, "take, eat: this is my bodie."[17]

IV

If Lear's language of assumption activates this language of Eucharistic participation, it also activates another narrative of participation, one that proves especially volatile in the context of the English Reformation. The term "assumption" in Christian discourse often refers, after all, to a key moment of eschatological consummation, the taking up of Mary into heaven. This assumption is often figured in late medieval texts as a narrative of union, not just between a son and his mother, but between a sitting king and his newly crowned queen, even between a bridegroom and his bride. The Sarum rite for the feast of the assumption gathers this complex network of imagery into one dense narrative synopsis:

> Fair Spouse of God, thou Christ the King hast borne :
>
> Lady thou art in heaven and in earth.
>
> This day hosts met thee from the court of heaven,
>
> And to the starry palace led thee up.
>
> Jesus Himself, to welcome Thee His Mother,
>
> Came with the angels forth, and set thee up
>
> With Him for ever in His Father's seat.[18]

This narrative of assumption unfolds in a dynamics of mutual bearing: Mary bears Christ into the world, and Christ bears Mary to the court of heaven. The unity between them is founded on Mary's act of taking Christ into herself and Christ's act of taking Mary upon himself, so that they sit together on a common seat, bound in a kind of sacramental, matrimonial mystery. In narrative and dramatic texts such as the *Golden Legend* and the English cycle drama, these scenes of union and mutual assumption gather to themselves a complex iconography of bearing and taking on. Caxton's English translation of the *Legend* has Christ promise to Peter, whom he charges with burying the virgin's body, that he will "clothe her in ye semblable

16 *Godly Meditations vpon the Most Holy Sacrament of the Lordes Supper,* p. 213.
17 All biblical citations come from *The Bible and Holy Scriptures Conteyned in the Olde and Newe Testament* (Geneva, 1560), in facsimile at *Early English Books Online*.
18 *Sarum Missal*, p. 427.

clerenesse of my selfe which I have taken of her / & that whiche that she hath taken of me shal be assembled togyder and acorde."[19] When Christ returns after three days to take up her body, Caxton's text records that the apostles "sawe theyr kynge bere in his proper armes ye soule of a woman / and sawe ye this soule was Joyned to hym."[20] Again and again, this language of *taking* and *bearing* comes into play. Christ bears Mary's soul in his arms; the apostles bear her body to its grave; and he finally bears her reunited soul and body into his own embodied and virgin-born self.

The plays of the assumption in the York and the N-Town cycles lay particular emphasis on the affective appeal of the assumption as a reunion of mother and son. The York "Coronation of the Virgin" follows the reunited pair into heaven, where she the mother now kneels before her son and he places a crown upon her head. He then invites her into an ecstatic and endless communion, not exactly Lear's "come, let's away to prison" but instead "come forth with me, my modir bright, / Into my blisse we schall assende."[21] These invitations to bliss play out at some length across three plays in the York cycle. In the first of these three plays, the "Death of Mary," she cries out to her son at the threshold of death and he promises that she will, on the other side of the threshold, "sitte with myselfe all solas to se / In aylastand liffe."[22] Again, it's not quite "we two alone will sing like birds i'th' cage," but here too the king promises his beloved a charism of life on the other side of death. There is, throughout these plays, an emphasis on bearing with and dwelling with, an emphasis made even stronger by Mary's persistent pleading that Jesus help the suffering and dying ones who call on her, "be it manne in his mourning," she says, "or womanne in childinge."[23] She, too, is a great assumer. She suffers with those who suffer, and she takes upon herself a double burden, of bearing the incarnate Christ into the world and of bearing the world into the incarnate Christ.

I want to return now to that image of Lear with the dead Cordelia in his arms. Commentators have sometimes observed that this image is a transfiguration of the *Pietà*, the representation, widespread in late medieval painting and sculpture, of Mary bearing in her arms the body of the crucified Christ. Fair enough; but there might also be another visual tradition in play here, that of Christ the king bearing the dead body of Mary and adorning her with his own crown of life. There aren't, in England, many material remains of this medieval iconography, but the artifacts that survive suggest that the English tradition, in particular, gives emphasis to the bearing up of Mary's body. In an image from the twelfth-century York Psalter, Mary is assumed to heaven in her winding sheets, carried in a cloth by angels as Christ

19 I quote from an edition printed by Wynkyn de Worde, *The Legende Named in Latyn Legenda Aurea* (London, 1521), fol. ccx.r. In transcribing this text, I have modernized and regularized some of de Worde's typography.

20 *The Legende Named in Latyn Legenda Aurea*, fol. ccv.r.

21 I quote here from "The Coronation of the Virgin," in *The York Corpus Christi Plays*, ed. Clifford Davidson (Kalamazoo: Medieval Institute Publications, 2011), lines 103-4.

22 "The Death of Mary," in *The York Corpus Christi Plays*, lines 161-62.

23 "The Assumption of Mary," lines 192-95.

presides. At the top of this illuminated page, above the image of her corpse borne up to heaven, is the image of her friends, the disciples, bearing her corpse down into its grave. The image emphasizes the weight of her mortality. And the compositional form of this image is evident in many of the English assumption images that survived the Reformation. The various alabaster carvings that survive from fifteenth-century England correspond again and again with this form: the virgin is carried upward to heaven, with angels palpably bearing her weight, as Christ her beloved opens his arms to receive her. In this later medieval tradition, the virgin is often quite prominently a queen; often Christ himself sets the crown upon her head.

What if this icon of assumption has been in play all along, starting with the image of Lear bestowing his crown on his two dissembling daughters, and coming to a kind of fullness in his promises, to Cordelia, that he will assume her into a mystery of communion? This image of the queen received into heaven might indeed have a kind of topicality when Shakespeare writes *King Lear*, in an England from which Marian iconography has never disappeared, and at a moment when English subjects are renewing that iconography in response to the death in 1603 of their own virgin queen. How far off can the iconography of assumption be when the God of Thomas Bentley's *The Monument of Matrones* says, "ELIZABETH, thou Virgin mine, the KINGS Daughter, and fairest among women.... Thou art my Daughter indeede, this daie haue I begotten thee, and espoused thee to thy king CHRIST, my Sonne; crowned thee with my gifts, and appointed thee QVEENE, to reigne vpon my holie mount zion."[24] And how far off can the image of this virgin queen be when, at the outset of Shakespeare's play, a king determines to confer his crown upon his most beloved daughter, so long as she can say to him, "be it unto me according to thy word"? Might that image still be in play when the same king enters, at the end of all things, bearing her dead body in his arms?

V

The differences of Shakespeare's play are, of course, profound. The beloved daughter refuses to speak; the bridegroom-king descends into mad folly; in the end they are crushed by a violence from which their own actions cannot be disentangled. This play is a tragedy, and a reading of its theological and liturgical language need not recoil from that simple fact. But what can the liturgical dynamics of *King Lear* help to clarify about the play's tragic poetics? In what sense is the play's grammar of assumption a tragic grammar? The narratives of decline with which I began have done much to discover the complex forms of mourning, nostalgia, translation, and recuperation that Shakespeare cultivates in the face of ritual loss. But these accounts read the language of Christian ritual in a play like *Lear* in largely negative terms, as the ruins of a devastated order. I want to suggest that the iconography of

24 Quoted from Peter McClure and Robin Headlam Wells, "Elizabeth I as a Second Virgin Mary," *Renaissance Studies* 4.1 (1990), p. 43.

assumption might in fact furnish materials for a less oppositional reading of early modern tragedy, a reading of the catastrophes of *King Lear* as something other than the signs of a fall from a medieval and Christian cultural order. The play's language of assumption is, after all, internal to that old cultural order. The enactment at the communion table of breaking and eating the Lord's body does not cancel but rather reenacts and redeems the suffering of the crucifixion. The imagery of suffering and the imagery of feasting coexist in the ritual, both of them powerfully real and neither complete without the other. The image of Christ bearing Mary's body heavenward is similar: it refigures and redeems, but does not supplant, the image of Mary bearing Christ's dead body in the *Pietà*. The scenes of loss belong to the same ritual economy that produces the scenes of restoration.

By participating in that drama of loss at the Eucharistic table, the ritual community comes to know what Paul calls the "fellowship of his afflictions" (Phil. 3:10). The community's liturgical work at the table involves not just the enactment of an anticipated feast but also the work of taking something upon itself, of suffering with the paradigmatic sufferer. Edgar inhabits exactly that liturgical work when he affirms, in the very last lines of *King Lear*, that "the oldest hath borne most. We that are young / Shall never see so much, nor live so long" (5.3.301–2). He expresses here the pain of one who has, in his own acts of assumption, learned the simple necessity of suffering with. This necessity is a tragic necessity because it discloses, at the heart of kinship and communion, the imperative of taking upon oneself the burden of the other. It is, in the end, an imperative that kills: Lear takes up Cordelia and dies. But it is also an imperative that gives life, or at least what the play at various times calls "blessing." It might just be that Lear's commitment to take on the mystery of things affirms the goodness of this participatory suffering. In his affirmation, he reveals something of this play's genealogies in the mysteries of incarnation and sacramental union. And he reveals how central to this play's tragedy, and to its charism of life, is the moment when he at last enters bearing Cordelia in his arms. The play has, it turns out, been disclosing the significance of this image all along, in all its promises of bearing and blessing. Gloucester has given ethical shape to the image already in the words he speaks to Lear out on the heath: "take him in thy arms," he says; "take up thy master / …take up, take up" (3.6.46, 50, 53).

Is this the promised end? So Kent will ask, when the terrible moment comes. But he will not stay for an answer. He hears his master calling, dead as earth.

HOW TIMELESS MOVIES WOULD CHANGE IF MICHAEL CERA WERE CAST IN THE LEAD ROLE

Ted Kluck

Michael Cera is an actor who embodies a certain, very distinct aesthetic. These are iconic movies. This is an essay about how funny it might be and how the movies might change if Michael Cera were cast in a prominent role in these movies. The point of this essay is enjoyment—primarily the author's. It should be noted that the author really likes Michael Cera as an actor and (presumably) as a person. It should also be noted that the essay contains no political or cultural or religious statements. It is not intended to "make you think." I apologize in advance to anyone who identifies with Michael Cera or is related to Michael Cera or IS Michael Cera. Also, I apologize in advance to everyone, about everything. Enjoy.

Die Hard

Michael Cera as NYPD Officer John McClane

Citing travel-related anxiety, McClane stays home in New York City for Christmas where he hits up a number of used bookstores and struggles with second-guessing his decision. Holly McClane takes Harry Ellis up on his offer of mulled wine, a crackling fire, and a baked brie—because who wouldn't? Both she and Ellis—by

leaving the party—avoid Hans Gruber's hostile takeover of the Nakatomi Building, and McClane is served his divorce papers by mail the following month. It is, needless to say, a very different movie.

Point Break

Michael Cera as LAPD Detective Johnny Utah

Former Big Ten quarterback Johnny Utah joins the Los Angeles Police Department as an undercover detective; however, he refuses to party with Bodhi and his wild band of surfers/bank robbers at the beach luau, citing acid reflux as well as some ethical issues with the food they're serving. He also bows out of the beach football game later that evening, saying that he'd rather read. This raises suspicion within the group, he and Bodhi fail to connect, and he is soon killed. It is a much shorter movie.

Top Gun

Michael Cera as Navy F-14 Pilot Iceman

Nothing homoerotic happens in this one. Iceman continues to just be a really solid pilot, but Maverick is no longer threatened by him.

Dead Poets Society

Michael Cera as Whiny, Privileged Private School Student Todd Anderson

Anderson remains whiny and self-obsessed. No discernible change.

Fight Club

Michael Cera as Anarchist(s) Tyler Durden

Durden, having just taken his first freshman philosophy class, is now an expert on everything. He visits the basement fight club but only to explain his nuanced stance on pacifism. The rest of the group beats him to death, resulting in a much shorter movie.

Gone with the Wind

Michael Cera as Socialite and Blockade Runner Rhett Butler

Butler spends most of the nine-hour movie explaining that his pencil-thin moustache is actually not ironic; rather, it is era-specific. Scarlett O'Hara passes on a romantic interlude, explaining, "I want to be with a guy who can pick me up, not the other way around."

Bonanza

Michael Cera as Rancher Hoss Cartwright

Cartwright really struggles with the manual labor on the ranch, due to the fact that, as a vegan, he has trouble reconciling himself to raising and slaughtering animals for meat. He offers to work only with the agricultural side of the operation, causing the rest of the family to lose patience with him and question his work ethic. His father, Ben, struggles to come up with a variety of delicious, vegan-only options at mealtime. As a result, Cartwright leaves the ranch to study theater at NYU and, as a result of that, none of his brothers really understand him and all of their interactions are weird in perpetuity.

Goodfellas

Michael Cera as Ruthless Gangster Henry Hill

Cera lets the guy from across the street steal his girlfriend because he was never really sure if they were dating or just hanging out.

Raiders of the Lost Ark

Michael Cera as Roguish Archaeologist and College Professor Indiana Jones

Indiana Jones focuses on the academic side of his work in archaeology, resulting in a movie that consists of Jones presenting a white paper at a conference. The movie lacks Jones running away from a giant boulder, cracking a bullwhip, and shooting anyone.

The Fighter

Michael Cera as Boxer "Irish" Mickey Ward

"Irish" Mickey Ward, instead of fighting "The Black Jew" Saul Mamby, is so fascinated by his racial/religious/ethnic heritage that the movie becomes a rich, nuanced conversation between the two men with no actual boxing. Coincidentally, Ward denounces Irish Catholicism and becomes a Black Jew, even though he's still white.

The Big Lebowski

Michael Cera as Burnout the Dude

A millennial icon sitting around, smoking a bunch of weed, not working, and pontificating in a way that doesn't make a whole lot of sense? Nah, nobody would watch that.

