



# THE TRINITY

## AND THE CYCLE OF INNOVATION

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### **ABSTRACT**

The Holy Trinity's role in Christianity can offer helpful insights on the cycle of innovation. The invention, commercial viability, and market significance phases of a typical innovation cycle are compared to the respective roles of the three members of the Trinity in the salvation process. God the Father's creation of humans in his image and assignment of dominion to humanity over the created world offer new perspectives for innovations that enhance human flourishing. Jesus' ministry provides a model for adopting innovation that heals a broken world and addresses the needs of the neglected. The Holy Spirit, by promoting faith and unifying communities as witnesses of God's benevolence, encourages innovations that glorify God through building strong, networked communities. The Trinity offers new perspectives on ways to improve the development of innovative technologies such as artificial intelligence for the collective good. These same perspectives also shed light on the reasons why innovations fail as borne out in historical examples of abandoned technologies.

## ▶ INTRODUCTION

Innovation is a key catalyst for economic growth, offering entrepreneurs opportunities to “lift their productivity, invent and reinvent offerings, and contribute to humanity’s well-being.”<sup>1</sup> How can Christian entrepreneurs pursue innovations that add to humanity’s well-being in a way that also glorifies God? This essay proposes that one way to extend the discussion of innovation beyond a secular perspective is to examine the Trinity’s role in God’s plan for salvation.

God bases his plan to save humanity on the Trinity, with the Father initiating salvation, the Son mediating, and the Holy Spirit sanctifying.<sup>2</sup> Two of the most widely known references to the Triune nature of God are the Great Commission and Paul’s blessing to the Church of Corinth. Jesus instructs the disciples to “Therefore go and make disciples of all nations, baptizing them in the name of the Father and of the Son and of the Holy Spirit.”<sup>3</sup> In 2 Corinthians 13:14, Paul says “May the grace of the Lord Jesus Christ, and the love of God, and the fellowship of the Holy Spirit be with you all.”

The Trinity makes Christianity distinctly different from other religions. Sontag observes that “it is peculiarly Christian to experience God’s actions from three ways, that is, from three distinct sources and directions.”<sup>4</sup> Experiencing God as the Father allows humans to see God as a creator, able to “externalize creative powers freely” without fear of failure.<sup>5</sup> The love and kindness of Jesus the Son is clear in his depiction of “God as forgiving, concerned, compassionate for us.”<sup>6</sup> And it is God as the Holy Spirit that offers the gift of faith and equips and encourages believers to share the Gospel. As Sontag observes, “Even when we hear the “good news” preached or see the face of God in the compassion of another, unless we are supported by a Spirit we deem ‘holy,’ that belief is not likely to ... move us to carry the gospel out to others.”<sup>7</sup>

The process of innovation bears some interesting resemblance to the way the Holy Trinity works in the process of human salvation. This article examines the cycle of innovation, focusing on aspects where insights can be gained as we examine the way in which God uses the Trinity in his plan to save humanity. Our discussion begins with a brief review of modern diffusion theory, highlighting characteristics related to an innovation’s uncertainty and the steps taken by potential users to address it. Diffusion theory is then used to examine how each phase of the innovation process (name-

ly, invention, commercial viability, and market significance) has characteristics that correspond with the role of the three members of the Trinity (God the Father, the Son, and the Holy Spirit) in God’s plan for salvation. We conclude the article with an application of this Trinity-based perspective to the innovation of artificial intelligence (AI) which has currency and the tremendous potential to impact humanity for better or for worse.

## INNOVATION: UNCERTAINTY AND DIFFUSION

An analysis of the adoption of hybrid corn across U.S. farms is one of the first studies confirming that adoption patterns tend to form an S-curve over time.<sup>8</sup> Information flows among potential users drive the pattern of adoption. Initially, the number of users with information about the innovation is limited. As the number of individuals adopting the innovation increases, more information about the innovation circulates. The number of users then increases quickly until the market becomes saturated.

