

# Transformative Models: Economic Modeling, Relational Ontology, and the Image of God

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This article offers a comparison between economic models and the theological concept of the image of God. There is an overlap of purpose between these two in four areas: (1) seeking to represent reality, (2) seeking to uncover the correct equilibrium of relations among actors, (3) seeking to describe and predict change through time as a basis for current action, and (4) acting as a means to change reality. Having established the conceptual overlap, it is argued that the *imago dei* can inform economic models by offering a better understanding of relationality or personhood. Finally, the thesis herein is compared to similar work in the field, arguing that the emphasis on ontological change represents a unique contribution.

Many theological approaches to economics address economics at a structural level by comparing capitalism and socialism or on the level of specific policy proposals. These approaches, while valuable, have neglected an aspect of economics that must be theologically addressed: the economic model. After all, economic policies undertaken by governments, banks, and corporations are made at the recommendation of economists, bankers, and CFOs, all of whom have at their disposal significant economic models that guide their decision making. Economic systems are in a sense the legal and financial frameworks that make certain model-derived policies possible. We ought not to overestimate the role of models, however, because many models developed by academic economists will receive limited attention and application. Models are not the sole driving force behind economics. Nonetheless, models are significant enough to warrant attention from theologians who attempt to develop a theological economics.

With the above in mind, this article seeks to analyze economic models and attempts to find a counterpart in the traditional theological loci in order to discern the theological consequences that arise from dominant twentieth-century models. I will pay special attention to the way these models function in economic analysis and to the consequences that arise from this function and from the particular aspects of the model.<sup>1</sup> My analysis will show that economic models function similarly to the theological notion of the image of God with different ontological results. Many economic models distort the human being by replacing properly theological means of relation and individuation for inadequate and incomplete alternative means of relation and individuation. These improper means of relating and individuating human beings hinder their development into the image of God.

This article consists of four parts. First, a historical survey of the development of economic models will explore the function of models. Second, the theology of the image of God will be presented as the theological concept with the closest correlation in function to economic models. Third, the correlation between economic models and the image of God will be explored through the development of a relational ontology in dialogue with Christos Yannaras, John Zizioulas, and Vladimir Lossky. In so doing, I will not only demonstrate a correlation between the image of God and economic models but will also show how the principles of relation and individuation in economic models constrain growth into the image of God by distorting the proper relational ontology of persons into an ontology of opposed individuals. I will conclude in a fourth section by briefly explaining how my proposal differs from the work of many who have already done strong work in relating theology and economics.

## **Economic Models and Their Function: Cournot to the Present**

The three main precursors of mathematical modeling in economics were Augustin Cournot, Francis Edgeworth, and Léon Walras.<sup>2</sup> Cournot was influential on early general equilibrium analysis<sup>3</sup> and a precursor of game theory.<sup>4</sup> He expected resistance to the use of mathematics in economics<sup>5</sup> but believed that “whatever man can measure, calculate, and systematize ultimately becomes the object of measurement, calculation, and system.”<sup>6</sup> The inevitability of mathematical economics compelled Cournot to demonstrate that economic realities could be represented in mathematical terms. His *Researches into the Mathematical Principles of the Theory of Wealth* (1838) showed how algebraic functions and geometric curves could adequately represent economic principles. Cournot

was also the first to develop demand functions and demand curves representing preferences for goods at given prices.

The early stage of mathematical models was a matter of representation. Cournot and others sought to find mathematical ways to represent economic agents. Demand curves functioned as images of what Bernt Stigum calls “representative individuals,” which are “ideal persons whose behavior is stripped of all characteristics” other than “positive analogies of individual behavior.”<sup>7</sup> Cournot’s individual demand curve represented an individual’s ability to rationally modify demand for a product according to fluctuations in price. Edgeworth later noted that Cournot’s curves did not determine “what price would rule any market” but simply helped “in conjecturing the ... general character of the affect which changes ... will produce.”<sup>8</sup> The models merely functioned as representations for lack of data and lack of sufficient mathematical methods for solving the functions.<sup>9</sup>

Léon Walras’s equilibrium analysis initiated a crucial second stage in the development of economic models. Walras, along with Stanley Jevons and Carl Menger, discovered the connection between marginal utility and value, namely, that a person will purchase units of a commodity until the marginal utility added for purchasing an additional unit is equal to the cost of the good.<sup>10</sup> In his 1874 publication, Walras’s “demand schedule in the mind of the holder”<sup>11</sup> represented mental preferences for demand at a given price, and his “rareté” curves represented wants satisfied by consumption.<sup>12</sup> Walras’s “equilibrium prices” occurred where marginal utilities between several agents are equal,<sup>13</sup> thereby establishing how several agents in a market could create an equilibrium where all obtained maximum utility. Walrasian general equilibrium analysis thereby related the utility function to the demand function, making price a result of the satiation of desire through the use of reason and related individual demand and utility curves (as “representative individuals”) to one another to form equilibrium—a natural balance of relationships in a market.

Equilibrium analysis demonstrates a new function of models: their use in resolving conceptual problems.<sup>14</sup> Models no longer simply represent, but rather serve as a basis for conceptualizing relation. Walras’s initial mathematical proofs of general equilibrium were wanting, so much of the subsequent decades consisted of finding new proofs to justify the relations. The Lausanne school of Vilfredo Pareto and the General Competitive Equilibrium of Kenneth Arrow and Gérard Debreu were the most significant advances.<sup>15</sup> Each can be seen to perpetuate this conceptualizing function of economic models.

Game theory represents a parallel development. John von Neumann and Oskar Morgenstern’s 1944 *Theory of Games and Economic Behavior* introduced game

theory to the world of economic modeling.<sup>16</sup> Game theory sought to explore the interdependence assumed in Walrasian equilibrium analysis.<sup>17</sup> The work assumed that the aim of all economic participants was to gain money, such that obtaining utility depended on acting rationally.<sup>18</sup> Because von Neumann and Morgenstern thought there was no current valid explanation of economic rationality,<sup>19</sup> they sought “to find the mathematically complete principles which define ‘rational behavior’ for the participants in a social economy, and to derive from them general characteristics of behavior.”<sup>20</sup>

Like general equilibrium analysis, game theory was not simply about representation but about relation, as is evident in the work of John Nash in the 1950s to establish equilibrium. In game theory, each individual can adopt several possible strategies while attempting to surmise the strategies that will be adopted by other players. Nash’s equilibrium is the set of strategies that maximizes payoff to each individual based on the expected strategies of other players.<sup>21</sup> Thus equilibrium is again established as a series of correctly ordered relations among all agents.