Any Given Sunday

Michael Cera as Quarterback "Steamin'" Willie Beamen

Beamen—shy, self-doubting, and not especially good at throwing a football—never seriously challenges incumbent quarterback Cap Rooney for the starting job, resulting in Beamen never cutting a rap video entitled "Steamin' Willie Beamen," and resulting in a much shorter movie.

The Dark Knight

Michael Cera as Billionaire Socialite/Superhero Bruce Wayne/Batman

Bruce Wayne purchases all the Batman stuff but never uses it because he didn't sleep well last night and is really wiped out.

MTV: A EULOGY

Ted Kluck

We didn't get cable until probably middle school, and even then it was used primarily to watch SportsCenter in the morning with my dad, while we both crunched away on cereals that I've since found out were full of things that will kill us—sugar, gluten, and carbohydrates (Pops and I are still here, however). I watched the same television at lunch, where in the summer I ate more death-inducing foods, like baloney sandwiches on white bread with mustard. As Joan Cusack famously said in *Say Anything*, there was probably "no food in my food." I lived. I perfected the art of watching Harry Caray and the Chicago Cubs on WGN while eating the baloney sandwich in a prone position (not as easy as it sounds).

When I was a kid I wasn't allowed to watch MTV, which stood for Music Television. MTV: God rest its soul (or lack thereof). I grew up in a town of 7,000 people in East Central Indiana which was not as far away as you could get from Manhattan or Los Angeles, geographically, but about as far away as you could get culturally. If I wanted to see a black person, I had to watch ESPN or MTV.

When MTV hit our cultural landscape, it was on in the background at the homes of kids who were cooler than me. Kids with hot older sisters. While walking between rooms and loitering in these homes, I caught snatches of Duran Duran videos, Whitesnake videos, and Headbanger's Ball, which my cousin meticulously taped and archived on a series of VHS cassettes, which probably still live in his basement.

Like all good evangelical parents, my parents didn't want me to watch it, and like all good people-pleasing but basically Gospel-less evangelical children, I adhered to the letter of that law (sort of)—except when I watched bits and pieces of videos with my finger on the channel button of the primitive box that fed cable into our old-school television. Employing this method, I probably watched half of Paula Abdul's "Cold Hearted Snake" video 4,000 times.

Unbeknownst to me, my parents were way cooler than I gave them credit for, in that my mom had a weakness for Motown and would let me watch a Michael Jackson video on occasion, because she "admired him" as a performer. My dad liked music too, but had already reached a period of grizzled, mid-career adulthood where he just didn't care about music much anymore[1] because he was busy caring about providing for our family and getting me to sports practices and making sure I didn't flunk Algebra II[2].

At any rate, the narrative back then was that MTV was evidence of our culture's moral decline and that with continued exposure it would eventually rot our brains and our souls. They probably weren't wrong in that MTV was basically trash—and even became trashier as the years went by—and the network became less about music and more about reality shows with the following premise: put lots of hot people in a particular setting (a NYC loft, a San Francisco loft, an RV, the middle of nowhere), give them lots of free booze, and see who has sex.

So, as a Good Christian Kid in the 80s and 90s, it was important to have a conflicted relationship with secular music (as I was reminded each summer when I went to church camp). Lots of great secular CD's hit the black market every fall as Christian kids unloaded their collections—not by throwing them away, but by selling them off cheap to other Christian kids who had fewer qualms. Because if there's one thing good Christian kids loved more than a clean conscience vis-a-vis music, it was making a tidy profit.

It had probably been a solid decade since I thought about MTV at all, until recently on a car trip through the hinterlands of northern Michigan, my son (age 15) asked me if I thought that "social media would ever go away." It was an intriguing question, and it made me think about MTV for the first time in a decade because the selfsame thing that was supposed to ruin my soul and my brain is now, for all practical purposes, dead—having been replaced with *his* generation's bane of internet pornography and social media. MTV has had a 0% register on my son's mental/emotional/spiritual radar, and I would assume that's the case for most of his classmates.

MTV was about other people and their music, glamour, or adventures. Social media killed MTV because social media is about *me* in a way that MTV never was. I think social media will be harder to kill, as perhaps the only thing guaranteed to hold any person's attention is a steady stream of images, videos, and stories starring that person.

"I doubt it," I told him. He knows that my views on social media put me in the minority in my age bracket and definitely in my industry, where it is expected to be online promoting yourself in a way that doesn't exactly *look* like self-promotion. For pastors, this means tweeting fortune-cookie-type wisdom phrases that usually

1 I'm in this now.

2 I almost did. But Mr. Johnson, if you're reading this, I still haven't used Algebra in real life.

start like this: "Pastors..." For authors, it means dropping the word "humbled" into announcements about speaking gigs, book tours, new book releases, and magazine articles. Understand that what I just typed is tonally more aggressive and judgmental than I want it to be...it's just that there's really no other way to say it. Nearly everybody does this.

Life is relentlessly competitive anyway, and there are enough temptations to narcissism in my career, without the added burden of social media. I stepped away from social media seven years ago for reasons related to my sin life, and I have had zero days of regret over not being on it anymore.

My son knows that the college where I'm a professor—which is not unique in this regard—could triple its counseling staff and still barely keep up with the rate of depression, anxiety, and loneliness exhibited by our mostly affluent student body. Can you draw a straight line between social media use and these issues? Probably not. But I know that it doesn't help. My students almost uniformly express dissatisfaction with their social media lives and also uniformly express an inability to stop. It's an addiction that started for them in middle school, roughly the age that I was watching brief snippets of videos on MTV before my mom walked into the room. This scenario seems quaint and Rockwellian when contrasted with the new American tradition of handing our children a device that allows them not only unfettered access to pornography, but also unfettered access to their own self-obsession. This stuff is bad, but it's also completely normalized.

My son also knows that the college where I'm a professor plays really competitive and exciting Division II sports, but getting our average student to get off the couch and come to a game is miraculous (primarily because watching a sport is about other people, whereas scrolling through my phone is about me). Most of our diehard fans are super old people who have already learned a valuable life lesson: that watching somebody play good basketball is more interesting than gazing at images of themselves. It's the same at the college I attended, where the gym used to be packed and loud. Now the gym is only packed and loud for the one "Silent Night" game where students dress up and remain silent until the first basket is scored, at which point they go crazy and photograph themselves. For the rest of the season, tall and affluent guys with thick ankles and names like Van Vandersma shoot spot-up 17-footers in front of empty bleachers.

What's weird is that I haven't forbidden my son from social media (per se). I've just spoken so openly about its dangers that he's held off. I'm trying to convince him that it's easier to flee temptation without it...and for the time being, he's buying that. I'm also trying to convince him to live his life in real time—that is, if he's doing things that are interesting and praiseworthy, people will eventually find him and praise him for those things, without him having to act as his own press agent at age 15. And I'm trying to convince him that acting as one's own press agent—at 15 or at 42—makes you the kind of person that you don't want to be. The kind of arrogant,

preening, self-promoting caricature of a person that would have been roundly mocked an era or two ago and should probably still be roundly mocked now.

What's also weird is that MTV never really tempted me to sin. Seeing David Coverdale prancing around in spandex and using his guitar as a phallus was, at worst, really dumb. At best, it was also...really dumb. There's nothing morally defensible about it, but at the same time, I didn't see that kind of behavior as a viable and realistic life choice for myself. But seeing people respond in real time to my photos, announcements, contrived cleverness, and image curation was, at all times, intoxicating to my vanity. What's more, I was tempted by the praise of man, the fear of man, the attention of women, and secretive behavior that all centered on the most interesting person in my world: me.

I'm reminded of Peter's letter to the struggling Gentile believers, which reads:

Called to Be Holy

13 Therefore, preparing your minds for action, and being sober-minded, set your hope fully on the grace that will be brought to you at the revelation of Jesus Christ. 14 As obedient children, do not be conformed to the passions of your former ignorance, 15 but as he who called you is holy, you also be holy in all your conduct, 16 since it is written, "You shall be holy, for I am holy." 17 And if you call on him as Father who judges impartially according to each one's deeds, conduct yourselves with fear throughout the time of your exile, 18 knowing that you were ransomed from the futile ways inherited from your forefathers, not with perishable things such as silver or gold, 19 but with the precious blood of Christ, like that of a lamb without blemish or spot. 20 He was foreknown before the foundation of the world but was made manifest in the last times for the sake of you 21 who through him are believers in God, who raised him from the dead and gave him glory, so that your faith and hope are in God. (1 Peter 1:13-21, New International Version)

I don't want narcissism and social media addiction to be a "futile way" that my students or sons inherit from me. I want their faith and hope to be in God and not in images of themselves. And I hope to share what I have learned, in part, the hard way.

HOW SCIENCE AND TECHNOLOGY PROLONGED WORLD WAR I[1]

Jimmy H. Davis

The year of our Lord 2018 is the centennial of the end of World War I. On November 11, 1918, at 11 A.M., the Armistice took effect, ending hostilities on the Western Front.[2] World War I had lasted from August 1914 to November 1918. When the war began, all sides thought that the war would end quickly. This article will explore how science and technology prolonged World War I.

At the outbreak of World War I, both sides expected a fast-break war.[3] The movie *War Horse* visually presents the new reality of war: the glory of the cavalry charge is cut short by a hail of machine gun bullets, and horses become beasts of burden pulling great artillery pieces. To survive the firepower of modern weapons, a matched pair of trenches stretched from the Swiss border to the North Sea coast of Belgium by September 1914. Stalemate set in.

Stalemate was not supposed to happen. People assumed this was going to be a quick war. Why did they think that? Each combatant had a plan for quick victory. France and Russia were bound by treaty to protect each other. France would attack through Alsace-Lorraine ultimately advancing down the German Rhine River valley. Russia planned on attacking both East Prussia in Germany and Austria-Hungary. Great Britain had no treaty to defend France with troops but planned to impose a blockade

1 This paper is based on the following presentation: "How Chemistry and Technology Prolonged World War I," Jimmy H. Davis, Christianity in the Academy Conference, Germantown, TN, March 13, 2015.

2 The peace treaty (Treaty of Versailles) ending World War I was signed on June 28, 1919.

3 In August 1814, as Kaiser Wilhelm II of Germany watched German troops leave for the front, he stated, "You will be home before the leaves fall from the trees." Quoted in "WWI: The Battle That Split Europe, and Families." http://www.npr.org/2011/04/30/135803783/wwi-the-battle-that-split-europe-and-families (accessed 8 September 2018).

on Germany by placing mines in the Straits of Dover and patrolling the North Sea to prevent ships from reaching Germany.[4]

Realizing the intentions of its potential enemies, Germany had its own plan: the Schlieffen Plan, which would allow a quick victory over France before Russia could mobilize its forces. Since the common border between Germany and France had many fortifications, the Schlieffen Plan involved German troops passing through neutral Belgium, sweeping through northern France to trap the French troops near Alsace-Lorraine, and capturing Paris before Russia could mobilize.[5]

Germany also knew that Great Britain was very dependent upon imports for food and supplies for its war industry. After the war began, Germany did two things. First, it cut off exports to Britain, which resulted in Britain no longer having enough khaki dye for its soldier's uniforms and cutting off Britain's supplies of pharmaceutical, laboratory equipment, porcelain for magnetos,[6] gun sights, and tungsten for steel.[7] Germany's second action was an attempt to use submarine warfare to stop all trade with Britain. Food rationing soon came to Britain. By the end of the war, submarines had sunk nearly five thousand ships with almost thirteen million gross tons of cargo.

At the outbreak of World War I, Germany was a great industrial power but had very few natural resources. For example, Germany had to import nitrates, oil, rubber, and many metals. All of these materials are needed for modern warefare. For example, nitrates are used as ammonia fertilizer in agriculture to provide food for troops as well as the cilivian population. Nitrates are also used to manufacture gunpowder. Germany had enough gunpowder to last only six months. Why worry? Germany had the Schlieffen Plan!

Given Germany's lack of resources, why did the war not end in six months? Enter the chemists. When the war broke out, nitrates for fertilizer and explosives came from one source: Chile. The Atacama Desert of Chile contained the world's largest supply of naturally occurring nitrates. Since the 1840s, the Chilean deposits had been mined for the fertilizer needs of Europe.

Although the German military did not see a need to break the Chilean monopoly on nitrates, the chemists did. In the early twentieth century, the great German dye company BASF hired chemist Fritz Haber (1868-1934) to develop a process of fixing atmospheric nitrogen to make ammonia from air, which could be used directly as fertilizer or converted to nitrates for use in fertilizer or explosives. By July 2,

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4 H. P. Willmott, *World War I* (New York: Dorling Kindersley Publishing, 2003, 2006), 29-31.

5 Willmott, 31.

6 A mageneto is a device that uses magnets to produce alternating current for the ignition in an internal combustion engine.

7 D.S.L. Cardwell and R.V. Jones, "Science and World War I", *Proceedings of the Royal Society A* 342, no. 1631 (1975): 447-456, doi: 10.1098/rspa.1975.0035.

1909, Haber had succeeded, and BASF selected their best chemical engineer, Carl Bosch (1874-1940), to scale up the process. The BASF Oppau plant began producing ammonia on an industrial scale in 1913.

Initially, the German military did not appreciate the Haber-Bosch achievement. In fact, when the war started in 1914, they drafted most of the Oppau workers, which crippled the production of synthetic nitrates. In the same year, Britain imposed a naval blockade on Germany, cutting off the supply of Chilean nitrates.