Innovations often encounter resistance due to uncertainty, where innovations with more uncertainty are more slowly adopted.<sup>9</sup> Diffusion theory identifies five characteristics related to uncertainty that determine whether an innovation will be widely adopted: *relative advantage*, *compatibility*, *complexity*, *trialability*, and *observability*.<sup>10</sup> For example, the Coca-Cola Company’s attempt to replace Coke with “New Coke” in 1985 was described by company chairman and CEO Roberto Goizueta as the “the surest move ever made.”<sup>11</sup> Seventy-nine days later, the company announced a return to the original formula after customers loyal to the original product recognized no *relative advantage* in the new product, deluging the company with calls and organizing protests. Another familiar example is Google Glass, identified by Time Magazine in 2012 as one of the “Best Inventions of the Year.”<sup>12</sup> Google’s attempt to market Google Glass failed because it lacked *trialability*. The product’s \$1,500 price tag prevented customers from testing the new technology without making a sizable investment.

Parallels exist between the characteristics associated with diffusion theory and factors contributing to the growth of the early church. According to Stark, three conditions are present in environments that encourage new religious movements to spread: high religious inactivity, cultural continui-

ty, and preexisting social networks.<sup>13</sup> Religious movements thrive in more secular areas because the contrast emphasizes a movement's *relative advantage*. People are more receptive to religious outlooks possessing a cultural continuity that allows them to retain and add to a known cultural heritage. As is the case when adopting innovation, people are more receptive to something new if it is *compatible* with existing values. Finally, religious movements are more likely to thrive in cultures with preexisting networks because they allow people to encounter that faith through their ties to previous converts (*trialability* and *observability*).

Lack of *complexity* also contributed to the early church's quick spread. Stark identifies the converts' faithfulness to the simplicity of the early church's message of salvation and the Great Commission as being the "ultimate factor" accounting for Christianity's spread: "I believe that it was the religion's particular doctrines that permitted Christianity to be among the most sweeping and successful revitalization movements in history. And it was the way these doctrines took on actual flesh, the way they directed organizational actions and individual behavior, that led to the rise of Christianity."<sup>14</sup>

Potential users address questions regarding an innovation's advantages and disadvantages by collecting and reviewing existing information.<sup>15</sup> The innovation decision process consists of a 5-step approach: awareness/knowledge, persuasion, decision, implementation, and confirmation. In the first stage, an individual searches for information after learning about the innovation's existence, wondering "what (it) is and how and why it works."<sup>16</sup> Upon reaching the persuasion stage, a negative or positive attitude toward the innovation is formed that may or may not result in its adoption or rejection.<sup>17</sup> At this stage, uncertainty regarding the innovation's performance will be influenced by other people's opinions, especially those of closer colleagues.<sup>18</sup> At the decision stage, a decision to adopt or reject the innovation occurs, although rejection can occur at other stages. Actual adoption occurs at the implementation stage. Uncertainty about implementation remains an ongoing issue, making help from experts essential at this stage. Once individuals reach the confirmation stage, they have finalized their decision but actively seek supportive feedback.

The five steps involved in the decision to adopt innovation are akin to the process many individuals undergo when making a decision to convert to Christianity. An individual in the knowledge stage encounters the Gospel's message and questions its meaning. Once they reach the persuasion stage, they develop either a negative or positive impression

of becoming a Christian. The individual eventually decides to accept Christ or reject him, although as noted earlier, rejection can occur at any step. A Christian in the implementation stage officially accepts Christ but has questions related to how to proceed in this new phase of life. Support from experts is essential at this stage. Once individuals reach the confirmation stage, attending church services and related activities reinforces their decision.

Diffusion theory also addresses periods surrounding an innovation's entry into a market. Three distinct phases occur during a market entry: invention, commercial viability, and market significance, with widespread disruption resulting when numerous innovations mature at the same time.<sup>19</sup> According to the cycle of innovation, an invention's initial stage consists of creation and entrepreneurship. This is followed by the changes, education, and disruption that characterize commercial viability. Finally, growth and mass flourishing take place during the phase of market significance.