After Walras’s and subsequent equilibrium models were used to solve conceptual problems, a third important stage in the development of economic models occurred. Cournot’s models were atemporal.<sup>22</sup> Walras only considered actions over a single time period,<sup>23</sup> but economists soon recognized that equilibrium analysis needed to be transposed into time. The result, known as temporary competitive general equilibrium, was developed by Erik Lindahl and J. R. Hicks in the 1930s.<sup>24</sup> According to these theories, each economic agent develops expectations for the future based on analysis of past economic activity, which results in present economic action and equilibrium. Because these expectations can be incorrect, it is possible for new equilibria to develop in each time period as expectations change.<sup>25</sup> A similar development occurred in game theory with the development of repeated games that allowed participants to learn and develop new strategies. Both developments introduced a new aspect of economic modeling: the ability to analyze and forecast change through time.

A fourth and final aspect of the development of economic models warrants particular attention. Once change was introduced into modeling, it became possible to intentionally direct the change. Nash’s equilibrium assumes perfect rationality, which allows economists to focus on the necessary institutional changes to realize optimal outcomes.<sup>26</sup> Therefore, two important strands of game theory developed that sought to change institutions as a way of changing individuals. Auction theory developed as an attempt to uncover how auctions could be structured to obtain a desired outcome but has since expanded to include applications in the labor market and tax incentives, for example.<sup>27</sup> Similarly, mechanism design theory emerged based on the recognition that different types of games are played based

on how information is shared. It attempts to develop coordination mechanisms as a way of organizing social interactions such that certain types of games will be played, which in turn yields certain equilibria.<sup>28</sup> Both fields are an effort to intentionally design markets and thereby change individuals. This is particularly true of mechanism design theory. In game theory, the representative individual is the specific strategy adopted. Thus, insofar as coordination mechanisms change the game played, they also change the identity of the representative individual.

Recent work in the field of the sociology of economics suggests that not all design is intentional. There are unintended ways in which models shape the world they describe. The idea of “performative economics,” introduced by Michel Callon, suggests that economic theories can create the realities they describe.<sup>29</sup> The most significant case has been uncovered by Donald Mackenzie.<sup>30</sup> Mackenzie has thoroughly analyzed the Black-Scholes-Merton model, which suggested an appropriate price level for stock options.<sup>31</sup> Prior to the model, options trading was thought to be based on pure speculation, but the model gave it scientific rigor. When the first options markets opened in Chicago a few traders began to use the model and found that it was in many cases a poor fit to actual prices. As time went on, the model began to be widely used, and market prices for options converged with the prices predicted by the models.<sup>32</sup> The model was considered to be one of the best in finance until a crash in 1987. After this crash, the model has become a permanently poor reflection of options prices because of what is known as the “volatility skew.”<sup>33</sup> New models have had to be developed to explain the actual prices. Mackenzie concludes that the model actually created the reality it described, as traders bought and sold such that the options converged on the model’s equilibrium prices. Performativity, though likely only a reality in some cases, demonstrates that models can unintentionally shape and change the reality that they intend to describe, much as auction theory and mechanism design seek to change reality intentionally.

The above survey of the history of economic models reveals four significant functions that economic models fulfill. First, models serve to represent reality by establishing representative individuals based on a particular aspect of an individual. Second, models serve to uncover the correct equilibrium of relations among economic agents. Third, models serve to describe and predict change through time as a basis for current action. Fourth, models can be used to intentionally or unintentionally change economic reality.

## The *Imago Dei* as a Theological Correlate to Economic Models

Lacking explicit Scriptural teaching on economic models, a theological analysis must proceed by attempting to discern whether any traditional theological locus can appropriately be put into dialogue with economic models. The ideal theological approach would seek a traditional theological locus that when articulated in a traditional way (i.e., when articulated in its appropriate doctrinal function rather than distorted by being put solely to economic ends) functions in a manner similar to the four functions of the models discussed above. The image of God is precisely such a locus because it functions in theology similarly to the way that economic models function in economics: as a principle of representation and relation and as a means to understand and direct change.

Biblically, the image of God first appears in the book of Genesis. On the sixth day, it is written that “God created man in his own image, in the image of God he created him; male and female he created them” (Gen. 1:27). Precisely what this image consists of is unclear from the text, and after two more brief references in Genesis 5:1–3 and 9:6 the Old Testament does not use the terminology again. Opinions have varied as to what the image of God consists of, including the intellect, righteousness, holiness, and an I-Thou relationship with God.<sup>34</sup> However, there is broad consensus to the fact that the terminology is not intended to equate man and woman identically with God. For example, Thomas Aquinas considers the image of God “an approximation that is attainable by an essentially distant object”<sup>35</sup> such that “the ‘image’ is a likeness in kind ... a likeness in respect of some concomitant that is proper to the kind in question.”<sup>36</sup> Similarly, John of Damascus writes that “an image is a likeness depicting an archetype, but having some difference from it; the image is not like the archetype in every way.”<sup>37</sup>

New Testament discussion of the image of God takes a new direction. Humans still bear the image of God (1 Cor. 11:7), but the main emphasis is Jesus Christ as the image of God. Thus we read of “Christ, who is the image of God” (2 Cor. 4:4), and “the image of the invisible God” (Col. 1:15), and of our being “conformed to the image of his Son” (Rom. 8:29). This shift raises a potential objection to the above discussion of image as necessitating a distinction between the archetype and the image. Would not such a distinction demand that Christ not be very God of very God as Christians affirm? Such need not be the case. Insofar as Christ is the self-revelation of God *in the flesh*, Christ is the image of God. No one has seen the invisible, infinite divine nature—only the glorified human nature of Christ. As such, Vladimir Lossky is correct in claiming that in the incarnation “the Person [of the Son] appeared to men while the Godhead remained hidden

under the form of a servant.<sup>38</sup> Christ made visible in the flesh is an image of God insofar as the human nature of Christ reveals the person but not the nature, thereby having a hypostatic likeness to God but maintaining a difference between the visible human and hidden divine nature of the hypostatic union.

Objections aside, the New Testament development suggests that Christ is the superior image of God into which Christians are being transformed. In the New Testament the *imago dei* is more appropriately the *imago christi*. Christ in his human nature as the new Adam fulfilled the representational role intended for the old Adam as image of God. Christ the perfect representation of God is also a perfect representation of humanity toward which all humans should be conformed.

Economic models and the image of God thus share the function of being a representation. Economic models are an idealized representation of human beings based on a particular identical attribute shared between the model and the economic agent. Likewise, Christ in the flesh as the image of God and as the ideal human into which we are being conformed is a representation of God based on an identity with the second person of the Trinity. Christ is representative of humanity based on the shared human nature that is relating to God in an idealized way.