After the trench stalemate, the German military realized that they were going to run out of gunpowder. They asked BASF to build a plant that would convert ammonia to nitrates for explosives. Carl Bosch was put in charge of operations. No new German offensive operations could be attempted until the nitrate problem was solved. Although Germany could not import more nitrates, Britain and France could. These events put Germany in a precarious situation. However, by May 1915, Bosch succeeded in developing an industrial-scale production of nitrates from ammonia. Germany no longer needed imported nitrates and now had a domestic source for explosives.

To deal with all its looming shortages, the German Ministry of War created a War Raw Materials Office, which had a chemical division headed by Haber. He assembled the best chemists in Germany, many of whom would receive the Noble Prize in chemistry.[8] While Bosch was scaling up the process for nitrate production, Haber's chemistry group addressed the other advantages that German chemical expertise offered. Many of these chemists came out of the dye industry and reported the dangerous gases produced in dye manufacturing. These gases would later be the key to developing the chemical weapons that were used throughout the war.

The Hague Convention of 1899 (Declaration IV, 2) stated, "The contracting Powers agree to abstain from the use of projectiles the sole object of which is the diffusion of asphyxiating or deleterious gases."[9] All the nations that participated in World War I signed the Convention.[10] The Convention specified that there are five classes of chemical agents: lachrymators (tear gas), asphyxiators (cause the lungs to fill with fluid), toxic gases,[11] sternutators (respiratory irritant), and vesicant (blister or burn agent). France openly experimented with lachrymators and developed grenades

8 Joseph Borkin, *The Crime and Punishment of I.G. Farben* (New York: Pocket Books, 1978), 21. Emil Fischer (1852-1919) received the 1902 chemistry prize for his work on sugar and purine syntheses; Richard Willstätter (1872-1942) received the 1915 prize for his research on plant pigments, especially chlorophyll; Walther Nernst (1864-1941) received the 1920 prize for his work in thermochemistry.

9 Charles E. Heller, *Chemical Warfare in World War I: The American Experience*, 1917-1918 (Fort Leavenworth, Kansas: Combat Studies Institute, U.S. Army Command and General Staff College, 1984), 3. https://babel.hathitrust.org/cgi/pt?id=mdp.39015020731124;view=1up;seq=15.

10 Heller, 3. The United States did not sign this section of the Hague Convention. Secretary of State John Hay did not want to restrict United States ability to develop new weapons.

11 Although many of the other classes of chemical weapons could ultimately kill a person, a toxic gas is a gas that interferes with a biochemical pathway, such as cyanide ion binding to hemoglobin rendering it inoperative.

filled with ethyl bromoacetate, a non-toxic tear gas. France attempted to stop the German advance during August 1914 by using these grenades, but they proved ineffective in open areas.

Concerned about the potential use of chemical weapons, the German High Command requested the development of chemical weapons that would adhere to the letter if not to the spirit, of the Hague Convention. Thus, Germany developed a projectile that delivered not only a gas but also explosives; these gas shells contained xylyl bromide, a type of tear gas. On January 13, 1915, the first large-scale attempt to use chemical weapons took place on the Eastern Front at the Battle of Bolimów in Poland. The Germans fired eighteen thousand gas shells at the Russians, but the gas proved ineffective because it froze in the cold weather.

The German High Command tasked Haber and his chemical division with finding a more effective battlefield weapon. As mentioned previously, the chemists working for Haber came from the dye industry and had a list of possible poisonous chemicals, such as chlorine and bromine.[12] Haber was an enthusiastic supporter for the use of chemical weapons. While the majority of German scientists supported Haber, his wife, who had a Ph.D. in chemistry, opposed his development of these weapons. He ignored her wishes and began promoting the use of chlorine gas, an asphyxiator. BASF had succeeded in storing chlorine in metal cylinders rather than glass containers. Since chlorine was discharged from cylinders, it was not covered by the Hague Convention's restriction on projectiles. Haber convinced the military to use chlorine on the Western Front. In late April, Haber and his team along with five thousand cylinders of chlorine gas arrived on the Western Front near Ypres, Belgium.[13, 14] Haber and his crew had to wait a month for favorable easterly winds, which finally came late on the afternoon of April 22.[15] Haber gave the order to release the chlorine gas, causing a thick cloud of yellow smoke to issue from the German lines. Chlorine maims and kills by attacking the lungs. Being heavier than air, it followed the soldiers into the bottom of the trenches. As British Field Marshall Sir J.D.P. French reported, "The effect of these poisonous gases was so virulent as to render the whole of the line held by the French Division…incapable of any action at all….Hundreds of men were thrown into a comatose or dying condition, and within an hour the whole position had to be abandoned."[16] About fifteen thousand soldiers were affected and over one-third of them were killed. A gap over four miles wide was

12 Borkin, 21.

13 Willmott, 102-104. The release of the chlorine gas was at the beginning of the Second Battle of Ypres (22 April-25 May 1915). Losses during the battle are estimated to be 58,000 Allied and 38,000 German troops.

14 The Second Battle of Ypres resulted in one of the most famous poems of World War I. Major John McCrae of the Canadian Medical Corps wrote the poem, "In Flanders Fields" in remembrance of his friend Canadian artillery officer, Lieutenant Alexis Helmer who was killed on May 2, 1915. http://www.greatwar.co.uk/poems/john-mccrae-in-flanders-fields.htm (accessed 8 September 2018).

15 Heller, 7.

16 Victor Lefebure, *The Riddle of the Rhine : Chemical Strategy in Peace and War* (Charlottesville, Va: Generic NL Freebook Publisher, 1996), 31. https://ezproxy.uu.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=2010957&site=ehost-live.

torn in the French lines. Nothing lay between the Germans and the French ports except for the fog of war. About half an hour later, German troops, wearing cotton wadding over their faces, cautiously advanced into the gap. Seeing the havoc, they stopped their advance into the darkness. Since the conservative German generals did not expect Haber's gas attack to work, they did not deploy enough troops to recover the land that the gas had cleared of enemy soldiers. This lack of German reserves allowed the Canadian and French troops on the edge of the gap to regroup. Captain Francis Scrimger of the Canadian Arm Medical Corps identified the gas as chlorine and devised a countermeasure: urinate on a cloth and put the wet cloth over your mouth and nose.[17] Captain's Scrimger's advice saved many Canadian lives.

Haber was bitterly disappointed by the conservatism of the German military but continued exploiting chemical agents.[18] When he returned home from the Western Front, his wife begged him to abandon this work, but he refused and left for the Eastern Front. While her husband was away, Clara Haber committed suicide.[19]

Although Germany was denounced for violating the Hague Convention, chemical agents were widely used by both sides after this chlorine attack. By September 1915, Britain had launched its first chlorine attack.[20] In 1915, France weaponized the asphyxiator, phosgene,[21] which smells like moldy hay and takes twenty-four hours for symptoms to show. In 1916, France introduced the toxic gas, hydrogen cyanide. In 1917, Germany first utilized the vesicant mustard gas, which is called the "king of the gases." Not only does mustard gas cause severe burns and blisters, but also, being a liquid, it contaminates the battlefield. Therefore, all personnel and equipment must be decontaminated. To protect against the effects of the chemical weapons, gas mask technology developed from simple wet gauzes to gas masks covering the whole face and or body.[22, 23] By the war's end, chemical weapons from both sides had killed approximately 90,000 with more than 1.3 million casualties.[24, 25]

Neither Bosch's success with providing nitrates nor his breakthroughs in chemical warfare broke the stalemate on the Western Front, and the blockade stayed in place. Therefore, chemists turned their skills to solving other shortages. Ersatz petroleum was another major chemical project. (The German word "ersatz" means

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17 For his actions during the following days of the Second Battle of Ypres, Captain Francis Scrimger was awarded the Victoria Cross, which is the highest military decoration awarded to armed forces members of the British Commonwealth http://www.victoriacross.org.uk/bbscrimg.htm (accessed 8 September 2018).

18 Borkin, 23.

19 Borkin, 24.

20 Heller, 11.

21 Phosgene was first synthesized the British scientist John Davy in 1812 and was a common ingredient in the dye industry.

22 Gerald J. Fitzgerald, "Chemical Warfare and Medical Response During World War I", *American Journal of Public Health* 98, no. 4(2008): 611-625.

23 Heller, 31.

24 Fitzgerald, 612.

25 Sarah Everts, "When Chemical Weapons Became Weapons of War" *Chemical & Engineering News* 93, no. 8(2015): 9-21.

substitute, similar to the American words "artificial" or "synthetic.") The chemists' attempt to convert coal into liquid fuel did not succeed until the 1920s and was the fuel source for Hitler's armies.[26] Ersatz rubber was produced during the war; this product was harder than natural rubber and could not be used for tires but was useful for submarine batteries and other electrical equipment.[27] Ersatz coffee was made from acorns and beechnuts, both of which were needed to feed pigs. Ersatz tea was made from a mixture of the bloom of the linden tree mixed with beech buds and tips of pine. Ersatz cocoa was produced from the coal-tar chemicals mixed with roasted peas and oats.[28] Ersatz sausage was invented by the mayor of Cologne, Konrad Adenauer, the first German Chancellor of West Germany after World War II. After much experimentation, he selected soy as the meatless ingredient for his Friedenswurts or peace sausage.[29, 30] The German scientists never solved the problem of how to replace all the food that the blockade prevented from entering Germany. By the end of the war, famine broke out in Germany.

Germany and its allies collapsed in 1918 because of the blockade's attrition of men and supplies, the United States's entry into the war, and allied advances on the battlefield. The war ended on November 11, 1918. Chemistry and other sciences prolonged the war beyond the estimated six months with a loss of life equal to over eight million military deaths, about twenty-two million military casualties, and over six million civilian deaths.[31]

After the war, Fritz Haber's career in chemistry continued. During the fall of 1919, the Nobel Prize committee awarded the 1918 Nobel Prize in Chemistry to Fritz Haber "for the synthesis of ammonia from its elements."[32] The scientific community reacted with disgust, writing editorials in *Nature* and the *New York Times* denouncing this choice. The reaction was so strong that Dag Hammarskjöld, the first secretary of the Swedish legation in Washington, wrote an article in the *New York Times* defending the choice and reminding everyone that the award had nothing to do with chemical weapons.[33] On February 3, 1920, Haber was on a list of over nine hundred people who would be tried as war criminals, but on May 7, 1920, a new list came out with only forty-five names, which did not include Haber's.[34] For the rest of his life, Haber worked to rebuild broken relationships with international scientists

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26 Borkin, 33-34.

27 Borkin, 34.

28 Marc Benedict, "On the Home Front: The Production and Use of Ersatz Goods," http://www.reenactor.net/ww1/morsels/fsc/home_front.html (accessed on 8 September 2018).

29 Stephen Evans, "10 inventions that owe their success to World War One," *BBC News Magazine*, April 13, 2014; http://www.bbc.com/news/magazine-26935867.

30 Jimmy H. Davis, "Consumer Goods and World War I", *Journal of the Union Faculty Forum* 37 (2017): 76-78. This articles documents other consumer goods that originated in World War I.

31 Willmott, 307.

32 "The Nobel Prize in Chemistry 1918". Nobelprize.org. Nobel Media AB 2014. Web. 17 Feb 2015. http://www.nobelprize.org/nobel_prizes/chemistry/laureates/1918/.

33 Borkin, 43-44.

34 Borkin, 45.

and to use science to mitigate the consequences of the war. Despite his contributions to World War I he had to leave Germany in 1933 because of his Jewish descent and spent most of his remaining life in Switzerland. He died in 1934 and was buried in Germany. Haber never renounced chemical weapons. As he said many times, "Chemical warfare is certainly no more horrible than flying pieces of steel; on the other hand, the percentage of mortality from gas injuries is smaller."[35]

Like Haber, Carl Bosch kept working in the field of chemistry, specifically continuing his study into the development of synthetic materials. Bosch became head of BASF in 1919. He extended the high-pressure techniques to the synthesis of synthetic fuel and methanol. In 1931, Carl Bosch and Friedrich Bergius were awarded the Noble Prize in Chemistry "in recognition of their contributions to the invention and development of chemical high-pressure methods."[36] In 1935, Bosch was the driving force for combining the six largest German chemical companies into a gigantic monopoly called I.G. Farben, with Bosch as its first chief operating officer.[37] Bosch's battles with Hitler[38] led to a long illness, and he died in 1940.[39] However, I.G. Farben would supply Hitler with the materials to wage war, start the first slave work camp for its factories, and provide the gas used for extermination in the concentration camps.[40] The Allies forcibly broke up I.G. Farben after World War II, but its parts survived. Today, BASF is the largest chemical company in the world.[41]

After a war that was radically altered by the influence of chemists like Haber and Bosch, the world developed varying opinions on science. One view is reflected in Lord Cromer's belief that science turned Germany into a barbarian society.[42] G.K. Chesterton reflects this view in his philosophical travelogue from England to Palestine, *The New Jerusalem*. While describing the Jaffa Gate of the old city, he mentions the 1898 visit of German's Kaiser Wilhelm II to Jerusalem. The Kaiser arrived with 200 people and 112 luggage trunks.[43] Since he did not want to dismount to enter the city, a hole was cut in the wall next to the Jaffa Gate, and the Kaiser entered in triumph. After describing this, Chesterton commented, "The Christians made the Church of the Holy Sepulchre and the Moslems made the Mosque of

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35 Fritz Haber, "Chemistry in War", *Journal of Chemical Education* 22, no. 11 (1945): 526-553 doi: 10.1021/ed022p526. quote from page 528. The article is a lecture given by Haber to a group of German officers on November 11, 1920.

36"The Nobel Prize in Chemistry 1931". Nobelprize.org. Nobel Media AB 2014. Web. 17 Feb 2015. <http://www.nobelprize.org/nobel_prizes/chemistry/laureates/1931/>

37 Borkin, 54-55. The six firms were BASF, Bayer, Hoeschst, Agfa, Cassella, and Kalle.

38 Bosch strongly denounced Hitler's anti-semitic laws and appealed to Hitler to allow Jewish scientists to remain in Germany. By the time of his death, Bosch had been declared persona non grata by the Nazis.