## THE TRINITY AND INNOVATION CYCLE

The work of the Trinity in the salvation process offers some interesting parallels to activities in the innovation cycle. The beginning phase of invention during an innovation cycle corresponds to God the Father as he initiates creation and salvation, creating humanity in his own image and assigning them dominion over his creation. Activities in the second phase of innovation, commercial viability, parallel those of Jesus as he engages in redemption, teaching, and disruption. The final phase of innovation, market significance, corresponds to the network effects and community-building enabled by the Holy Spirit.

## CREATION AND THE ENTREPRENEUR

Innovations are often preceded by events that precipitate a need for new solutions. These include unexpected failures and successes, inconsistencies between how things are and how they should be, process needs, unforeseen industry changes, demographic shifts, perception changes, and new knowledge.<sup>20</sup> A study of future innovation in the U.S. economy underscores two catalysts for change.<sup>21</sup> Science-based technology changes result from scientific advances or im-

provements in cost effectiveness. Silicon Valley technology changes occur when existing technologies progress rapidly and transform several sectors of the economy.<sup>22</sup>

God did not create in order to address a problem in need of a solution. God was not alone and was “supremely happy in the fellowship of the Trinity.”<sup>23</sup> His intent was not, according to Piper, “out of any need or any weakness or any deficiency. He created out of fullness and strength and complete sufficiency.”<sup>24</sup> God’s purpose for creating humans is revealed in how he created them: “So God created man in his own image, in the image of God he created him; male and female he created them.”<sup>25</sup> Piper notes that in creating humans in his image, God is “point(ing) to the original, glorify(ing) the original. God made humans in his image so that the world would be filled with reflectors of God.”<sup>26</sup> It is worth noting that the entire Trinity takes part in this endeavor, with Scripture describing the Spirit hovering over water and the Son as the firstborn over all creation.<sup>27</sup>

## THE FATHER AND INVENTION

Supreme authority in the Trinity rests with the Father, who is responsible for orchestrating “the grand purposes and plans that take place through all of creation and redemption.”<sup>28</sup> The Father’s role as initiator is significant not only in creation but also in salvation through the work of the Son.<sup>29</sup> St. Augustine identifies the Father’s role in creation “as the one who begets the Son through the Spirit, and the one who creates all things through them.”<sup>30</sup>

Entrepreneurs differ from inventors because they seek opportunities to innovate and furnish the resources for creation.<sup>31</sup> As the supreme innovator, God also provides resources, but does not settle at simply sustaining creation. As Kooi and Rietveld observes:

The creation of our world and the cosmos itself and the initiative of the Covenant can be regarded as acts of investment. God may not need this project for the fulfillment of his glory and life because he is, according to classical Christian doctrine, the fullness of life in himself, but he nevertheless chooses to start this project for his glory even if this means tremendous risk.<sup>32</sup>

Thus, creating man is an act of investment with risk. Al-

though God had intended to allow humanity to “participate in his glory... (there were) many occasions in which the project seemed to end in complete failure or bankruptcy. On many occasions, the human being was and is not the coworker that he is supposed to be.”<sup>33</sup> Scripture provides other examples of biblically informed risk taking. In the Parable of the Talents, the master criticizes one of the men receiving talents because he did not put the master’s money to work on his behalf, indicating that measured risk-taking is consistent with wise stewardship.<sup>34</sup> Further direction is offered to entrepreneurs to diversify to protect their welfare from unexpected disaster.<sup>35</sup>

Scripture also guides us as to how we can improve on our own innovativeness. First, God created all things with foresight and purpose. An innovation should reflect the entrepreneur’s dedication to solving a problem. The invention’s direct impact on people’s lives or values, or intrinsic worth, should be apparent to users (relative advantage and observability). Second, God created humans to manage his creation, using the human he created in his own image to rule over everything he made.<sup>36</sup> Humanity is his handiwork, created intentionally to “do good works” and to glorify God.<sup>37</sup> Man’s role as a steward requires accepting responsibility for his innovations such that the Creator is glorified. Simply put, the resulting product should be one that enables human flourishing and contributes to the greater good as opposed to one that detracts from it.