Although there is dispute over the precise analogy between humans and God that is behind the idea of the image of God, many modern theologians have suggested the basis is relationality.<sup>39</sup> Thus, Miroslav Volf describes “the ecclesial community as an icon of the trinitarian community,”<sup>40</sup> and Jürgen Moltmann says, “Human beings are *imago trinitatis* and only correspond to the triune God when they are united with one another.”<sup>41</sup> Moltmann’s claim originates in Gregory of Nazianzus, who explained that Adam, Eve, and Seth represented an image of the Trinity insofar as Eve came from Adam (via a rib) and Seth came from Adam through procreation. Thus, for Gregory, the primordial family is an image of the Trinity.<sup>42</sup>

There is both exegetical and theological basis for considering the image of God as relational. Exegetically, the use of the plural, “let *us* make man in *our* image” (Gen. 1:26, italics mine), followed by the creation of Adam and Eve, suggests that the image rests not in a particular capacity of Adam, but rather in something shared between Adam and Eve, that is, in some sort of relation. Theologically, Christ is the perfect image of God because he reveals one of the persons of the Trinity, thereby revealing the relational nature of God. Insofar as Christ is love, both as the God who is love (1 John 4:8) and as the supreme example of human love (1 John 3:16), Christ is an image of God and an image of the ideal of humanity. For this reason, the *imago dei* is at once the *imago christi* and the *imago trinitatis*, suggesting that relationality is the basis for understanding the image of God.<sup>43</sup> In this way, the image of God functions similarly to economic models

insofar as it is a theological principle for establishing rightly ordered relations. When believers relate in love as the Trinity does, they relate properly such that they are an image, a representation, of God.

Given that the *imago christi* is the perfect representation of the *imago dei* as *imago trinitatis*, an ideal representation of human beings rightly ordered in relation among themselves and toward God according to relationships mirroring triune love, there must be some mechanism allowing the church to obtain this image. The process of change is often theologically considered in a twofold fashion. Hilary of Poitiers is illustrative of the point. According to Hilary,

man is made perfect as the image of God. When he has been made conformable to the glory of God's body he will be raised to the image of his Creator, according to the exemplar of the first man that has been placed before him. And after the sin and the old man, the new man who has been made unto the knowledge of God receives the perfection of his nature, while he recognizes his God and thereby becomes his image, and while he advances toward eternity through the true worship of God he will remain throughout eternity the image of his Creator.<sup>44</sup>

Hilary's analysis is significant in several respects. First, he makes our conformity to the image of God a matter of the past action of Christ's incarnation. Hence, Christians are conformed to "God's body" in the "first man" Jesus Christ. Second, this conformity is also a future expectation that will be fulfilled at the final resurrection when the faithful are transformed into the image of the Creator. Finally, Hilary's words indicate that the final state as the image of God will be rooted in properly relating to God in "true worship." The image thus has a relational aspect. We might summarize the import of Hilary's analysis for the Christian life as follows: The Christian's attempt to live into the image of God is rooted in the faithful remembrance of Christ's salvific birth, death, and resurrection, and in the expectation of the future triumphal return of Christ. This reveals a third connection with economic modeling. Modeling serves to prescribe action today on the basis of past events and future expectations much as a Christian's attempt to live into the image of God is rooted in the past events of Christ as the image, and in the future expectation of restoration into the image of God.

The above discussion used the language of "living into the image of God," a phrase that must now be explained. If the image of God is a temporal concept rooted in the past life of Christ and the future expectation of his return, then it can also be understood as a pneumatological concept. The Spirit reminds us of the things that Christ has accomplished (John 14:26) and sanctifies us to draw

us into the coming future kingdom. Through this sanctification, Christians are able to reflect the image of God today. Through faith and in the workings of the Spirit, Christians receive a “new self” (Eph. 4:24) such that they are clothed with Christ (Rom. 13:14). In a sense, they are transformed into a new reality as they become a part of the redemptive historical action of God in Christ through the Spirit. This new reality may be termed being “conformed to the image of the Son” (Rom. 8:29). This reveals a fourth point of connection between the image of God and economic modeling. Through performativity and recent applications of game theory, economic models actually shape reality, fitting the model’s representation of relations more clearly. Similarly, the concept of the image of God is one theological way to speak of our transformation to fit the *imago christi*’s representation of rightly ordered relations with God and humankind.

This discussion of the image of God shows that it is an appropriate theological locus for dialogue with economic models because it has the same functions in the field of theology as economic models do in the field of economics, namely, to serve to represent an idealized individual, to properly explain the relations between such representations, to describe how those relations and representations change through time, and to actually produce some degree of change in the ideal as depicted by the representation.

## Persons and Individuals: Relational Ontology in Theology and Economics

If the image of God is an appropriate, functional correlate to the economic model, does this correlation imply anything (other than this author’s ability to develop an analogy)? Can theology offer anything constructive to economists as they develop models? I propose that the best means of connecting theology’s notion of the image of God with economic models is through the development of a relational ontology rooted in the Trinity.<sup>45</sup> John Zizioulas and especially Christos Yannaras are helpful in this process.

Zizioulas suggests that relation constitutes being. To use his words, “the substance of God, ‘God,’ has no ontological content, no true being, apart from communion.”<sup>46</sup> Furthermore, in God “the ‘essence’ (or ‘what’) does not exist without the ‘how.’”<sup>47</sup> Yannaras agrees with Zizioulas in claiming that God’s being is rooted in the relational communion of God, rooting this relation in the notion that God is love (1 John 4:8). God’s being must exist in some modality, and Yannaras suggests that there are two modes of being. The first is by nature, “a given, predetermined mode that is not generated.”<sup>48</sup> The second modality

has “its causal principle in its own self”<sup>49</sup> existing as “a free disposition toward relation and self-offering.”<sup>50</sup> Yannaras explains,

Not that God’s existence precedes his love, which then follows as a property or a characteristic, not that he first *is* and afterwards loves—rather, the Church declares that what God *is*, his real being, can be defined only as *love*.<sup>51</sup>

Thus, Yannaras suggests that being can be fundamentally constituted by nature or by relation.<sup>52</sup> In other words, God has being as God *because* God subsists eternally as Trinity. For the Father as the self-causing *arche* of the Godhead, to exist as Father there must also be a Son, and for Him to exist as the One who spirates, there must also be a Spirit. Therefore, the Father’s act of self-causation and self-determination to be Father is the simultaneous choice to subsist as Trinity in relations of love.<sup>53</sup>

Yannaras further suggests that “*relation* indicates a given goal setting, and consequently a definitive *mode of existence*.”<sup>54</sup> This goal setting is rooted in “primordial life-giving desire,”<sup>55</sup> terminology that has a precise meaning for Yannaras. Desire is a need whose fulfillment depends on someone else and therefore demands a relation.<sup>56</sup> Thus, relation implies a specific desire for the other that establishes goals as conditions that can be fulfilled through that relation to satiate desire. These desires and the acts appropriate to their fulfillment establish a particular way of existing. To apply this to God,<sup>57</sup> the Father in existing as Father has a desire for the existence of the Son, which must be satiated by the Son who exists as Son by free choice and not as predetermined by the Father, choosing Sonship and thereby both fulfilling the desire of the Father and establishing his own desire for a Father that in turn is fulfilled by the Father. Likewise, the Father in existing as the One who spirates has a desire for the existence of the Spirit,<sup>58</sup> which must be satiated by the Spirit who exists freely as Spirit and creates a reciprocal (fulfilled) desire for the Father.<sup>59</sup> Each member of the Trinity exists as freely offering fulfillment of desire to the other and as desiring the other. These desires necessitate relations that allow for the mode of existence known as “love.”