39 Borkin, 126.

40 Borkin, 1-3.

41 Alexander Tullo, "Global Top 50: The world's largest chemical firms are growing and enjoying stronger profits" *Chemical and Engineering News* 92, no. 30 (2014): 10-13.

42 Cardwell, 454.

43 Jessica Steinberg, "The Brangelina of yore", *The Times of Israel*, October 29, 2012, http://www.timesofisrael.com/the-brangelina-of-yore/ (accessed 8 September 2018).

Omar; but this is what the most scientific culture made at the end of the great century of science. It made an enormous hole."[44]

The majority opinion did not agree with Chesterton, and science emerged from the war relatively untarnished, in contrast to politics, military, economic order.[45] Many people hoped that science would provide the means to overcome the destruction of the war.

The actions of scientists in World War I revealed the complexity of human activities. The action of the chemists provided fertilizer to feed millions, while suppling explosives to kill millions. The same gas, chlorine, can kill on the battlefield, while keeping our swimming pools and water supplies safe. This duality of action would be played out on a much larger scale during World War II.

44 G.K. Chesterton, *The New Jerusalem* Kindle Edition 91.
45 Cardwell, 454-455.

THE AFTERNOON WE FOUND BOB DYLAN IN THE WOODS

David Malone

It's hard to explain, first, how unlikely
it is we would be in the woods—
we talk about taking hikes, digging the dog's harness
out of wherever the kids tossed it last
and going out with her to some forest preserve or remote park,
but then the conversation will take a turn,
or, in searching the dog's room for her harness, I notice
the ants wandering, almost abstractedly, over her kibble,
and track the drunken line of ant movement back to the wall,
and leave the room in search of a can of bug spray.

But somehow there we are, away from the dog
and its harness and the ants, water bottles and green sacks
of roasted almonds, lightly salted, in your purse,
the trees above us waving and swaying like enthusiastic fans
at a sports stadium, singing along to the unlikely pop anthem
they've shoplifted to be their victory song. Particles of
shifting light glow on the white gravel paths, and birds,
shrieking in outrage or pleasure, burst from the trees,
their feathers clattering against each other as they ascend.

I draw up close to you, about to tell you something,
now that we're far from everything that we're used to,
that's nakedly appreciative, words that will let you know
how little there is for me without you;

And before I can utter one word, you're looking off, transcending
anything I might try to communicate: "Do you hear that?"
and while I'm starting to sift through all the sounds
resonating around us, you're crashing off the path,
heading down the slope, and I'm following you,
even though I've heard nothing.

"There," you say, at the bottom of the hill, and point
at something in the middle of the stream.
Someone's dumped garbage, I think, or old clothes.
"It's just—" I say, and then make out, beneath the burble
of the water, a long moan. It comes into focus, then—
the white slice in the stream isn't a limestone outcropping,
but a face half submerged in the water.

The gravel at the bottom of the stream has been stained brown
by the current, and the water that sluices around our ankles is freezing.
We squat by the man, who still looks like
a pile of abandoned clothes—his eyes are closed,
but his eyebrows arch as though, even unconscious,
he's continually surprised. He moans as we reach around him,
trying to get a grip to raise him from the water. His clothes
are sodden, and it's harder to lift him than I'd imagined—
his moaning vibrates through our hands and arms,
and we nearly tumble in the water before we reach the shore.

He's shaking when we lay him on the grass, his face icy and seamed.
"Take his clothes off," you say. "He'll never get warm in those
wet things." I wrench buttons from wet holes, unbuckle, peel clothes
from unresponsive limbs. Naked on the bank, he continues to tremble,
so we wrestle on my pants—too big for him and too long—
and your jacket—too small.

"Does he seem warmer?" I say. "He looks like Bob Dylan," you tell me.
I look at him again—he's just a grizzled man, skin made paler against
your white jacket. "Mr. Dylan," you say, "can you hear me?
What are you doing here?"
"I don't see it," I say.

We carry him up to the path, my feet slipping every other step.
At the top, he's able to stand with his arm over your shoulder.
"Mr. Dylan," you say. "Bob. Are you getting warmer?" He only moans
again, huddled down into your jacket and staring up at the searing
blue sky. His eyes look as though they're painted, a flat, obsessive gaze
drilling out of a fresco on a cathedral wall.

In the parking lot, my phone has one bar of reception,
and we find a Bob Dylan concert advertised for that night
at the Chandler Opera House, forty miles away. I mention how
improbable it is that it would turn out a man we found collapsed
in the wilderness would be an international celebrity,
but there's no way to put brakes on the inevitable.

In the car he begins to sing, his voice sandpapery and distracted:
This is My So Sad Come Back Song, I Got Friends in Low Places,
Strangers in the Night. "See?" you say.
"Those aren't Dylan songs," I say, but don't meet your eyes.
My foot, still wet on the accelerator, feels like it's melding with my shoe.

The opera house doors turn out to be locked. We stand on the sidewalk
with the man you believe is Bob Dylan—he still hasn't said a word to us.
How much trouble could we get in, I wonder, if I took back my pants
and your jacket and we left him outside the theater? I grab his clothes
from the floor of the back seat—still wet, though they've grown warmer on the trip.
When I hold them out to him, he bolts and runs down the alley
beside the theater, a stiff jointed, old man's run. You follow him,
and when I follow you around the corner he's pounding on a metal door.
You look at me holding back at the entrance to the alley, still pantsless,
and start slapping your palm against the door. "Let us in!
Your star's out here!"

No one comes to the door. You and the old man keep pounding—
your ring clangs against the metal with every slap. I drop
the wet clothes on the alley floor and imagine, for a moment,
walking back to the car and taking off in my boxer briefs.
You give me a manic smile, your face framed by your wild hair,
and without really deciding to, I walk to the door, noting the stubble
of rust running across its face, and begin slamming my hand against it.
"Bob Dylan's waiting out here! Let us in!"

Quantum constructions - dialogues #59

Melinda E. Posey

Statement

Strung between the mapped points is thread representative of a wave function (Si). The path of the string demonstrates the probability of finding future change in the volume (DTau), which is directly proportional to the area created by the string (si2). This process illustrates the future of the wall by marking its past. Through my work, I hope uncover the history of the void, while plotting a visual course for the space's future alterations.

THE MUSIC OF PHYSICS:

VIEWING PHYSICS THROUGH THE LENS OF VICTOR WOOTEN'S *THE MUSIC LESSON*

W. G. Nettles

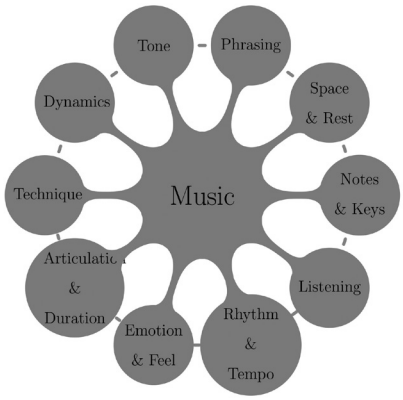
Introduction

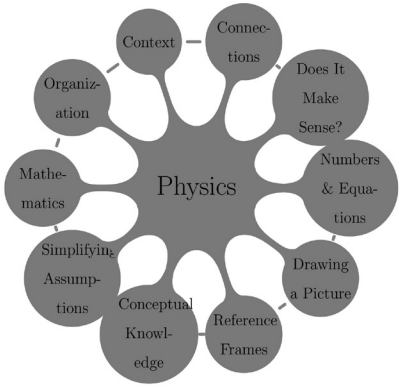
Playing music, either as a profession or a hobby, is an emotional outlet, a mental exercise, and a creative venture. Done alone or with a group, the interaction of physical, mental, and spiritual disciplines that happens in making music is a God-given blessing. Many aspects of music composition and performance can have analogies that apply to other activities in life. I like making music, and one of my inspirations is jazz musician Victor Lemont Wooten. The youngest of five brothers, he was born into a musical family and has been learning the craft and love of musicianship for decades. Known popularly as a bassist, he is recognized among musicians as someone who emphasizes the aspects of good musicianship beyond merely playing the right notes. While many of his ideas about music and teaching music have been garnered and harvested from the planting and watering of other musicians, Victor (he's a very personable guy and using a last name seems too sterile) has taken these ideas and formed them into an insightful pedagogical piece, a book entitled *The Music Lesson*.

In *The Music Lesson*, Victor uses a clever semi-autobiographical story as a teaching tool to communicate what he considers ten essential elements for any musician to integrate into practice, performance, and other areas of life.

Notes and Numbers, Keys and Equations

When most people learn about making music, they learn notes: "sing this note, play this note," they are told. Victor argues that merely playing notes isn't music, any more than saying words constitutes a conversation. The notes, like words, are foundational





for beginning to play or sing, but there are other important elements that bring them together into music. According to *The Music Lesson*, the actual notes can fade away, but the music remains.[1]

The same holds for solving physics problems. Manipulating numbers is useful and helps in applying physics to specific situations, but physics is much broader than numbers. After all, numbers on a page are simply symbols that point to some larger concepts. One could say physics is always happening, whether or not you know the numbers, and the numbers alone can't carry the physics conversation.

In music, a key or a mode acts as a template and lets musicians lay a structure around the note that makes the song sound harmonious. But again, playing in key isn't enough to make music. The key is similar to a specific language, such as English or German, but it doesn't organize the conversation. Similarly, physic equations give a structure and a relationship between numbers, algebraic symbols, or physics concepts, but they don't form a physics conversation by themselves. This physics conversation is the total discussion one has either with oneself or others when determining how to solve a physics problem. The idea of conversation is the discussion of ideas, gathering facts, asking questions.

In what he calls "2 through 10," Victor Wooten outlines nine other essential elements of music. These are certainly not stand-alone concepts but are synergistic. Let's examine these nine elements and see some analogies between music and physics.

Listening and Drawing

If musicians are going to talk about and play music, they must understand what other musicians are bringing to the conversation and what things are already in place. This process requires taking time to listen, not merely to the notes but to other aspects like rhythm, tone, emotion, and dynamics. The good musician, whether in the audience or on the stage, continually listens to what others are playing or composing.

1 Victor Wooten, *The Music Lesson* (New York: Berkley, 2006), 42.

For the physicist, drawing a picture is the equivalent of listening. Drawing allows the physicist to focus on and understand systems. Drawing pictures forces one to take time to consider the interactions of the pieces of a system and how you might describe the pieces. It's reflective rather than assertive. And it's an essential element to developing a good solution.

Rhythm, Tempo, and Reference Frames

Without a sense of rhythm, notes don't form a song. In fact, a single pitch can make music when coupled with rhythm and tempo. Consider the bass line to *Everyday People* by Sly and the Family Stone, or the verse section of *One Note Samba* by Antônio Carlos Jobim. Before jumping into a song, jazz musicians listen for a sense of rhythm and ways to make the notes fit together.

Physicists require a good reference frame to fit things together. If objects in a system are moving, how do we describe the positions and velocities of each object relative to other objects, either inside or outside the system? If we are calculating energy or momentum, what is the framework for those calculations? In order to communicate with other physicists, everyone involved with the problem must understand the reference frames. And just as it is important sometimes to change rhythm or tempo in music, it is important sometimes to alter the reference frame in physics. Without establishing clear reference frames, the path to a solution will get sloppy and derailed.

Feel/Emotion and Body of Knowledge

Notes provide the melody, and rhythm provides structure, but music also has a feeling or emotion which often is set by a mixture of key (major or minor), time signature, tempo, and syncopation. Feel or emotion is often affected by the genre of music: rock, swing, Latin, jazz, country, bluegrass, blues, hip-hop, or maybe a combination of these.

Without a body of knowledge—concepts and their limitations—numbers won't help you do physics. A well-understood physics concept will, however, make even boring numbers like zero (0) or one (1)—the loneliest number?—important and powerful. And even without numbers, a good conceptual knowledge can fuel a fascinating conversation with others who may only have a fleeting knowledge. Without conceptual knowledge, you can't begin to organize the equations or numbers. The concepts in physics help get you started in moving from your drawing toward a solution. Without a knowledge of basic concepts, you can't even draw a decent picture. In both music and physics, you must know what you are listening for.

When physicists analyze a situation, there are a variety of concepts that can be utilized, but there is usually one most important or best-starting concept. All the concepts a physicist may know might be true, just as a musician may be able to play several different genres of music. But not all are important at the moment. The

physicist needs to learn to recognize the feel of the problem, which helps one know how best to attack a problem. To do this, the physicist must have a repertoire of concepts that can be used in the right situation.

Technique and Mathematics

If you don't play your instrument technically well, your attempts to bring music to an audience or even to yourself will be frustrating and painful at best and a failure at worst. The musician must spend time learning a variety of technical behaviors so that when it's time to play, the music can flow forth. Time spent in practice pays off in the pleasure of a good musical performance.

For the physicist, mathematics is the equivalent of technical instrument playing. Numbers, equations, pictures, and concepts are all important things. If you can't correctly manipulate the quantities, you can't produce adequate physics solutions, descriptions, or predictions. If you're poor at the manipulation of equations, doing physics is extremely frustrating. Practicing mathematics pays off when the math isn't a roadblock to your physics conversation.

Tone and Context

Setting the mood for a piece of music involves several elements. I've already mentioned rhythm and feel, but tone is equally important. Tone deals with the brightness or softness of the sound. A trumpet can play a very wide range of tonality, from brassiness to romantic softness. By changing the tone, a slow ballad can convey either a sense of joy, sadness, or foreboding. Good musicians recognize when a change of tone is appropriate, and composers will often write cues in the music for musicians to follow, such as "joyful" or "somber."