## THE SON AND COMMERCIAL VIABILITY

The second stage of innovation is commercial viability, a period where the innovation can compete in the market and generate a profit.<sup>38</sup> When an innovation’s effectiveness is less certain, diffusion theory warns that the process of convincing users to adopt it becomes more challenging. It is also important to recognize that this stage of innovation is often marked by disruption as incumbent firms and industries resist the innovation.

Jesus was sent as the Savior to fulfill God’s promise that “He himself will redeem Israel from all their sins.”<sup>39</sup> Jesus calls for listeners to repent.<sup>40</sup> The Hebrew word for repentance is *teshuvah*, or return.<sup>41</sup> As Werblowsky and Wigoder observes, repentance in the Jewish culture calls for turning away from a previous behavior and turning to God instead.<sup>42</sup>

The need for believers to acknowledge a new reality defines a characteristic essential for innovation to succeed. True renewal of the mind entails the believer to be “born again” and turn away from previous behaviors.<sup>43</sup> Just as efforts that are “half-hearted” will not complete a born-again experience, innovations that are meaningful and eventually widely adopted require a fundamental revision to how something performs.<sup>44</sup>

Because innovations are new and unfamiliar to potential adopters, commercial viability requires making customers aware of an unfulfilled need and convincing them to adopt the new invention. The uncertainty surrounding the adoption of a new product and attachment to the old product mean that commercial viability requires educating consumers about the rewards of new habits and choices.<sup>45</sup> Effective teaching is a principal aspect of marketing innovation.

Scripture educates us about God’s plans for our salvation. In the Covenant/Old Testament approach to redemption, God instructs prophets to share information with unbelievers and persuade them to repent. In the New Testament, the Father sends his son in human form to reach out to humanity and convince them of their need for salvation.<sup>46</sup> An important way that Jesus “reaches out” to humanity is as a teacher. He recruited and commissioned disciples to help spread the Gospel (knowledge of the change).<sup>47</sup> Jesus also used parables to simplify and illustrate relevant concepts. One of the most profound ways that Jesus convinced people to convert is the authenticity in how he lived his faith.<sup>48</sup> His open willingness to obey and submit to God’s will time and again demonstrated love, forgiveness, forbearance, and other qualities that are highly visible to those who came into contact with him. Jesus is perhaps the greatest marketer the world has ever known.<sup>49</sup>

The commercial viability stage often breeds disruption, where a new firm effectively challenges larger, established firms.<sup>50</sup> Incumbent firms in an industry can be threatened by others’ attempts to innovate, and consequently try to resist its spread in multiple ways.<sup>51</sup> The incumbents may disapprove or discourage the innovative change, prevent the change, or take a more aggressive approach by attacking the change. These forms of resistance are apparent in the way Jesus interacted with the religious elite. Jesus called out the Pharisees and other legal scholars for treating traditions as being equivalent to God’s laws after they criticized the disciples for not washing hands before they ate.<sup>52</sup> When a synagogue leader complained after Jesus healed a possessed woman on the Sabbath, Jesus condemned his hypocrisy.<sup>53</sup> Jesus’ conduct throughout his life demonstrated that he really

was who he said he is and why his authority counts. Authenticity is the best weapon to use to respond to criticisms and biases against any innovation.

Successful (innovating) disruptors often identify potential adopters overlooked by incumbents and find ways to meet their needs.<sup>54</sup> They eventually “move upstream,” attracting more mainstream customers. For instance, Xerox’s neglect of small customers needing access to copying service allowed new disruptive firms to introduce personal copiers, initially creating a new market before “moving upstream” and servicing the larger customers that had been Xerox’s focus.<sup>55</sup>

Jesus’ interactions with the Jews and Gentiles illustrate this principle as he zeroed in on those marginalized in the community, including women, the poor, and others disregarded at that time. Jesus’ parable in Luke 10 centers around the goodness of a Samaritan at a time when society would have rejected such an individual. In addition, Jesus unites Jews and Gentiles, as Ephesians 2:14-16 declares:

For he himself is our peace, who has made the two groups one and has destroyed the barrier, the dividing wall of hostility, by setting aside in his flesh the law with its commands and regulations. His purpose was to create in himself one new humanity out of the two, thus making peace.