Here I would add to Yannaras’s proposal. Not only do the relations allow for a goal rooted in desire and for a particular mode of existence fitting to that goal, but also the relations create the possibility of certain acts within the mode of existence undertaken to fulfill the goal. By these acts, the mode of existence can be affirmed through the development of capacities appropriate to the actions taken, thereby reinforcing the relations, or the mode of existence can be countermanded or modified through the development of capacities ill-suited for the fulfillment of the goals on which the relations are built. To put it in concrete terms, the relations between Father, Son, and Spirit, by which God eternally subsists as

love, make possible the concrete acts of the Persons within redemption history. Consequently, the immanent Trinity subsists in love in such a way as to allow the possibility of corresponding actions as the economic Trinity. These actions are merely possible and not necessary to preserve divine aseity and freedom. God is not bound to create or redeem but does so freely. Likewise, God's identity as immanent Trinity is not dependent on his economic actions. That being said, the eternal act whereby God subsists as Trinity has a corresponding eternal decree by which God chooses to subsist as the redeeming God of the Bible. Through the acts of the economic Trinity, distinct possibilities of existence such as being the obedient Son (Heb. 5:8), or the well-pleased Father (Matt. 3:17), or the Spirit sent from the Father (John 14:26) are all made concrete. In such possibilities of existence actualized as a result of concrete actions in redemption history, the eternal nature of the loving persons is hypostatically reified in the history of creation. God exists as love because the possibility of existing as love always exists in the eternal processions and is reinforced in the redemptive missions.

Turning the discussion to human beings, humans have limitations and are largely bound by nature. As creatures, they are not self-created and do not fully choose their mode of existence, instead existing in a given mode as determined by the Creator. However, this is not to say that humans do not exist in relations at all in the way described above. Yannaras grants humans "relative existential freedom."<sup>60</sup> We might classify this in two senses. First, humans have the possibility either of relating to others and to God or of turning inward toward themselves and treating others as objects. Second, human beings have the ability to create new relations through their ability to construct social reality. John Searle's account of social reality is helpful here.

Searle suggests that humans possess a unique capacity for imposing social functions on an object through collective intentionality, thereby constituting a new social reality.<sup>61</sup> These social realities often "are in fact just placeholders for patterns of *activities*."<sup>62</sup> For example, money is a social reality that allows for the possibility of activities associated with exchange. These actions are possible both as a result of constitutive rules that define the function of the social fact<sup>63</sup> and as a consequence of what Searle calls "background," or "the set of nonintentional or preintentional capacities that enable institutional states of function."<sup>64</sup> Thus, by virtue of human abilities to create social facts toward which they relate intentionally through the establishment of constitutive rules, humans establish patterns of activity whereby they develop certain appropriate capacities commensurate with the maintenance of those social facts. Presumably, different social facts as representatives of certain actions and as governed by different constitutive rules develop different varieties of background capacities such that the relations

humans create between themselves and social facts have consequences for their own ontology. This is much akin to, though significantly less substantial than, the relational ontology outlined with respect to the Trinity above. Because many economic realities are social facts,<sup>65</sup> human beings fundamentally can be said to change their ontology based on the sort of social facts that they develop.<sup>66</sup>

Returning now to the image of God, recall that the image of God is an ideal representation of human beings based on a particular concomitant property, which we have defined as relationality. The image functions to establish proper relations between human beings that, in turn, implies that there are incorrect sorts of relations among human beings. If, as I have suggested, different relations can result in the development of different capacities and therefore a different ontology, we can posit that there are (at least) two types of ontology resulting from two varieties of relation. We will call these two types the person and the individual.

This distinction, drawn from John Zizioulas and Vladimir Lossky, is derived from the notion of *person* in Trinitarian theology. Christ as the image of God serves as image because of the concomitant personal mode of existence whereby he perfectly relates to God and man. Thus, a person is one who is conformed to the *imago Christi* in having like relations in a like existence. A person is not reducible to a mind, lest we risk Appolinarianism.<sup>67</sup> Rather, to quote Zizioulas, “The person is the identity born of relationship, and exists only in communion with other persons.”<sup>68</sup> To be a person is to relate to God and to others such that the person desires the other in love but gives the other space to be a person and return that love.<sup>69</sup> To be a person is to transcend the confines of nature and actualize capacities that depend on the other for satiation.<sup>70</sup>

An individual, by contrast, is rooted in a self-orientation that divides nature rather than constituting it through relational desire for the other.<sup>71</sup> The capacities developed by the individual are appropriate for relations in which the other is an object, a “not-I,”<sup>72</sup> rather than a fellow subject. In many ways, this is an Appolinarian view of the human being that reduces to the mind. Stanley Grenz traces the development of this line of thought from Boethius, who claimed that a “person [is] the individual substance of a rational nature,”<sup>73</sup> through the Cartesian thinking substance, into Locke’s idea of the self as consciousness, concluding in a discussion of modern psychology’s emphasis on the personality (in the mind) of the self.<sup>74</sup> When one primarily or exclusively relates to the other through reason, the other becomes reduced to an object identifiable by specific properties discernable to reason. Thus, I will show that the *homo economicus* is an individual.

I recognize that the person/individual distinction has been heavily challenged in recent scholarship. In Zizioulas and Lossky, it is partly based on a flawed assumption that in trinitarian theology the East begins with persons while the

West begins with substance.<sup>75</sup> Furthermore, Zizioulas, in particular, bases his notion of personhood on a flawed reading of Gregory of Nyssa and is perhaps more indebted to modern existential thought.<sup>76</sup> My account of the distinction does not depend on the thought of Gregory of Nyssa nor on a sharp East/West divide. Furthermore, I believe some form of the distinction between person and individual can be validly maintained based on the two different ways of differentiating the Father, Son, and Spirit that emerged during the debates over the *filioque*.<sup>77</sup> Therefore, it is my hope that the controversy surrounding Zizioulas's claims need not immediately disqualify my proposal.

Returning to the discussion of models, recall that economic models serve as representations of an ideal individual based on a particular property. Cournot developed demand curves that represented human preferences as ordered by reason. Walrasian equilibrium analysis linked utility and reason by subsuming the former to the latter. Utility was that which was obtained through rational discernment of the tradeoff between various purchases and sales. Walrasian equilibrium then sought to rightly order relations such that all individuals maximized utility by deriving the appropriate price levels across the market through the use of reason. According to our previous discussion, it should be clear that economic models represent Zizioulas's individual, a human whose identity is constituted in isolation from others and fundamentally equated with the use of reason.<sup>78</sup> When this reason is used to maximize utility, it satisfies what Yannaras calls an urge, a "stimulus provoked by a need"<sup>79</sup> that can be satisfied without any reference to the other. Whereas the person is born of desire as a demand for the other fulfilled in love,<sup>80</sup> the individual is born of an urge that reduces the other to an object. In economic models, relationality is not considered except to make evident the property of the equilibrium price by which all individuals can obtain optimal utility through reason. Even in game theory, relations are subsumed to reason insofar as relations consist solely of using reason to determine the strategies of other players, therefore reducing the other player to an object identical with the proposition (evident to reason) that describes their strategy.