The physicist knows there are many true principles, but not all of them need to be used in analyzing a situation, just as not all tones are appropriate for a single piece of music. Often the physicist must use different concepts in different parts of a problem. One part may require conservation of momentum, while another part requires the work-energy principle along with Coulomb's Law. Recognizing the context of a problem helps choose the best concept to use and helps the physicist make proper simplifying assumptions.

Articulation and Assumptions

Articulation and note duration contribute to the musical experience. Playing music with others requires playing at the right moment for the right amount of time. This is called articulation, and it develops a sense of rhythm that holds the various parts together. Playing music with others requires playing at the right moment with the right length note (articulation) so that a sense of rhythm is developed and holds the various parts together. Articulation corresponds to everyone agreeing on when the rhythm points (one-and-two-and-three-and, etc.) occur. If players don't conform to the established rhythm or play the notes for the right amount of time, the music

sounds muddled. Playing with articulate musicians makes playing more enjoyable and often easier.

In physics, problems can be made easier by making simplifying assumptions. When making these assumptions, however, one must be sure to communicate them to others. If assumptions are made, everyone must agree on them. For example, when solving problems of falling rocks and racing trains, physicists assume zero air resistance and a non-rotating Earth. Even though air resistance and Earth's rotation happen in real life, the assumption is that the effects are small enough to ignore in most situations. If that assumption is not communicated, other solutions might be out-of-step or not articulated with your solution. Also, if the simplifying assumption is improper (like playing a note too long or too short), the solution won't be close to reality.

Dynamics and Organization

While rhythm establishes the time reference and articulation assures that everyone plays according to the rhythm, dynamics provide the loud and soft volume for music, along with the transition between them. Playing proper dynamics also requires proper listening and matching the tone of the piece. (Do you get the sense that these musical aspects are synergistic?) Dynamics also add interest to the piece and influence the emotional tone set by the instrumentation. As the dynamics of a piece change, the emotions change as well, and so the dynamics help to organize the piece emotionally.

In analyzing physics problems, organization is important because it helps one clearly see the connection between drawing pictures, important concepts, simplifying assumptions, and equations. Organization, while not as objective as mathematics, helps one more easily understand a complicated situation.

Phrasing and Connections

Another organizational aspect in music is phrasing. Commonly, a given melody (or motif) is played and then repeated with some change: soft versus loud, legato versus staccato, brash versus mellow, unison versus harmony. Phrasing unifies a piece. An entire musical piece may have only two or three melodies (verse, chorus, bridge), but the variety of phrasing is used to make the melodies memorable. Phrasing allows for repetition throughout the piece without being boring.

Consider Beethoven's Symphony No. 5 in C Minor; the motif of the first movement is a 4-note rhythmic group. This group is repeated dozens of times, loudly and softly, staccato and legato, high strings and low brass, in unison and harmony, and with call-and-response between different sections of the orchestra. The phrasing makes it a masterpiece.

For physics analysis, phrasing is similar to making connections between two or more steps needed to describe a system. One part of a physics problem may require

a thermodynamic analysis, while another part needs Newton's Laws. A third part might require a knowledge of electromagnetism.

The physicist needs to recognize that these physics phrasings are all part of solving a single system. The ability to shift between these different techniques is just as important in physics as phrasing techniques are in music. The physicist also needs to give proper attention to each phrase in the problem.

Space and Sensibility

As musicians improve, they often want to show their audience what they can do that is difficult and show it all the time. While that can be impressive for a while, it can also become needless busyness and a distraction for other musicians. Mature musicians have learned that giving space for others to fit in is important. The presence of rest and space allows the listener to determine if the musical parts make sense. Space among the notes also helps build a rhythmic groove that all the musicians can fit into.

My space analogy in physics is really the final step of a solution to any problem. One must ask the question, "Does my answer make sense?" After all the equations, concepts, assumptions, pictures, and organization, if your final answer isn't sensible, you need to go back and spend some time figuring out what went wrong. If you skip this final step, what you might have is a bunch of worthless busyness.

The Music of Physics

The adept musician knows more than notes and key signatures. Playing music well requires a knowledge and application of tone, dynamics, articulation, rhythm, technique, phrasing, feel, listening, and space. Victor Wooten characterizes these "2 through 10" items as the groove of a musical piece. And "you should never lose the groove in order to find a note."[2]

Physics is more than numbers and equations, and studying physics properly requires a groove, which is a synergy of the important parts that I've described as analogous to Victor's musical groove. While the physics of music is an interesting topic for the classroom, the music of physics, the simultaneous application of important ideas and techniques in solving physics problems, is something that should be taught with other scientific concepts.

I believe that recognizing useful synergies is likely a valuable exercise for every academic area, as well as for hobbies and life in general. Just as music is more than notes, and physics is more than numbers and equations, life is more than eating and breathing. What "music" can you identify?

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2 Wooten, 33.

THE MONEY TRAIL:

TRACKING THE FUNDING OF JACKSON-MADISON COUNTY SCHOOLS

Ben T. Phillips

This past summer, a familiar scene played out in Madison County. While the key actors of this annual event change from time to time, the two principal roles always remain the same. The first role is the Superintendent of Jackson-Madison County Schools (JMCSS), now played by Dr. Eric Jones. The second role is played by the Madison County Commission, the local funding body of the public school system.

This summer, the scene began with Jones' funding request for the upcoming academic year. The ensuing discussions and decisions were much less contentious than in past years. In fact, the County Commission unanimously approved the school budget in both required readings and gave Jones the $103.3 million he was requesting.

Mostly, anyway. While Jones secured approval for the school system's 2018-2019 operating budget, he is still awaiting a firm commitment for his 10-year, $144 million capital improvements plan. Although the County Commission voted for the operating budget with little haggling, there is evidence to suggest Madison County could support its local public schools with significantly more funds.

A complete explanation of Madison County's present funding levels of JMCSS must begin with a historical understanding of public school funding in Tennessee.

The Basics of School Funding in Tennessee

In the late 1980s, 77 small, rural school districts across the state joined together to file a lawsuit against the state of Tennessee and then-Governor Ned McWherter, claiming the state's funding system violated students' rights to equal protection

under the law. The claim was based on the fact that students in districts that were small and rural—and generally less wealthy—did not have the same access to quality educational resources and opportunities as did students in larger, more affluent districts. The legal battle went all the way to the Tennessee Supreme Court, which ruled in favor of the small districts and gave birth to a completely new funding system called the Basic Education Program (BEP).

Since the early 1990s, state statute has required the BEP to ensure more equitable funding for all of Tennessee's public school systems. The concept is straightforward: The state will contribute more dollars to districts that have less ability to generate revenue and fewer dollars to districts that have a greater ability to generate revenue. While this idea is simple, the actual funding formula is rather complicated. Several factors are considered, and the percent of state funding differs for virtually every district in the state. For the 2016-2017 fiscal year, the state-funding percentages ranged from a low of 26% for the wealthy Franklin Special School District to a high of 82.7% for Alamo City Schools, mostly due to its limited ability to generate local revenue. In addition to state funds, school districts are allocated federal funds, which are based on factors such as the poverty status of the county, the number of special needs students in the district, and the number of students enrolled in career and technical programs. The third and final piece of the funding puzzle is local revenue. In Madison County, just as in each county district in the state, the county commission approves the local funds. In contrast, municipality and special school districts rely on local funding sources other than their county commissions.

The dollars provided annually by these three sources (local, state, and federal) pay for each district's operating costs. In a recent interview with Superintendent Jones, he said JMCSS's typical operating expenses include aspects from "transportation to maintenance to instructional supplies, technology, and teachers" (E. Jones, personal communication, June 21, 2018). Operating funds do not pay for some of the most expensive expenditures a district incurs—capital expenses. Capital expenses include the construction of new schools and the high-ticket maintenance costs associated with older ones. The federal government does not fund capital projects and the state provides only minimal capital funds; the majority of that burden falls on the local funding body.

In a state where school boards are financially dependent upon another local governing body, school officials from JMCSS must come before the Madison County Commission to request special funding for all capital projects. These additional funds are above and beyond the year-to-year funding required by state maintenance of effort laws, which mandate that the county commission cannot give less money to a school district than the previous year's funding level. Thus, the Madison County Commission is held to a bottom-line funding requirement by both the maintenance of effort law and the mandated local amount set by the state's BEP calculations. Public school advocates in Madison County often criticize the county commission for not providing more funds than the bare minimum required by law.

The Truth about the "65%"

Reports about local school funding occasionally mention that the county commission spends a vast majority of its budget on Jackson-Madison County Schools. Incoming commissioner Tommy Gobbell repeated the claim in a *Jackson Sun* article just after winning his primary election in May 2018.

Gobbell stated, "About 65 percent of county funds go to the schools. I'd like to see stability in the superintendent's office, and more accountability by the administration and school board about money they're already getting" (Yusuf, 2018).

The county's 2016-2017 budget included a graph that indicated 65% of all projected expenditures were allocated to education, specifically JMCSS. With the "justice" spending category a distant second at 15%, no other expense item even came close to the amount spent on schools.

The claim that the county spends 65% of its budget on public education is incomplete at best and misleading at worst. In the past fiscal year, $126.6 million was spent on JMCSS out of a total budget of $195.7 million; however, this school allocation includes all of the money from both the state and federal governments, $51.9 million and $28.3 million respectively. The state and federal governments use the county coffers as a conduit through which their moneys are dispersed. The county commission is neither raising nor controlling these funds. Instead, the county commission acts more like a fiduciary trustee in that the money simply passes through the county's books.

Even describing the commission's recent approval of Jones' $103.3 million operating budget for 2018–2019 deserves more explanation. Of that amount, $53 million is state money. After disregarding a few minor revenue sources, local taxes designated for the operation of JMCSS comes to only $47 million, barely 20% of the county's total budget. Thus, the oft-quoted percentage of the county's overall budget allocated to education is certainly not all local funds, nor is it an accurate measure of the county commission's effort to support public schools. Assessing that level of effort requires looking elsewhere.

Madison County's Fiscal Capacity

One way to measure a county's level of effort in supporting public schools is to compare the money it does give to fund education versus the money it could give. The amount any county could give is not an unknown value. In fact, the Tennessee Advisory Commission on Intergovernmental Relations (TACIR) in Nashville has calculated this amount every year since the inception of the BEP in 1992. This calculated value, known as fiscal capacity, is defined by TACIR as "the potential ability of local governments to fund education from their own taxable sources, relative to their cost of providing services. The formula estimates how much revenue per pupil each county area can afford to raise for education." In 2008, a second model for calculating fiscal capacity was introduced by the Center for Business and

Economic Research at the University of Tennessee. Per state law, this second model and the TACIR model have equal weight in determining how much money a county could raise to support its schools. These numbers are not inconsequential—the amount of money the state gives to local schools through the BEP is based on the fiscal capacity calculations.

An important distinction is that fiscal capacity is not a measure of what a county must provide to its local schools. Instead, just as the name suggests, it is simply an indication of how much funding a county has the potential to provide. Not surprisingly, counties with large, urban centers have higher fiscal capacities. With increased populations, these counties have broader property tax bases, and with retail options that attract shoppers from a wider region, these counties benefit from impressive sales tax receipts. Counties that boast major tourist destinations also benefit from higher-than-usual sales.

Table 1 lists the seven counties that have the highest per pupil fiscal capacities in Tennessee using data from TACIR based on the 2016-17 fiscal year. Out of 95 counties, Madison County ranked 6th.

Rank	County	Major City	Per Pupil Fiscal Capacity
1	Davidson	Nashville	$6,086
2	Sevier	Gatlinburg/Pigeon Forge	$5,869
3	Williamson	Franklin	$4,869
4	Knox	Knoxville	$4,496
5	Hamilton	Chattanooga	$4,488
6	**Madison**	**Jackson**	**$4,365**
7	Washington	Johnson City	$3,684

Table 1: Top Seven Tennessee Counties Ranked on Per Pupil Fiscal Capacity, FY 2017

Note. Tennessee County Profiles. (2017). Tennessee Advisory Commission on Intergovernmental Relations. Retrieved from https://www.tn.gov/tacir/tennessee-county-profiles-redirect.html

Comparing Fiscal Capacity and Fiscal Reality

A county's fiscal capacity does not determine its financial commitment to education. One way this commitment can be determined is to compare the actual spending

with the fiscal capacity. The Tennessee Department of Education (TDOE) releases key funding measures for each district, including the annual per pupil expenditure and the percentage for each funding source. With this data, a simple calculation reveals the amount of funding for Jackson-Madison County Schools that is paid using local money.

In 2016-2017, which is the most recent funding data provided by TDOE, the JMCSS per pupil expenditure was $10,041, slightly ahead of the state average of $9,648. That same year, the local funding percentage was 41.34%, meaning local funds allotted by the Madison County Commission amounted to $4,151 per student. In that fiscal year, the difference between the actual funding provided by the county commission and Madison County's fiscal capacity created a deficit of $214 per student. On the surface, a discrepancy this small may not seem alarming, even though it represented an underfunding of JMCSS. An understanding of the situation becomes clearer when Madison County is compared to the other counties with high levels of fiscal capacity.