## THE HOLY SPIRIT AND MASS FLOURISHING

**D**uring the commercial viability stage, an innovation needs to successfully compete in the market and generate a profit. The entrepreneur must navigate several challenges in this stage, including addressing firms’ hesitancy to adopt due to uncertainty, using marketing strategy to encourage adoption of the innovation, and triumphing over resistance. The final stage of innovation is that of market significance, where the innovation broadly gains acceptance across markets. The process associated with such widespread usage offers similarities to how the Holy Spirit enabled the Gospel’s spread and church growth through the networks initiated by Pentecost and the formation of faith communities.

Table 1 summarizes the five major technology waves that have served as catalysts for economic growth since 1771. What is interesting relative to the analysis at hand are the third and fourth columns, infrastructure networks and im-

**TABLE 1  
INNOVATION WAVES**

TIME PERIOD	TECHNOLOGICAL REVOLUTION	NETWORKS ALLOWING GROWTH OF INDUSTRY	SAMPLE OF AFFECTED INDUSTRIES
1771-1828	Mechanization and the Industrial Revolution	Mail coaches, canals, and roads	Machinery and textiles
1829-1874	Steam engines and railroads	Railways and telegraph	Coal and steel
1875-1907	Engineering and scientific discovery	Steamships and telegraph	Machines and chemicals
1908-1970	Mass production	Electricity, telephone, and highways	Cars and durable goods
1971-2010	Information Communication Technology (ICT)	Support networks for ICT and digital communications	Computer software and microelectronics

Sources: Archibugi and Perez<sup>58</sup>

pacted industries. Part of the massive growth and disruption Mills describes relies on new or revised infrastructure.<sup>56</sup> For instance, an innovation wave from 1908 to 1970 revolutionized mass production, accelerating the production of consumer durables and automobile industries.<sup>57</sup> These increases would have been impossible without network effects requiring new and improved infrastructure provided by electricity, telephones, and highways.

Network effects served a critical role in spreading the Gospel. Jesus promises to send an advocate that will testify about him. God fulfilled this promise during Pentecost, allowing the Holy Spirit to descend upon the disciples after they assembled. A crowd from different countries heard the disciples speak in their own native tongues.<sup>59</sup> This divine power of the Holy Spirit is the same power that allowed all believers to witness to those who did not know Jesus.<sup>60</sup> This act by the Holy Spirit initiated the sharing of the Gospel across language barriers, precipitating a powerful network effect.

Another characteristic associated with market significance is the tendency of innovations to cluster. Brunswick observed that:

What may seem painful on the surface is actually great for innovation. We're getting shaken out of complacency, and that's when incredible things can happen. Think of the game-changing companies that debuted during

the last recession—Uber, Airbnb, Slack and Square... (changing) how we go about our daily lives.<sup>61</sup>

Brunswick's observation is supported by research confirming that innovations tend to occur together, especially during a recession's recovery phase.<sup>62</sup> Investments in general purpose technologies generate repercussions throughout the economy. Sensitivity to pessimism and optimism causes investment clusters and innovation bunches.<sup>63</sup> One analysis of growth patterns in productivity and investments detects waves of innovation and patents during downturns in the 1930s, 1970s, and 2010s, suggesting that innovations cluster around structural crises.<sup>64</sup> Another study attributes innovation waves to the pressure challenging times placed on firms to transform.<sup>65</sup> The bunching of plant and equipment installation peaks well into a recession for two reasons.<sup>66</sup> Firms that have invested in these new installations benefit because they can now produce new goods or reduce production costs. Secondly, firms that were barely breaking even during periods of prosperity are forced to make production changes when economic growth declines.