Recall further that models are the basis of making decisions for current action based on past actions and on future expectations. Insofar as models only measure past actions and future expectations according to the predominant variables of utility and rational preference, and insofar as they refer to social facts (to use Searle's terminology), which function as placeholders for reason-based actions of utility satisfaction, they ensure the development of particular background capacities, resulting in a particular ontology. To put things in Yannaras' terminology, the model facilitates a certain form of relation that instantiates a certain mode of existence. This is particularly true whenever models are used to

intentionally shape economic agents, or when that formation is by unintentional performativity. This mode of existence and these background capacities are those appropriate to the individual, though further research will be required to expand on the import of this claim. Having suggested that personhood is the basis of the image of God, it is also evident that, broadly speaking, economic models in their current forms are serving to undermine the image of God. Whether this is a necessary result of modeling, or whether it is only a consequence of most models' underlying presuppositions of a rational agent and of utilitarianism<sup>81</sup> will also require further research.

## Concluding Thoughts on Theological Analysis of Models

Perhaps all of the theoretical analysis above would be clearer if my own approach were distinguished from that of others. Toward that end, let us conclude by considering recent attempts by Edward O'Boyle, the authors of the *Foundations on Economic Personalism* series, and Daniel Bell to analyze the economy and economic modeling from a theological perspective.

Edward O'Boyle's "Requiem for *Homo Economicus*" suggests that the model of human nature as *homo economicus* emerged in an age of script, but that "the electronic stage of human communication altered our awareness,"<sup>82</sup> resulting in both an inevitable reliance on others in economic affairs and in the philosophy of personalism as an intellectual means of explaining this reliance.<sup>83</sup> As such, the (neo)classical *homo economicus* needs to be replaced because it no longer "accurately represents the economic agent in the global economy."<sup>84</sup> O'Boyle advocates a *homo socioeconomicus* that is both a social and an individual being, both self-made and shaped by culture, prone to both utility maximization and gift giving. O'Boyle's analysis is helpful, and he rightly notes areas where the *homo economicus* is a different model of human nature than the *imago dei*.<sup>85</sup> However, I believe his analysis would benefit if he expanded it to consider the four functions of models I have discussed above. If the transition from script to electronic media can help to transform the *homo economicus* into the *homo socioeconomicus*, it seems plausible that a widespread acceptance of a particular economic model and corresponding transformation of economic interactions could also change human nature. Therefore, I believe we must go further than O'Boyle, not only seeking the image of humanity that best *represents* the economic agent but also the model that best relates economic agents to one another in a way that facilitates (and in some cases performatively causes) their growth through time by concretely developing certain capacities.<sup>86</sup>

The *Foundations of Economic Personalism* series lays the foundation of a theologically informed approach to economics. Although the three-volume series raises important questions about praxeology, axiology, and anthropology,<sup>87</sup> the project is too large to survey in great detail here. However, two aspects of the analysis are particularly germane to the subject at hand. First, the series repeatedly gestures to the fact that human nature is not static or constant. The series' analyses of Karol Wojtyła,<sup>88</sup> Martin Buber,<sup>89</sup> and the scholastic tradition,<sup>90</sup> for example, all unfold in such a way as to make it clear that the nature of a specific human can grow, develop, and change throughout the course of human life. Second, it is unfortunate that, though connections with the *imago dei* are made in passing,<sup>91</sup> and though the authors admit that the practice of economics can influence culture,<sup>92</sup> the authors explicitly reject the notion that economists should consider the effect of their discipline on human nature. Using the example of an economist who studies elasticity of demand, Donahue-White et al. admit that an economist "may then make economic predictions about how human nature changes in response to changes in price" but to consider this question would be to "read more into her findings" than the simple historical data included there.<sup>93</sup> Instead, the authors of these works agree that the main contribution of theology to economic modeling is to offer a clearer depiction of human nature than the *homo economicus*,<sup>94</sup> and through this depiction to allow for better predictive accuracy for economic models.<sup>95</sup> Although I readily grant that theology and philosophy can suggest improvements to economic representations of the human being, it seems to me that the series fails to fully integrate its theology and economics insofar as it does not connect the implications of inadequately representing a variable human nature to that nature's variation itself.

Daniel Bell's book, *The Economy of Desire*, challenges us to move beyond the question of whether capitalism works<sup>96</sup> and instead encourages us to ask about the work capitalism does.<sup>97</sup> The question is an important one, and Bell believes that the work of capitalism is to distort human desire. He rightly suggests that Christianity can heal desires,<sup>98</sup> and contrasts the disordered desires of the *homo economicus* with the properly ordered desires of *homo adorens*.<sup>99</sup> As important as Bell's second question is, I would add a third: What precisely is doing the work that capitalism purportedly does? Bell seems to believe that the very structure of the market itself brings about the distortion of desire, but I am not yet convinced. The market as such need not be the culprit of any distorting influence given that models themselves can function in part to organize human beings in such a way that their very nature (and the desires arising from this nature) can be disordered. The sharp contrast that Bell draws between a theological anthropology and the *homo economicus* is primarily a critique of the particular

theories of Milton Friedman, Friedrich Hayek, and Michael Novak.<sup>100</sup> In reading his summary, one wonders whether the ideal solution is a change in economic system, or the rejection of certain Austrian and Chicago school economic models deployed within that system.

Despite their economic and theological differences, O'Boyle, the authors of the *Foundations* series, and Bell all share one thing in common: a neglect of the potentially transformative nature of economic models. The image of God is not simply a matter of right representation but rather a matter of rightly being transformed and renewed so that loving relationships with God and fellow human beings are possible. This article has contended that economic models as they now frequently exist are serving to impede this transformation because they, too, facilitate a transformation in human nature. The very ways that economic models represent the world, the ways that they relate one individual to another, and the resulting changes in human nature that ensue are such that humans are depersonalized; transformed into individuals who are turned inward toward themselves and thus unable to grow into the image of God.