In the top seven districts, no other county underfunded their local public school system based on this metric. Table 2 includes the same seven counties along with their local funding amount and the difference between actual funding and capacity. All counties on the list—other than Madison County—have found a way to fund their public schools using locally generated revenues beyond their TACIR-

Rank	County	Funding Paid w/ Local Funds	Fiscal Capacity	Amount Over/(Under) Capacity
1	Davidson	$7,399	$6,086	$1,313
2	Sevier	$6,696	$5,869	$827
3	Williamson	$5,457	$4,869	$588
4	Knox	$4,556	$4,496	$60
5	Hamilton	$5,164	$4,488	$676
6	**Madison**	**$4,151**	**$4,365**	**($214)**
7	Washington	$3,868	$3,684	$184

Table 2: Actual Funding Compared to Fiscal Capacity for Top Seven Counties, FY 2017

Note. All amounts are per pupil. Tennessee County Profiles. (2017). Tennessee Advisory Commission on Intergovernmental Relations. Retrieved from https://www.tn.gov/tacir/tennessee-county-profiles-redirect.html

State Report Card. (2017). Department of Education. Retrieved from https://www.tn.gov/education/data/report-card.html

calculated fiscal capacity. This type of overfunding paints a favorable picture of the commitment of these communities to support public education financially.

When Madison County's funding deficit is calculated as a total amount instead of a per pupil amount, the situation worsens. In the 2016-2017 school year, JMCSS reported 12,105 students as its average daily membership, the measurement used by the TDOE for funding allocations. Based on that student count, the per pupil funding deficit of $214 expands rapidly to a total deficit of almost $2.6 million.

This total measure of underfunding puts Madison County near the bottom of the list in comparison to the other 95 counties in the state. In fact, Madison County's total deficit ranks 94th in Tennessee, with only Bedford County (Shelbyville) reporting a greater shortfall. Madison County's 6th-place rank based on fiscal capacity now becomes a 94th-place rank based on actual financial support of JMCSS.

Table 3 lists the ten counties across the state that underfund their local school system in excess of $1 million, based on this analysis.

Rank	County	ADM*	Difference** Between Actual Funding & Capacity***	Total Underfunding ***
86	Campbell	5,281	($252)	($1,330,944)
87	DeKalb	2,806	($476)	($1,335,329)
88	Hamblen	9,998	($135)	($1,351,127)
89	McMinn	5,459	($305)	($1,666,081)
90	Cumberland	7,029	($237)	($1,668,260)
91	Fayette	3,184	($690)	($2,197,253)
92	Bradley	9,552	($235)	($2,241,755)
93	Putnam	10,619	($225)	($2,286,498)
94	**Madison**	**12,105**	**($214)**	**($2,585,419)**
95	Bedford	8,412	($455)	($3,825,208)

Table 3: Bottom Ten Tennessee Counties Ranked on Total Levels of School District Underfunding, FY 2017

Note. * ADM means Average Daily Membership; ** Difference per pupil; *** Negative numbers are reported in parentheses.

Madison County is one of only two West Tennessee counties to appear on such an undesirable list. Since it is the largest, most complex school district of them all, this creates an even more difficult challenge to run its educational programs with significantly less money than what could be provided by the county commission.

Comparing Fiscal Capacity and Actual Revenues

Analyzing school funding based on the local percent of per pupil expenditures is not the only way to measure a community's commitment to public education. Another type of assessment involves comparing a county's fiscal capacity to the actual revenue generated, an amount largely driven by tax rates set by the county commission. This local revenue amount is also tracked by TACIR, whose officials describe the measure as "a three-year average based on the own-source revenue used by local government to fund education" ("A User's Guide", 2016). TACIR has already released the numbers for the upcoming 2018-2019 fiscal year. Madison County's fiscal capacity has increased, a positive indication of continued economic strength of the community. However, the funding shortfall for JMCSS has also increased—a negative indication of the county commission's seeming lack of commitment to provide the school funds that it has the capacity to generate.

For the upcoming fiscal year, Madison County's improved fiscal capacity of $4,597 per pupil is far higher than the actual revenue of only $3,951 per pupil. This $646 per pupil gap translates to a total shortfall of over $8 million when multiplied by the district's projected enrollment of 12,480 students. Thus, the situation for the upcoming fiscal year mirrors that of the 2016-2017 fiscal year. Madison County's coveted rank of 6th in the state in terms of ability to raise revenues for its public schools plummets to a rank of 92nd in terms of the total amount it falls short of capacity.

The conclusion to both assessments is as obvious as it is unavoidable: Madison County simply does not financially support Jackson-Madison County Schools at the high levels it could afford.

Which Came First?

Any discussion of school funding would be incomplete without connecting per pupil expenditures to academic outcomes. It is widely known that Jackson-Madison County Schools continue to be plagued by poor academic achievement and weak growth measures. The academic woes and funding shortfalls are somewhat of a chicken-or-egg situation. Did the chronic underperformance of the school district set the stage for chronic underfunding, or did the chronic underfunding by the county commission contribute to the district's chronic underperformance?

Jones is less interested in chasing the answer to that question and focuses instead on the dilemma at hand. He understands the commission's desire to see the district move the needle on academic growth before they allocate more funding for schools.

However, he likens that position to a sick person seeking medical treatment. Jones explains, "If you're sick, we don't say we're going to send you to the worst doctor and once you start getting better, we'll give you the best doctor" (E. Jones, personal communication, June 21, 2018). Instead, he argues for sending the sickest patients to the best doctors because their needs are greater.

Bringing the discussion back to the district, Jones acknowledges the funding/performance issue is a two-way street. "It's not only on the county. We have to show that we can manage our money and that we can produce students that can compete globally in order for people to invest more." Madison County Commissioner Jay Bush approves of Jones' approach. Bush said, "I've been very impressed that Dr. Jones came in and immediately got to work on a long-range plan for the school system. That's something that we never had before" (J. Bush, personal communication, June 22, 2018). He added, "I think most of the commissioners are on board with what Dr. Jones is trying to do."

The curtain has closed on the familiar scene of the superintendent and the county commission settling on a school budget for this fiscal year. Concerned citizens of Madison County are now awaiting the subsequent scene to be played out in the coming months and years: Who is going to take the first step in breaking the perpetual cycle of underfunding and underperformance?

Both key players—the superintendent and the county commissioners—know the stakes are high. Jones paints a bleak picture if Jackson-Madison County Schools do not improve soon. He states, "If the trajectory of our school system does not change over the next five years, Jackson as we know it will start to look significantly different." Bush's outlook was even more ominous: "If we don't get our school system turned around, this community is going to die."

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SOME REFLECTIONS ON HUMAN PERSONHOOD[1]

Justin D. Barnard

It is an honor to have the opportunity to speak about the subject of human personhood with a group who has devoted their lives to the art and science of medicine. The tradition of medicine in the West is grounded in a simple, yet profound, conviction expressed by the ancient Greek philosopher Aristotle: "Health is the end of medicine."[2] In seeking the health and well-being of their patients, healthcare providers make an extraordinary contribution to the protection and, at times, restoration of human dignity.

Human dignity[3] is at the heart of medicine. It is also the very foundation of a civil society. Without a basic conviction in the inherent worth of each and every human being—regardless of diversifying traits such as race, ethnicity, nationality, gender, age, ability, sexual orientation, economic status, and so on—we would lack a basis for treating one another in characteristically *personal* ways. To treat someone else in a personal way is to think of them as a subject rather than a mere object. However different someone else may be from me, human dignity requires that I recognize the inherent value of another's existence, and that I treat that person in ways that affirm the goodness of their being. My actions should say to them, "I am glad that you exist!"

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1 Dr. Justin Barnard delivered this speech at the University of Louisville School of Medicine on March 3, 2017 as part of a debate on the question of when human personhood begins.

2 Aristotle, *Nicomachean Ethics*, (Indianapolis, IN: Hackett, 1999), 1.

3 For an outstanding set of reflections on human dignity, see *Human Dignity and Bioethics: Essays Commissioned by the President's Council on Bioethics,* (Washington, D.C., March 2008).

This notion of human dignity lies at the core of how we train our children. As a society, we are right to reject attitudes that are racist, sexist, homophobic, or xenophobic. We are right to reject hateful attitudes and speech, as well as the bullying that often accompanies them. That is because such attitudes, speech, and bullying reduce other people to objects. We teach our children to relate to others with care, empathy, and compassion, training them to imagine the world from the perspective of another subject. Moreover, we expect that over time, with the right training, children will learn to exhibit appropriate responses in their various encounters with other human beings, hoping they will learn to interact with others in ways that are kind and fair, regardless of the sorts of diversifying traits those others may possess. All of this is rooted in a belief in human dignity and the fundamental conviction that every human person possesses intrinsic worth.

This basic conviction about the inherent value of every human being is not merely a feeling. Rather, it's a principle of reason that we employ both to evaluate and to train people's feelings. For instance, racism is not only morally wrong but also stupid; in other words, it is irrational. Reason tells us that every human being has intrinsic value, regardless of race. So, when someone displays feelings or actions of animosity or malice toward someone else with a different skin tone, that person is not only wicked but also dumb. Such a person has failed to listen to the voice of reason, which says, "Every human being should be treated in keeping with their inherent dignity, not according to how one feels about the color of their skin, their age, gender, nationality, sexual orientation, ability, economic status, and so on."

We value the voice of reason, in part, because of its capacity to enable us to think clearly about the world. Reason helps both scientists and philosophers alike to avoid the clouding effects of emotions and feelings and to see the world as it truly is. It also helps us to diagnose which responses to others, or even to the world itself, count as crazy and which ones don't. Reason's role as diagnostician is particularly important in the practice of medicine itself, especially in such fields as psychology and psychiatry.

Suppose, for example, that a patient manifests struggles with on-going hallucinations or delusions. They may range anywhere from relatively harmless (e.g. having a persistent belief that a pink elephant in the room wants to share a strawberry milkshake) to potentially destructive (e.g. believing that visible demonic creatures are insisting upon self-harm or even suicide). Assuming that the patient's hallucinations and delusions are persistent, demonstrably consistent, and not drug-induced, a good medical provider will consider the possibility that some form of schizophrenia may be in play.

In such cases, reason plays a crucial role. Specifically, it is reason that evaluates the extent to which such a patient is apprehending the world in the right sort of way. So, when the physician hears the patient say, "I'd like to share my strawberry milkshake with the pink elephant sitting over there in the corner of the room," and the physician realizes that neither milkshake nor elephant exist, it is the physician's

reason that begins to suspect hallucination or delusion. Most importantly, reason makes this judgment because the patient's response to the world is out of sync with the way the world actually is.[4]

My point here is to illuminate and to defend the role of reason in both evaluating and shaping our response to the world. When someone displays uncontrollable grief or anger over the kidnapping of their pet unicorn, reason's job is to help us determine the extent to which the person's emotional response is appropriate. If there are no such things as unicorns, or if the person in question did not actually have one as a pet, or if it was not, in fact, kidnapped, then we are reasonable in regarding that person's emotional response as irrational, even if we harbor no doubts about the sincerity with which they feel what they do. Similarly, if we encounter someone who delights in mocking those with severe disabilities, we are reasonable in regarding that person's response to those who may face serious cognitive or physical challenges as not only mean but also irrational. Reason helps us to see the world *as it is*. In addition to helping us see whether there are such things as unicorns, reason also helps us see that every human person has inherent dignity, just by virtue of being human.

At this point, I suspect that at least a few of you are wondering how what I have said thus far bears on the central question of this forum. After all, I was not invited here to talk about pink elephants and unicorns. I was asked to address this question: "From a scientific and philosophical standpoint, when does human personhood begin?"

The reason that I began this talk with what may seem like a detour is because in many discussions about when human personhood begins, people will occasionally lose sight of reason's role in evaluating and shaping our response to the world. For example, some will claim that an early human embryo, say, from the single-celled zygote stage through the blastocyst stage, is nothing more than a clump of cells, no different than any other cellular tissue from the body. The argument is that since the clump of cells that gets removed when I clip my fingernail is not a human person, neither is a one-week-old fertilized human egg.

This way of thinking fails to take into account the differing ways that people actually respond to clumps of cells and human embryos. This strikes me as odd. If I go to the dermatologist to have a dysplastic nevus removed, I don't respond to the loss of tissue from my body with intense emotions of grief or sadness. I may experience a slight measure of anxiety about the discomfort associated with the procedure or pain in recovery, but I don't mourn the loss of my mole, and no one tells me that I should. In fact, if I did display an excessive amount of grief over the loss of that sort of bodily tissue, I expect that reasonable people would think I was odd at best. And

4 This is not to say that the only factor involved in diagnosing something like schizophrenia is merely whether a patient's responses to the world align with the way that the world actually is. I recognize that in addition to many other clinical factors, a significant dimension of mental illness in general is whether the patient experiences the symptoms as harmful to the self, or whether the symptoms are, in fact, potentially harmful to the self or others.

they would be right! Reason helps us recognize that we shouldn't mourn the demise of mere clumps of cells. (Science and medicine would be utterly grief-stricken fields if it were rational to express intense sorrow every time some cellular life form died.)

By contrast, however, some women do experience sorrow over the demise of early embryos, either in cases of early miscarriages or perhaps failed attempts at in vitro fertilization. Others may experience guilt or anxiety in trying to decide how to dispose of leftover embryos created through in vitro fertilization.[5] How should we regard these sorts of emotional responses? Should reason intervene and tell us that crying over the loss of an early human embryo is like crying over the loss of skin cells from a biopsy? Or is the grief expressed for the demise of a frozen embryo an appropriate response to the way the world *really is*, in a way that grieving over the disposal of my mole wouldn't be?

Now, let me be perfectly clear here. I am not claiming that everyone is sad when a human embryo dies. Moreover, I am not claiming that everyone *ought* to be sad every time a human embryo dies. I recognize that human emotional responses are matters of great complexity. My point is simply this: whenever someone experiences sadness over the loss of human life, even at the earliest stages, we do not regard such a response as crazy. Why is this the case?[6] Why is it that you would find me a tad strange if I wept over the death of my fingernail clippings, but you wouldn't find it strange to hear of a female friend who was struggling with guilt and depression after deciding to donate her leftover embryos for scientific research?