The tendency of innovations to cluster reflects the Holy Spirit's role in the formation of Christian communities. Paul emphasizes the importance of followers remaining bound by keeping "unity with Spirit through the bond of peace."<sup>67</sup> Stark described conversion as "a network of interpersonal attachments," warning that new religious movements that become

closed networks fail to spread.<sup>68</sup> In contrast, movements that occur through relationships that are “direct and intimate interpersonal attachments” are more likely to grow.<sup>69</sup> Interpersonal attachments are key in several of the stages involved in the decision process outlined in diffusion theory. Opinions of others, particularly closer colleagues, are important at the persuasion stage. Given that uncertainty still occurs at later stages, these attachments also provide expert assistance at the implementation stage and supportive feedback at the confirmation stage.

The Holy Spirit enables the formation of networks by distributing gifts among the Christian community.<sup>70</sup> The apostles engaged the Holy Spirit in the selection and appointment of seven men to oversee church business so that the apostles can focus on evangelism.<sup>71</sup> Thus, the Holy Spirit not only promotes fellowship among Christians, but also guides them as they select leaders to manage the nascent community. People are more likely to experiment with something new when there is a community available to assist and encourage them. Innovators should keep in mind that a reliable network allows users to stay connected to the innovator and other users. The Holy Spirit united communities with shared values and mission. Innovations that promote shared values and mission will likely encourage and be supported by united communities.

## APPLICATIONS

Using a biblically informed perspective based on the Trinity could offer insights in ways to improve the development and adoption of innovative technologies such as artificial intelligence (AI) for the collective good. This particular innovation has attracted increased interest and scrutiny recently, particularly given its rapid advancements and connections to so many aspects of human life. A Trinity-based lens is also useful in understanding why some previous attempts at innovation have failed, and what those failures can teach us about innovations that are currently being developed and adopted.

Our previous analysis suggests that God the Father initiated creation with foresight, purpose, and risk. God designed humans, unlike his other creations, to have the ability to program technology and AI.<sup>72</sup> One current concern associated with decisions made by AI is the “aura of neutrality and impartiality associated with (the process) ... even though they may be the result of biased historical decisions or even bla-

tant discrimination.”<sup>73</sup> Programmers of AI should favor decision making techniques that are ethical and transparent so that the user’s perception of the invention’s value is accurate. In addition, God made humans in his image and gave them dominion over the rest of creation. He created a world with a purpose - that is, to glorify him. To align with God’s will, AI applications should be developed with the intention of enhancing human flourishing and enabling new inventions that bring honor and glory to God.

Jesus’ life demonstrates love, inclusion, and other virtues that should inspire technological innovations that embrace and enable these behaviors. Christ’s commandment to love our neighbors should inspire AI developers to seek ways to heal and provide solutions to a broken world, apparent in AI processes such as robotic prosthetics and watches with electrocardiograms.<sup>74</sup> In addition, Jesus’ actions to tear down socioeconomic and cultural barriers should encourage innovators to search for ways to address the needs of customers who have been overlooked in the past. It is worth noting that prosthetics and other medical applications of AI are expensive when they initially come to market. Developing technologies to reduce these costs would be another way of removing barriers.<sup>75</sup>

The role of the Holy Spirit in building and strengthening communities also offers useful lessons for AI development. There is a deep longing for real relationships in a world that “often promotes shallow and fake connections.”<sup>76</sup> Just as network effects permitted growth in the church through the Holy Spirit, AI developments in science, language, and education have the potential to unite communities. For example, people who speak different languages can now communicate with one another thanks to the translation provided by machine learning algorithms.<sup>77</sup> Khan Academy is currently testing Khanmigo, a chatbot designed to tutor students in subjects ranging from elementary school math to college-level organic chemistry.<sup>78</sup> AI could someday design unique lesson plans for each student, addressing individual differences in goals, past experiences, and other characteristics.<sup>79</sup>

What can the Trinity perspective teach us about how and why some innovations “fail?” Sometimes potential users will resist a well-designed innovation because it is incompatible with their current needs. One reason this occurs is that the network needed to make the product more broadly accepted is not widely available at that time. Consider the videotape industry in the 1970s. Sony’s Betamax format emerged in 1975, one year before JVC’s VHS format. Sony’s product was actually superior to JVC’s.<sup>80</sup> However, Sony refused to

license its technology to other manufacturers, limiting the number of movies available on that format. Sony's decision prevented the development of network effects. In contrast, JVC licensed its technology to any firm that was interested, expanding the network to make its product popular.