I am under no illusion that all models always have a significant influence in the way described above. Models sometimes “behave badly,” failing to correspond to reality at all, much less causing that external reality to conform to the model.<sup>101</sup> It would be a mistake to believe that any economic model could itself work out our transformation into the image of God. Nevertheless, I consider it equally mistaken to suggest that economic models are simply value neutral means of predicting human action. The ways a society conceives of representing its members, the ideal way in which these members are to relate to one another, and the concrete efforts that are made to order society such that the ideal is met will inevitably transform the human beings within that society, and this transformation can either impede growth into the image of God or it can foster a certain malleability toward that end. I believe that the current approach to economic modeling is a hindrance to our growth in the image of God. Consequently, this is a call to reevaluate our modeling by striving to develop models that represent human beings, relate them to one another through time, and change the reality described by the model in such a way as to “throw off everything that hinders” (Heb. 12:1, NIV) us from developing the capacities that transform us from individuals to persons, from *homo economicus* into the *imago dei*.

## Notes

Scripture quotations are taken from the English Standard Version (ESV) unless otherwise noted.

1. As a theologian, I feel the need to belabor points that economists who read this article might find rather obvious, or even inadequate. Nevertheless, I feel the need to elaborate a basic history of models for the benefit of theologians, like myself, who might be quite unfamiliar with this history. I will rely on the generosity of my economist readers to evaluate the basic contours of my explanation of how models work while overlooking particular smaller details where my historical reconstruction could be clarified, elaborated on, or corrected. I am painfully aware that I am no economist.
2. PierCarlo Nicola, *Mainstream Mathematical Economics in the 20th Century* (New York: Springer, 2000), 3.
3. Leon Walras, *Elements of Pure Economics or The Theory of Social Wealth*, trans. William Jaffé (Homewood, IL: Richard D. Irwin, 1954), 37. Walras explicitly claims that Cournot gave him the idea to use calculus to describe his theories.
4. Nicola, *Mainstream Mathematical Economics*, 8.
5. Augustin Cournot, *Researches into the Mathematical Principles of the Theory of Wealth*, trans. Nathaniel T. Bacon (New York: Augustus M. Kelly, 1960), 2.
6. Cournot, *Researches*, 10.
7. Bernt P. Stigum, *Econometrics and the Philosophy of Economics* (Princeton: Princeton University Press, 2003), 73. Although Stigum introduces the idea of a representative individual in a discussion of choice theories, his insight applies to numerous other models, including the work of Cournot in supply and demand. Steven Rappaport directly applies the notion of a “simplified representation” to supply and demand models. See Steven Rappaport, *Models and Reality in Economics* (Northampton, MA: Edward Elgar, 1998), 123.
8. F. Y. Edgeworth, “On the Application of Mathematics to Political Economy,” in *Papers Relating to Political Economy*, vol. 2 (London: Macmillan, 1925), 275.
9. Edgeworth, “On the Application of Mathematics to Political Economy,” 287. Early economist William Stanley Jevons noted that economists’ “numerical data are more abundant and precise than those possessed by any other science, but that we have not yet known how to employ them. The very abundance of our data is perplexing. There is not a clerk nor a book-keeper in the country who is not engaged in recording numerical facts for the economist.” See W. Stanley Jevons, *The Theory of Political Economy*, 4th ed. (London: Macmillan, 1931), 10–11.

10. For a good account of the marginalist revolution, see Lionel Robbins, *A History of Economic Thought* (Princeton: Princeton University Press, 1998), 287–301.
11. Walras, *Elements of Pure Economics*, 94.
12. Walras, *Elements of Pure Economics*, 119.
13. Walras, *Elements of Pure Economics*, 145.
14. See discussion in Rappaport, *Models and Reality*, 131.
15. For a summary of these developments, see Nicola, *Mainstream Mathematical Economics*, 17–48, 105–14, and 197–216.
16. John von Neumann and Oskar Morgenstern, *Theory of Games and Economic Behavior* (Princeton: Princeton University Press, 1947).
17. Philip Mirowski, “What Were von Neumann and Morgenstern Trying to Accomplish?” in *Toward a History of Game Theory*, ed. E. Roy Weintraub (Durham, NC: Duke University Press, 1992), 136.
18. Von Neumann and Morgenstern, *Theory of Games and Economic Behavior*, 8.
19. Von Neumann and Morgenstern, *Theory of Games and Economic Behavior*, 9.
20. Von Neumann and Morgenstern, *Theory of Games and Economic Behavior*, 31.
21. For a good survey of Nash’s thought and his significance, see Roger B. Myerson, “Nash Equilibrium and the History of Economic Theory,” *Journal of Economic Literature* 37, no. 3 (September 1999): 1067–82.
22. Nicola, *Mainstream Mathematical Economics*, 4.
23. Nicola, *Mainstream Mathematical Economics*, 9.
24. Nicola, *Mainstream Mathematical Economics*, 83.
25. Nicola, *Mainstream Mathematical Economics*, 85.
26. Myerson, “Nash Equilibrium,” 1069.
27. Emiel Maasland and Sander Onderstal, “Going, Going, Gone! A Swift Tour of Auction Theory and Its Applications,” *De Economist* 154, no. 2 (June 2006): 197–249. Maasland and Onderstal explain that firms competing for a job candidate are behaving as if in an auction. Likewise, geographic regions competing for a new factory, for example, often do so through an auction-like offering of tax breaks and tax incentives.
28. For a good survey of mechanism design theory, see Roger B. Myerson, “Perspectives on Mechanism Design in Economic Theory,” *The American Economic Review* 98, no. 3 (June 2008): 586–603.

29. Michel Callon, *The Laws of Markets* (Malden, MA: Blackwell, 1998).
30. Donald Mackenzie, *An Engine, Not a Camera: How Financial Models Shape Markets* (Cambridge, MA: MIT Press, 2006); Donald Mackenzie, "Is Economics Performative? Option Theory and the Construction of Derivatives Markets," *Journal of the History of Economic Thought* 28, no. 1 (March 2006): 29–55; Donald Mackenzi and Yuval Millo, "Constructing a Market, Performing Theory: The Historical Sociology of a Financial Derivatives Exchange," *American Journal of Sociology* 109, no. 1 (July 2003): 107–45.
31. A stock option is a derivative that gives the owner the option of buying or selling a stock or commodity at a given price for a given time.
32. From June to August 1983, prices only departed from the Black-Scholes-Merton model by 0.32 percent. See Mackenzie, *Engine*, 176.
33. Mackenzie, *Engine*, 202.
34. A good survey is found in Anthony A. Hoekema, *Created in God's Image* (Grand Rapids: Eerdmans, 1986), 33–65.
35. Thomas Aquinas, *Summa Theologiae*, vol. 6, trans. Ceslaus Velecky (New York: McGraw-Hill, 1963), I.93.1.
36. Aquinas, *Summa Theologiae*, I.93.2.
37. John of Damascus, *Three Treatises on the Divine Images*, trans. Andrew Louth (Crestwood, NY: St. Vladimir's Seminary Press, 2003), 1.9.
38. Vladimir Lossky, *The Mystical Theology of the Eastern Church* (Crestwood, NY: St. Vladimir's Seminary Press, 1976), 168.
39. By "relationality" I am referring to the potential or actual state of existing in a relation to God and others above and beyond any relation necessarily implied in the connection between Creator and creation. This relationality might be thought of as being interpersonal, liturgical/doxological, or linguistic/noetic. Each variant shares a basic emphasis on relationship.
40. Miroslav Volf, *After Our Likeness* (Grand Rapids: Eerdmans, 1998), 25. "Icon" is derived etymologically from the Greek word for "image," *eikona*.
41. Jürgen Moltmann, *God in Creation* (Minneapolis: Fortress Press, 1993), 216.
42. Gregory of Nazianzus, *Orations*, 31.11.
43. The two best leading alternatives point to the image consisting of reason and of domination of the earth. The former can be deduced from Colossians 3:10, where we are said to be "renewed in knowledge after the image of its creator." The latter from Genesis 1:27–28, where, immediately following the first mention of the