The answer to this question lies in what we all know, by means of reason, about the world. Specifically, all of us know from a scientific and philosophical perspective (i.e. the perspective of reason) that human personhood begins at conception. We know rationally that all humans, regardless of their life circumstances or various developmental characteristics, possess an inherent dignity that fingernail clippings

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5 This phenomenon is now widely recognized. See, for example, Juli Fraga, "After IVF, Some Struggle With What To Do With Leftover Embryos," *NPR,* last modified August 20, 2016, accessed on February 7, 2017, http://www.npr.org/sections/health-shots/2016/08/20/489232868/after-ivf-some-struggle-with-what-to-do-with-leftover-embryos. See also, Tamar Lewin, "Industry's Growth Leads to Leftover Embryos, and Painful Choices," *The New York Times,* last modified June 17, 2015, accessed on February 7, 2017, https://www.nytimes.com/2015/06/18/us/embryos-egg-donors-difficult-issues.html.

6 Some might suggest that sorrow over a miscarriage is nothing more than a hormonal bodily response experienced in the aftermath of a pregnancy termination. Such a reductionist view (as a complete account) of emotions strikes me as implausible, especially in light of its inability to account for the similar sorrow experienced by one who discards leftover embryos. Some might attempt to explain the latter by arguing that the emotional reaction is a physiological response to constructive imagination. Through her imagination, the IVF patient comes to regard her frozen embryos as though they were her own children (which, so the argument goes, they're not), and hence mourns their demise. Thus, her sorrow is a response to fantasy, not reality. While there is no doubt that our emotional responses to the world are partly shaped both by our hormones and by our imaginative framework, our capacity for disentangling altogether our emotional responses from the world (as it truly is) is limited. If it weren't, there would be no point to mental health counseling. My point here is that neither the hormonal reductionist nor the socio-linguistic constructionist can, by themselves, account for the *rationality* of the sorts of emotional responses here in view. An essential part of explaining the rationality of such responses is demonstrating their rational appropriateness to the way that the world actually is. In some cases, doing this might even involve appeal to natural hormonal responses.

do not. In short, we know that human zygotes are different kinds of things than somatic cells. Since reason's job is to help us assess whether sorrow is an appropriate response to the demise of a human zygote, it is also reason's job to tell us what kind of thing a human zygote is.

A human zygote is a person, from the moment it is conceived. At the moment of conception, the human zygote is an organism whose interior, self-guided[7] trajectory is oriented toward the full-realization of the set of capacities that it already possesses, capacities that if not hindered will result in what all of us recognize as human personhood.[8] To be sure, early human embryos have not yet actualized all of those capacities, but that is beside the point. If human personhood were defined in terms of the actualization of certain capacities as opposed to the mere possession of those capacities, then many individuals (e.g. the profoundly disabled) would not count as human persons if they failed to display the relevant capacities.

This account of human personhood enables us to make rational, principled distinctions between different *kinds* of things. For example, a human zygote is a fundamentally different kind of thing from an unfertilized egg or any other bodily cell. Unlike the human zygote, the unfertilized egg simply does not possess an interior trajectory that is organismally self-guided toward the full-realization of a set of capacities that will result in a person. This is a straightforward, scientific fact; the egg lacks a complementary set of 23 chromosomes. Moreover, although somatic cells have the full complement of human DNA, they simply do not, in and of themselves, possess an interior trajectory that is organismally self-guided toward the full-realization of a set of capacities that will result in a person. (If they did, we would be constantly sprouting people from our arms and legs.) Only human embryos, from conception, have this feature I am describing. That is what makes human embryos different kinds of things from clumps of cells.

In claiming that this account of human personhood enables us to make rational, principled distinctions between different kinds of things, I intend to differentiate this view from those that associate the onset of human personhood with the actualization of some specific capacity. Some might believe that personhood begins at the point when a human being begins to think, or becomes self-aware, or uses language, or expresses preferences. Others might associate the onset of personhood with an important developmental milestone: the presence of a heartbeat or neurological activity, or even separation from the womb. However, in addition to being arbitrary, such alternative lines of demarcation pose the danger of excusing abuse. If I don't actualize my capacity for thinking, self-awareness, or language in the way that you think I should, do I still count as a person? If I don't yet or no longer

7 The self-directed nature of the early embryo's organismal life has recently gained further scientific support. For a summary of the recent evidence and its implications, see Ana Maria Dumitru, "Science, Embryonic Autonomy, and the Question of When Life Begins," Public Discourse, last modified January 24, 2017, accessed on February 7, 2017, http://www.thepublicdiscourse.com/2017/01/17222/.

8 The view that I am summarizing here has been ably defended by Robert P. George and Christopher Tollefsen in *Embryo: A Defense of Human Life* (New York: Doubleday, 2008).

give evidence of the neurological activity that you regard as essential to personhood, do I still count as a person?

Human personhood matters in the application of the principle of human dignity. I have attempted to articulate an account of human personhood that makes the general application of human dignity in the practice of medicine straightforward. Every human being from conception until their natural death ought to be treated as a subject, never as a mere object. Healthcare providers should regard early human embryos and fetuses-in-utero as patients whose inherent dignity is to be protected, seeking their health and well-being consistent with the aim of medicine,[9] for if the view of human personhood I have described is in keeping with reason, then refusing to treat human embryos and fetuses as persons is irrational. It is like saying to a patient, "I refuse to treat you because you're too small, or because you can't speak, or because you can't think, or because you don't have ears or eyes, or because you're in a petri dish or a womb." It is, in effect, like saying to a patient, "I refuse to treat you because you're gay or Muslim or disabled." Since the latter is deeply offensive to human dignity, the former is, too.

From a scientific and philosophical standpoint, there is no question that human personhood begins at conception. Those who reject this view often refuse to say when human personhood begins. This is because they regard personhood as a characteristic that is conferred, rather than a property that is simply possessed by virtue of being a certain kind of thing. The weakest members of our society should not be vulnerable to the will of those with the power to bestow personhood. The great challenge of our age is to determine, as a society, whether we will continue to pursue the cowardly course of leveraging our power to serve our own interests against and often at the expense of those who can't resist, or whether we will have the courage to conform our wills to reason's voice.[10] The future of human dignity—indeed, the future of our very civilization—depends on our response.

9 This is not to deny that there will, at times, be cases in which the general affirmation of human dignity will underdetermine a specific course of action. In such cases, additional moral principles must be brought to bear in order to determine what ought to be done. Nevertheless, the general application of human dignity entails that at a minimum, scientists and healthcare providers are prohibited from treating early human embryos and fetuses as though they do not matter in the moral calculus at all (i.e., as though they are *just a clump of cells*).

10 The central point that I am expressing here has been articulated in great depth by C.S. Lewis in *The Abolition of Man*.

ROMANCING THE TRUE, GOOD, BEAUTIFUL, AND JUST:

ESTHER MEEK'S COVENANT EPISTEMOLOGY

C. Ben Mitchell

> And this is my prayer: that your love may abound more and more in knowledge and depth of insight, so that you may be able to discern what is best and may be pure and blameless for the day of Christ, filled with the fruit of righteousness that comes through Jesus Christ—to the glory and praise of God (Philippians 1:9-11 NIV).
>
> Love is patient and kind; love does not envy or boast; it is not arrogant or rude. It does not insist on its own way; it is not irritable or resentful; it does not rejoice at wrongdoing, but rejoices with the truth. Love bears all things, believes all things, hopes all things, endures all things. Love never ends. (1 Corinthians 13:4-8 NIV).

Esther L. Meek is Professor of Philosophy at Geneva College in Beaver Falls, Pennsylvania, where she teaches a range of philosophy courses. Among other volumes, she is the author of a trilogy on epistemology, including *Longing to Know: The Philosophy of Knowledge for Ordinary People* (2003), *Loving to Know: Covenant Epistemology* (2011), a volume whose readers, she says, "regularly undergo personal transformation,"[1] and the most recent, *A Little Manual for Knowing* (2014).

1 Esther Lightcap Meek, *A Little Manual for Knowing* (Eugene, OR: Cascade Books, 2014), 5.

Her burden in this trilogy is not only to exegete and argue for what she calls "covenant epistemology," but to provide "epistemological therapy" for those of us who have inherited the "defective epistemic default setting" embedded in the Western cultural tradition.[2] Therapy is necessary because "the defective default setting we inherit actually goes against the grain of our humanness."[3]

What is the "defective epistemic default"? Or, what do most people think knowing is?

"For starters," she says, "when we think of knowledge, we tend to picture it as *information, facts, statements, and proofs.* Knowledge *consists exclusively of* statements, pieces of information, facts. The best (and only) specimens of knowledge are those adequately justified by other statements that offer rational support, reasons, for the claim in question. Knowledge is statements and proofs. Knowledge is facts."[4]

Meek maintains that the defective epistemic default can be visualized as a "daisy of dichotomies."[5] A few examples will suffice. Knowledge is contrasted with belief. Knowledge is identified with fact, where facts are identified with reason and reason is opposed to faith and even emotion. Knowledge, facts, and reason are identified with theory, and are distinguished from application and action. Knowledge, facts, reason, and theory are identified with objectivity and science. And so on.

The Cartesian experiment only exacerbates these dichotomies. For Descartes, the project of systematic doubt resulted in a disembodied mind, the thinking "I" of the *cogito ergo sum* (I think, therefore I am). There is mind and there is body, but the mind is clearly the locus of everything interesting and meaningful. This is generally true of the modern self of the Enlightenment. As Wilhelm Dilthey said in his 1883, *Introduction to the Human Sciences*, "No real blood flows in the veins of the knowing subject constructed by Locke, Hume, and Kant."

The paradox of late modernity's scientific physicalism is that embodiment seems less and less necessary, while at the same time, the locus of the mind is just the organ we call the brain. The result of this paradox reduces *Homo sapiens* to a brain on a stick and commits us to what James K. A. Smith has called "thinking thingism."[6] Even the very genus (*Homo sapiens*, the human knower) predetermines this disposition—unless knowing is more than, or other than, merely cataloging data.

This is the *status quo*, which is Latin for "the mess we're in."

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2 Esther Lightcap Meek, *Loving to Know: Covenant* Epistemology (Eugene, OR: Wipf & Stock Publishers, 2011), 6-7.

3 Ibid., 7.

4 Ibid. Italics original.

5 Meek, *Loving to know*, 8-9

6 James K. A. Smith, *You Are What You Love: The Spiritual Power of Habit (*Grand Rapids: Brazos Press, 2016*), 145. See also his, Desiring the Kingdom: Worship, Worldview, and Cultural Formation* (Grand Rapids: Baker Academic, 2009).

On the one hand, because the epistemological default is so defective, suggests Meek, the response of all but the most analytic of minds is boredom. After all, information must be grasped *dis*-passionately and *dis*-interestedly. "Dispassionately gleaned information, dispassionately conveyed and dispassionately apprehended, spells boredom. It suggests that knowledge has little to do with what is meaningful in life."[7]

On the other hand, late modern or postmodern epistemology results in knowledge that is socially constructed, perspectival, and subjective. Since there is no objective reality, we are left with a subjectivism and a skepticism that leads to hopelessness. There is nothing that is finally true-Truth: beauty is in the eye of the beholder, what's good for you isn't necessarily good for me, and justice is merely whatever turns out to be the best deal you can cut. What is there to ultimately know, and why would one want to know it?

Boredom or hopelessness—those are your choices given the defective epistemic default position. Neither one makes a university education worth enduring, much less paying for.

If successful, however, Meek's epistemological therapy offers the potential to impact favorably everything from business to science and athletics to discipleship. Instead of boredom or hopelessness, knowing is meant to bring *shalom*, "not just to the knower, but to the known."

> Knowing healingly is what humans were made to do. We have been called in our earth stewarding to promote shalom; the picture of knowing as covenantly interpersonal fulfills our calling to steward the earth and therein promote shalom. Shalom is blessed, fulfilled well-being in harmony with all else. A healthy act of knowing leaves neither knower nor known where it was, but constitutes an intersection of trajectories down the road from where each began. All down the road, with good prospect, in the direction of shalom.[8]

So, how does Covenant Epistemology work? Although I do not have space in a single paper to elucidate every aspect of her epistemology, I am desperate to at least point the way.

One of the important features of covenantal epistemology is its relationality. Knowing what is real is more like cultivating a relationship than curating factoids. That's one reason Meek sometimes refers to knowing as being "relationally interpersoned"[9] At the same time, knowing is covenantal. In a covenant, two persons bind themselves to the terms or stipulations of the covenant. Think of the Noahic, Abrahamic, or Mosaic covenants, for instance. Even to label them is to point to their relational nature—Noah, Abraham, and Moses are persons in relation to God.

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7 Meek, *Loving to Know*, 13.
8 Meek, *Loving to Know*, 51.
9 Meek, Ibid. 149.

God made a covenant with Noah and Noah's offspring. In this case, God bound himself to the terms of the covenant.

> When I bring clouds over the earth and the bow is seen in the clouds, I will remember my covenant that is between me and you and every living creature of all flesh. And the waters shall never again become a flood to destroy all flesh.16 When the bow is in the clouds, I will see it and remember the everlasting covenant between God and every living creature of all flesh that is on the earth."17 God said to Noah, "This is the sign of the covenant that I have established between me and all flesh that is on the earth."

Covenants bind the parties of the covenant in their relationships to one another. This is even clearer in parity covenants between equals, although it remains obvious in suzerainty covenants like this one.