JVC's decision to expand its network is consistent with Stark's recognition that growth in new religious groups depends upon members forming relationships with individuals outside of the organization: "... for a group to grow as rapidly as Christians did, it must maintain close ties to its nonmembers—it must remain an open network."<sup>81</sup> Jesus promised the disciples before his ascension: "But you will receive power when the Holy Spirit comes on you; and you will be my witnesses in Jerusalem, and in all Judea and Samaria, and to the ends of the earth."<sup>82</sup> Networks in the Christian community remained open because the Holy Spirit distributed gifts and promoted faith.<sup>83</sup>

The Trinity-based model is also helpful in thinking about other types of failure that occur from innovation. For instance, consider waves of innovation in the financial industry that have produced digital currencies, derivatives, securitization, and other attempts to avoid regulation. Quickly adopting innovation without taking the time to fully understand its impacts has led to crises in the industry such as the development of complex mortgage-backed securities which led to the 2008 financial crises. The resulting emotional and financial toll experienced by homeowners, banking interests, and other real estate related parties was considerable. In addition, fallout that ensues from innovation in this industry harms not only those directly involved, but others in the rest of the economy and beyond. Those who develop or adopt innovation with a singular focus on financial gain should not be surprised when attempted shortcuts to wealth lead to disastrous outcomes and crises. Such failures highlight an absence of the ethical and common good criteria embodied in the teachings of Jesus and the Holy Spirit. Embracing these criteria in the design of future innovations is needed to promote human flourishing consistent with God's will.

## CONCLUSION

Innovative technologies have long provided an important catalyst for economic growth. Stages in the innovation cycle bear resemblance to the salvation process enabled by the persons comprising the Trinity. Christians, in particular, can benefit from the insights of the Trinity model as applied to

new inventions. Initiating new discoveries (innovations) with imagination and purpose, turning away from dated processes and behaviors, addressing the forgotten needs of the neglected, and generating impactful networks that unite communities are but a few common characteristics shared by both conversion (to Christianity) and innovation.

The Trinity model also offers new perspectives on the development and adoption of AI. It reminds us that God the Father designed humans in his image and assigned them dominion over the rest of his creation. This would advise of innovations that are developed with reverence, vision, and purpose that advance human flourishing and bring honor and glory to the Creator. Jesus' ministry reminds us of innovations that address the brokenness in the modern world and the need of those who are neglected or marginalized. The Holy Spirit brought connectivity and harmony amongst communities which can be addressed by developments in education and communication. Given the tremendous potential and promises of AI, these Trinity inspired considerations would ensure enhancements that greatly enrich the human experience as God had originally intended it.



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## NOTES

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- <sup>17</sup> Ibid.
- <sup>18</sup> A tendency to trust closer colleagues more is also apparent in Bryce Ryan and Neal Gross, "Acceptance and Diffusion of Hybrid Corn Seed in Two Iowa Communities."
- <sup>19</sup> Mark Mills, *The Cloud Revolution: How the Convergence of New Technologies Will Unleash the Next Economic Boom and a Roaring 2020s* (New York: Encounter Books, 2021). Other studies with comparable categories of innovation stages include Raghu Garud, Philipp Tuertscher, and Andrew H. Van de Ven, "Perspectives on Innovation Processes," *Academy of Management Annals* 7, no. 1 (2013): 775-819. <https://doi.org/10.1080/19416520.2013.791066>; Morten T. Hansen and Julian Birkinshaw, "The Innovation Value Chain," *Harvard Business Review* 85, no. 6 (2007): 121-42.
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- <sup>22</sup> Ibid.
- <sup>23</sup> This is among many helpful insights provided by an anonymous reviewer. See John Piper, "Why Did God Create the World?" *Desiring God*, September 22, 2012. <https://www.desiringgod.org/messages/why-did-god-create-the-world>
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