“image of God,” God says that humans will “have dominion.” However, because the Scriptures indicate that God *is* love, it seems more appropriate to suggest that it is (relational) love that is both the fitting property of God and of humans according to the image. Likewise, “knowledge ... will pass away” but “love never ends” (1 Cor. 13:8). A notion of the image of God rooted in relational love is therefore a notion of the image that will persist into eternity.

44. Hilary of Poitiers, *The Trinity*, 11.49, in *The Fathers of the Church*, vol. 25, trans. Stephen McKenna (New York: Fathers of the Church, 1954).
45. Theologians are prone to dig through Trinitarian theology for ideas that can be applicable to virtually any problem. This is a risky habit. The doctrine of the Trinity was not developed with the intent of providing a solution to every problem the theologian will face. However, the doctrine *was* developed in an attempt to establish differentiation and relation within the Godhead, setting the standard for Christian ideas of differentiation and relation. As such, it is functionally related to the discussion at hand. Moreover, we have already suggested a connection between the *imago dei* and the *imago trinitatis*, claiming that the church is able to be the image of God insofar as it reflects the relations among the members of the Trinity. We have also claimed that the “concomitant” (to use Aquinas’s term) that connects Christ with the *imago dei* is the person of Christ, again a Trinitarian concept. As such, further exploration of our topic can justifiably relate to the Trinity without fear of stretching the doctrine beyond its applicability.
46. John D. Zizioulas, *Being as Communion* (Crestwood, NY: St. Vladimir’s Seminary Press, 1985), 17.
47. John D. Zizioulas, *Lectures in Christian Dogmatics*, ed. Douglas Knight (New York: T&T Clark, 2008), 58.
48. Christos Yannaras, *Relational Ontology*, trans. Norman Russell (Brookline, MA: Holy Cross Orthodox Press, 2011), 12.
49. Yannaras, *Relational Ontology*, 12.
50. Yannaras, *Relational Ontology*, 12–13.
51. Yannaras, *Relational Ontology*, 11.
52. Yannaras, *Relational Ontology*, 13.
53. See a very similar discussion in Yannaras, *Relational Ontology*, 53.
54. Yannaras, *Relational Ontology*, 48. The emphasis is Yannaras’s.
55. Yannaras, *Relational Ontology*.
56. Yannaras, *Relational Ontology*, 19–20.

57. Here I begin to differ from Yannaras insofar as he describes these aspects of his discussion as phenomena that are “exclusively human, and wholly particular to humanity” (48). I see no reason why the relations in the Trinity cannot be described in the same way, as I show here.
58. The terminology handed down by the tradition is admittedly more awkward with respect to the Spirit.
59. In this respect, my current description of the Trinity (and Yannaras’s in *Relational Ontology*, 50–53) is superior to Zizioulas’s. Zizioulas makes freedom essential to his understanding of the Godhead but then grants sole power to the Father in self-causation, thereby giving the Father a freedom unavailable to the other persons. This risks subordinationism given Zizioulas’s concept of the Godhead. See the discussion in Aristotle Papanikolaou, *Being with God* (Notre Dame: University of Notre Dame Press, 2006), 150–51.
60. Yannaras, *Relational Ontology*, 15.
61. John R. Searle, *The Construction of Social Reality* (New York: Free Press, 1995), 40–41.
62. Searle, *The Construction of Social Reality*, 57. The emphasis is Searle’s.
63. Searle, *The Construction of Social Reality*, 44.
64. Searle, *The Construction of Social Reality*, 129.
65. This is true on many levels. Stocks, bonds, money, derivatives, and corporations are all examples of social facts, in which a concrete object (often a piece of paper) is given a new social function. Beyond such examples, we might even say that realities like “labor” as a quantifiable and manipulable object of models are in fact social realities where a concrete object (a worker) is given a social function, representing marginal productivity, for example.
66. The theologian ought to be careful to not overstate the case. The economy is not the only influence in shaping human beings. For many it is not even the dominant influence, but, as an influence nonetheless, it is worthy of inspection.
67. Vladimir Lossky, *In the Image and Likeness of God*, ed. John H. Erickson and Thomas E. Bird (Crestwood, NY: St. Vladimir’s Seminary Press, 1985), 120.
68. Zizioulas, *Lectures*, 57.
69. For more discussion of this point, see Colin E. Gunton, “Trinity, Ontology, and Anthropology: Towards a Renewal of the Doctrine of the *Imago Dei*” in *Persons Divine and Human*, ed. Christoph Schwöbel and Colin E. Gunton (Edinburgh: T&T Clark, 1991), 56–69.

70. Papanikolaou offers a nice summary of Lossky and Zizioulas on these points. Papanikolaou, *Being with God*, 132.
71. Lossky, *Mystical Theology*, 123; Lossky, *Image and Likeness*, 107.
72. Lossky, *Image and Likeness*, 106. Lossky depicts this as the opposite stance of the person.
73. Stanley J. Grenz, *The Social God and the Relational Self* (Louisville: Westminster John Knox, 2001), 65.
74. Grenz, *The Social God*, 70–90.
75. Michel Barnes explains that this reading is based on the work of de Régnon, whose claim was based on a desire to develop a schema of distinct historical epochs focused on a central problem. He posited that “scholastic” theology, beginning with Augustine, developed new concerns that shifted the emphasis in Trinitarian theology onto the ontology of God. Such a shift is overstated, especially as the patristic (and contemporary) East’s emphasis on the X from X formula reveals a similar ontological concern. Lossky’s work is in many respects dependent on de Régnon. See Michel René Barnes, “De Régnon Reconsidered,” *Augustinian Studies* 26, no. 2 (1995): 51–79.
76. Turcescu raises three primary objections to Zizioulas’s reading of Gregory of Nyssa. First, Zizioulas claims that personhood was not about capacities but was about uniqueness. Nyssa would disagree, as, in fact, does my account of personhood. Second, Zizioulas wrongly suggests that an individual can be quantified, but persons cannot. Nyssa, in fact, quantified persons, a point irrelevant to my discussion. Third, Zizioulas contrasts Boethius’s description of the individual with Nyssa’s. Turcescu claims Nyssa used the term *individual* similarly, but in my reading the same term is used differently. I am unconvinced as to the validity of this objection. Lucian Turcescu, “‘Person’ Versus ‘Individual,’ and Other Modern Misreadings of Gregory of Nyssa,” in *Rethinking Gregory of Nyssa*, ed. Sarah Coakley (Malden, MA: Blackwell, 2003), 97–109.
77. During the *filioque* debate, some theologians in the West began to use the idea of “relations of opposition” to differentiate among the persons of the Trinity. According to this view, the Father is not the Son because something is predicated of each that could not logically be predicated of both. The Son cannot be his own Father. Likewise, the *filioque* must be valid in order for there to be a relation of opposition between the Son and the Spirit. Relations of opposition suggest that individuation is possible *despite* the simple nature. A specific logically incompatible property differentiates one individual from another, so recognition of this property through reason is all that is needed for differentiation, but this only necessitates an I-it relationship, and only assumes an individual possessing reason to recognize this individuation. The result of this strategy is the individual who, as outlined above, receives being through