Meek is particularly taken with Annie Dillard's reflections in *Pilgrim at Tinker Creek*, and with Dillard's potential to inspire "hope of another way to conceive knowing."[10]

Dillard is an award-winning American woman of letters who taught for two decades at Wesleyan University in Connecticut. Published in 1975, *Pilgrim at Tinker Creek* won her the Pulitzer Prize for General Non-Fiction in 1975. And for good reason: it is a remarkable book. Annie Dillard describes vividly how one binds oneself "in her effort to know . . . muskrats!"[11]

Here is Meek's response to Dillard:

> Stalking muskrats can only be done by the "via-negativa"—meaning that you must compose yourself to do nothing but wait, still enough, long enough, so that, if you are lucky, the muskrat will come. You must do it on the muskrat's terms, not on your own terms. If indeed you are lucky, even if you get only a wee glimpse, you sense the glory of this condescension . . . Note that it is no the knower who is in the driver's seat, but rather the yet-to-be-discovered reality. The real discloses itself, in its own time and way. And when it does, it is grace.[12]

At the same time, Meek alludes to the marriage covenant as a powerful metaphor for knowing: "Knowing is perhaps a bit like a marriage. First you bind yourself with promises to love, honor, and obey. Only then does reality unfold itself to you. If you do, and you're favored, it will."[13]

Meek, doubtless, developed this perspective in conversation with another of her conversation partners, Parker Palmer, who has written at least twenty books on teaching and learning, including some modern classics like *The Courage to Teach.*

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10 Meek, *Loving to know*, 35
11 Ibid. 37.
12 Ibid.
13 Ibid.

This, from his volume, *To Know as We Are Known: Education as a Spiritual Journey:*

> To know something or someone in truth is to enter troth with the known to rejoin with new knowing what our minds have put asunder. To know is to become betrothed, to engage the known with one's whole self, an engagement one enters with attentiveness, care, and good will. To know in truth is to allow one's self to be known as well, to be vulnerable to the challenges and changes any true relationship brings. To know in truth is to enter into the life of that which we know and to allow it to enter into ours. Truthful knowing weds the knower and the known; even in separation, the two become part of each other's life and fate . . . Rather, truth involves entering a relationship with someone or something genuinely other than us, but with whom we are intimately bound . . . Truth requires the knower to become independent with the known. Both parties have their own integrity and otherness, and one party cannot be collapsed into the other. . . We find treaty's by pledging our troth, and knowing becomes a reunion of separated beings whose primary bond is not of logic but of love.[14]

So, knowing requires the cultivation of certain virtues—whether in knowing a spouse, a multiplication table, or a muskrat. Commitment, patience, respect, and humility are required to engage the real. Likewise, faith, hope, and love are virtues invoked in covenant epistemology.

Over the modernist approach to knowing, an approach that promotes curiosity and control (curiosity is self-interested and possessive. Control asks, have you mastered the material?), covenant epistemology is shaped by covenantal love. "Love actively gives oneself for the sake of the other," says Meek.[15] And as Simone Weil has so famously said, "Love is the soul's looking. It means that we have stopped for an instant to wait and to listen."[16] Or, in another place, she says that the attention required for truly living and truly learning, "taken to its highest degree, is the same thing as prayer. It presupposes faith and love."[17]

Contrary to the forces of our culture, especially in the culture of higher education, we should revel, then, in being "amateurs" (amator, Latin for those who engage in something out of love). This idea is from one of my favorite books, *The Supper of the Lamb*, by Robert Farrar Capon, who held, among other titles, Professor of Dogmatic Theology and Instructor in Greek, at the George Mercer, Jr., Memorial School of Theology in Port Jefferson, New York.

Father Capon, also an Episcopalian minister, wrote this volume as a meditation on the act of cooking a leg of lamb for eight people four times. It is a volume filled with wisdom and good theology, especially a theology of the body. In the first

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14 Parker Palmer, *To Know As We Are Known*, 31-32
15 Meek, 428.
16 Simone Weil, *Waiting for God*, 212.
17 Simone Weil, *Gravity and Grace*, 105.

session, you will be taught how to spend the most valuable hour you will have ever spent with an onion. Yes, one hour with an onion. But this enterprise presumes a certain form of love.

> In such a situation, the amateur—the lover, the man who thinks heedlessness is a sin and boredom a heresy—is just the man you need. More than that, whether you think you need him or not, he is a man who is bound, by his love, to speak. If he loves Wisdom or the Arts, so much the better for him and for all of us. But if he loves only the way the meat browns or onions peel, if he delights simply in the curds of his cheese or the color of his wine, he is, by every one of those enthusiasms, commanded to speak. A silent lover is one who doesn't know his job. . ..
>
> There, then, is the role of the amateur: to look the world back to grace. There, too, is the necessity of his work: His tribe must be in short supply; his job has gone begging. The world looks as if it has been in the custody of a pack of trolls. Indeed, the whole distinction between art and trash, between food and garbage, depends on the presence of absence of the loving eye. Turn a statue over to a boor, and his boredom will break it to bits—witness the ruined monuments of antiquity. On the other hand, turn a shack over to a lover; for all its poverty, its lights and shadows warm a little, and its numbed surfaces prickle with feeling.[18]

The ancient perspective of love as the way to the knowledge of truth is enjoying a bit of a contemporary revival. For instance, Calvin College philosopher, James K. A. Smith, has published a helpful volume called, *You Are What You Love: The Spiritual Power of Habit*. Smith shows in this volume how epistemology and anthropology connect.

In a talk that Smith gave recently at John Brown University to a national conference of Student Life Staffers, he declared, "You have heard that it was said, 'Virginia is for Lovers!' but I say unto you that "The Christian university is for lovers."[19] Now, this may need some translation for parents of university students! But his point is well taken. He said:

> Human beings aren't just thinkers or believers or sentient pieces of meat bred to consume and copulate. The university is a place where we learn to curate our loves, to guard and guide our hearts precisely so we can be sent to act as God's image bearers in and for the world. Our loves are learned by practice, and a Christian education is a space to unlearn the heart habits students absorb from cultural liturgies and have their loves recalibrated by the Spirit, becoming a people indexed to the kingdom of God.[20]

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18 Robert Farrar Capon, *The Supper of the Lamb: A Culinary Reflection* (New York: The Modern Library, 2002), 4.

19 Unpublished manuscript courtesy of the author.

20 Ibid.

So, let us fan the flames of love for the True, the Good, the Beautiful, and the Just. Let us romance reality, betrothing ourselves to true Truth. Let us embrace the Good and live happily ever after with justice.

Now, none of this is to suggest that coming to know reality is either maudlin or romantic 24/7/365. Like marriage, it is sometimes just hard work. In *Loving to Know*, Meek offers a splendid illustration of this point.

> A few years ago, I taught my daughter to drive a standard automobile. Prior to this, she had little experience even as a passenger in a stick-shift, and now to which she was attending as a prospective driver. As we sat in the school parking lot, I began with some preliminary comments. 'You'll have to let out the clutch to the sweet spot, then start giving the car a little gas . . .
>
> The parking lot was her Point A. Until she made her first attempt and stalled, Steph knew the words but had no inside feel of what my words meant. Now her confident demeanor registered a bit of self-doubt and puzzlement. But then she began to try to make her body do what my words said. Eventually she got the hang of it and thereby entered the world of driving a standard gear-shift car.[21]

One could take this passage from *A Little Manual for Knowing* as a commentary on "Learning to Drive:"

> It does take amassing information, sometimes massive amounts. But amassing information becomes richly meaningful in this larger context, when it is no longer defining knowing. Instead, we are striving to indwell the information, to get it inside us so it becomes part of us. We are not after information so much as its significance. We indwell amassed information as part of striving to live life on the terms of the yet-to-be-known.[22]

Offering his own commentary on the Philippians passage in the epigram of this paper, James K. A. Smith claims:

> If you read it too quickly, you might come away with the impression that Paul is primarily concerned about knowledge. Indeed, at a glance, given our habits of mind, you might think Paul is praying that the Christians in Philippi would deepen their knowledge so that they will know what to love. But look again—In fact, Paul's prayer is the inverse: he prays that their love might abound more and more because, in some cases, love is the condition for knowledge. It's not that I know in order to love, but rather: I love in order to know. And if we are going to discern 'what is best'—what is 'excellent,' what really matters, what is of ultimate importance—Paul tells us that the place to start is by attending to our loves.[23]

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21 Meek, *Loving to Know*, 83.
22 Meek, *A Little Manual for Knowing*, 28.
23 Smith, *You Are What You Love*, 6-7.

Or again from Meek: "The inference that drives inviting the real is as follows: The real behaves like a person. Treat it personally, and it will respond personally. So practice epistemological etiquette. Specifically, invite it hospitably. Healthy knowing involves a perichoretic (relational) consent to 'letting flourish' that is appropriate to evoking persons' gracious self-disclosure."[24]

Does this call for irrationality and illogic? No more than driving an automobile is an exercise in irrationality and illogic. Rather, it requires the cultivation of certain practices or dispositions which Meek describes as "An Epistemological Etiquette":

Desire. Long for the True, the Good, the Beautiful, and the Just.

Composure. Learn who we are as ourselves. We are loving and desiring creatures. Despite the fact that many of our desires are disordered, we are creatures before we are Christians. Desire is our creaturely condition. A vital relationship with God in Christ can reorder those desires.

Comportment. Invite the real, betroth yourself to the real, show hospitality to the real, and pledge to be faithful to the real.

Strategy. Noticing regard, active listening, indwelling, seeing versus looking.

Culmination. Friendship and communion. Eucharist.

Conclusion

Meek is correct. Having been marinated in late-modern ways of knowing has prejudiced us in certain ways to value the purely rational over other ways of knowing. In addition to rational ways of knowing, we need to cultivate relational ways of knowing. In addition to logic, we need love. Therefore, several concluding questions are in order: How would our "knowing" relationships change if we saw it as one long courtship, culminating in being knowing as we are known?

What does it mean to say, "I want to get to know you better"? Have you invited your various subjects, readings, problems, labs, and co-curricular events into a relationship?

Smith and Meek are right, the university is for lovers! Or, more accurately, perhaps, life and life-long learning is for lovers!

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24 Meek, *Loving to Know*, 427.

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Justin D. Barnard is Professor of Philosophy in the Honors Community at Union University in Jackson, Tennessee, where his teaching is motivated by the perennial philosophical question: *what does it mean to live wisely and well?* His scholarly interests and published work focus on issues in philosophy of religion, bioethics, technology and human flourishing, and the philosophical legacy of C.S. Lewis. His recent writing includes a chapter in *Reformation 500: How the Greatest Revival Since Pentecost Continues to Shape the World Today* (B&H Academic, 2017).

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Jason Crawford is Associate Professor of English here at Union. He is the author of *Allegory and Enchantment* (Oxford University Press, 2017) and is currently at work on two book projects: one on tragedy and religion in Shakespeare and one on the uses of comedy. His teaching interests include early modern literature and culture, ancient epic and drama, problems of tragedy and suffering, notions of beauty, and questions about modernity and its limits.

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Jimmy H. Davis is the Hammons Chair of Pre-Medical Studies and University Professor of Chemistry at Union University. He received his BS in chemistry from Union University and PhD in physical inorganic chemistry from the University of Illinois at Urbana-Champaign. He serves as a Fellow of the American Scientific Affiliation. His scholarly interests include green chemistry of seven-coordinated transition metal complexes as well as questions at the intersection of science and faith. He is the co-author, with Hal Poe, of four science-faith books, with the most recent being *God and the Cosmos: Divine Activity in Space, Time and History* (IVP Academic, 2012).

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Ted Kluck is the author of over twenty books on topics ranging from professional indoor football to the evangelical church. He is a syndicated columnist for *The Jackson Sun* (Tennessee) and *USA Today*, and his journalism has appeared in *ESPN the Magazine* and *Christianity Today*. Ted has ghostwritten for a Pro Football Hall of Famer, a filmmaker, and a missionary. He is screenwriter and co-producer on the forthcoming feature film *Silverdome* and co-hosts *The Happy Rant Podcast* (www.happyrantpodcast.com). He coaches football at Lane College (in Tennessee) and lives in Humboldt with his wife, Kristin, and sons, Tristan and Maxim.

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David Malone is Associate Professor of English. He is in his twentieth year of teaching at Union and his fifth year of a one-year appointment as English department chair. Books on his bedside table include *White Teeth* by Zadie Smith, *War and Peace* by Leo Tolstoy (Pevear/Volokhonsky translation), and *The Beggar Queen* by Lloyd Alexander. He has been known to whip up a mean lasagna.

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C. Ben Mitchell is Graves Professor of Moral Philosophy and Special Assistant to the President at Union University. He served as Provost and Vice President for Academic Affairs from 2014 to 2017. Among other works, he is the author of *Ethics and Moral Reasoning: A Student's Guide* (Crossway, 2013) and with D. Joy Riley, MD, *Christian Bioethics: A Guide for Pastors, Health Care Professionals, and Families* (B&H Academic, 2014). His essay represents the substance of a lecture given to the Honors Community at Union University in 2017.

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Bill Nettles is a native of Brandon, Mississippi, and has taught undergraduate physics for over 35 years. He came to Union in 2006. He has taught courses in almost every major physics topic, along with several engineering and mathematics courses. He likes wearing bow ties while riding his motorcycle and has jammed on electric bass with Victor Wooten. He loves physics, his family, Cornerstone Community Church, and Jesus.

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Ben T. Phillips serves as Associate Dean and Chair of the Department of Educational Leadership at Union University. Dr. Phillips has a background as a classroom teacher and school administrator in both public and private schools in West Tennessee. He completed his graduate work at the University of Memphis, studying educational leadership with a focus on school funding. His wife, Joy, is a special education teacher; their two children, Clay and Kaylee, are both in high school.

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Melinda Eckley Posey is Associate Professor of Art at Union University in Jackson, Tennessee. She obtained her Master in Fine Arts from Memphis College of Art in 2008. Her artwork has been featured on international stages utilized by clients such as Rolex, Polo, Subaru, Discover Card, and the United Nations.

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