opposition and emphasizes reason as its defining attribute. Though this was not a uniform practice in the West, it was problematic nonetheless.

The problems are apparent when we explore the contrasting views of Photios of Constantinople. In Photios' *Mystagogy of the Holy Spirit*, persons are differentiated not in terms of opposition but in terms of a "personal feature" of each, namely, "begotten" and "begat," "spirated" and "spirates" (65). It was not a logically incompatible predicate that differentiated Father, Son, and Spirit but ongoing relations among the three. God is Father and Son because fatherhood implies sonship. God by this account has ontological substance *as a result* of relations, and differentiation is a result of different ongoing modes of relation.

On relations of opposition, see, for example, Anselm of Canterbury, "On the Procession of the Holy Spirit," in *Anselm of Canterbury: The Major Works*, ed. Brian Davies and G. R. Evans (New York: Oxford University Press, 1998), 393; Aquinas, *Summa Theologiae*, I.28.3; The Council of Florence even rooted differences in "opposition of relationship." See H. Denzinger and A. Schönmetzer, *Enchiridion Symbolorum*, 32nd ed. (Freiburg: Herder, 1963), no. 1330. Siecenski claims this was a common argument among scholastics because divine simplicity logically (not temporally) preceded personal differentiation. Edward A. Siecienski, *The Filioque* (New York: Oxford University Press, 2010), 128–29. Photios's thought can be found in Photios, *The Mystagogy of the Holy Spirit*, trans. Joseph P. Farrell (Brookline, MA: Holy Cross Orthodox Press, 1987), 65.

78. In an impressive survey of concepts of individuality in economic theory, John Davis suggests that in post-World War II concepts of economic agents as abstract individuals "rationality and individuality are codefined, not in connection with human behavior but by reference to the logical-mathematical properties of equilibrium analysis." Davis's summary corresponds to the notion of the individual presented above. See John B. Davis, *Individuals and Identity in Economics* (Cambridge: Cambridge University Press, 2011), 8.
79. Yannaras, *Relational Ontology*, 19.
80. Yannaras, *Relational Ontology*, 19–20.
81. Historically, the assumption of utilitarianism is so widespread as to be nearly universal. One example from the early economists who developed mathematical modeling is Stanley Jevons: "The object of economics is to maximize happiness by purchasing pleasure, as it were, at the lowest cost of pain." Jevons claims he has "no hesitation" in accepting utilitarianism as a basis for economic modeling. See Jevons, *The Theory of Political Economy*, 23.
82. Edward J. O'Boyle, "Requiem for *Homo Economicus*," *Journal of Markets & Morality* 10, no. 2 (Fall 2007): 333.
83. O'Boyle, "Requiem for *Homo Economicus*," 329.

84. O'Boyle, "Requiem for *Homo Economicus*," 331.
85. O'Boyle does not explicitly use the terminology of the image of God.
86. O'Boyle does consider the growth of human persons through work (O'Boyle, "Requiem for *Homo Economicus*," 332), but he does not explain how this growth is connected to particular economic models themselves. The reader is inclined to believe that *homo socioeconomicus* better depicts the human being as capable of growth through work, not that models, policies, and institutions built on the *homo socioeconomicus* would better facilitate growth itself. The latter point seems to me the more significant one.
87. These three aspects of economic theory are the foci of analysis for the first, second, and third volumes, respectively. See Gregory R. Beabout, et al. *Beyond Self-Interest: A Personalist Approach to Human Action* (Lanham, MD: Lexington Books, 2002), 2.
88. Wojtyla is summarized as claiming that "every human action also has the effect of objectively forming the person doing the action." Beabout et al., *Beyond Self-Interest*, 57. Similarly, Wojtyla is said to have demonstrated that participation leads to a maturing of the self. See Patricia Donohue-White et al., *Human Nature and the Discipline of Economics: Personalist Anthropology and Economic Methodology* (Lanham, MD: Lexington Books, 2002), 41.
89. Buber is shown to believe that repeated exposure to an I-it relationship actually changes the I as well. See Donohue-White et al., *Human Nature and the Discipline of Economics*, 41.
90. Scholastics are summarized as affirming that humans exist "in flux, somewhere between actualization and potency" such that different potentialities can be actualized so that a person can "become fully what and who he or she was meant to be." See Anthony J. Santelli Jr. et al., *The Free Person and the Free Economy: A Personalist View of Market Economics* (Lanham, MD: Lexington Books, 2002), 51.
91. For example, see Santelli et al., *The Free Person and the Free Economy*, 82.
92. Donohue-White et al., *Human Nature and the Discipline of Economics*, 88.
93. Donohue-White et al., *Human Nature and the Discipline of Economics*, 65. Throughout the series, the effect of economic models and systems on human liberty, human dignity, and human subjectivity (especially alienation) is considered, but potential ramifications on human nature itself are conspicuously missing.
94. Beabout et al., *Beyond Self-Interest*, 3, 32–33, 104; Donohue-White et al., *Human Nature and the Discipline of Economics*, 94, 103; Santelli et al., *The Free Person and the Free Economy*, 77.

95. Beabout et al., *Beyond Self-Interest*, 3, 12, 104; Donohue-White et al., *Human Nature and the Discipline of Economics*, 60, 94.
96. Bell is willing to concede that capitalism works in the sense of producing wealth more effectively than other economic alternatives.
97. Daniel M. Bell Jr., *The Economy of Desire* (Grand Rapids: Baker Academic, 2012), 86.
98. Bell, *The Economy of Desire*, 93.
99. Bell, *The Economy of Desire*, 168.
100. These three men are by far the most cited in Bell's description of the *homo economicus*. See Bell, *The Economy of Desire*, 95–111.
101. The phrase and an introductory description of the limitations of models can be found in Emanuel Derman, *Models. Behaving. Badly*. (New York: Free Press, 2011).