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The economics of sin and redemption*

Purgatory as a market-pull innovation?

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Who foresaw that the beliefs in purgatory and priestly intercession would cause one-half of England to lapse into the hands of the Church?

Herbert Spencer, *The Study of Sociology*

'Tis as hard f'r a rich man to enther th' kingdom iv Hiven as it is f'r a poor man to get out of Purgatory.

Finley Peter Dunne, *Casual Observations*

1. Introduction

The word purgatory suggests an other-worldly experience between heaven and hell. According to Christian teachings, purgatory is a sojourn where the spirits of those who die in a state of grace pay in torment the debt due for their unexpurgated venial sins and for their mortal sins that have been forgiven but not atoned. The doctrine of purgatory, which emerged in the Middle Ages, became part of the Catholic Church's penitential system. Unlike secular jurisprudence, the Church's penitential system extended beyond the temporal world into the afterlife. This system, which evolved over a thousand years, consisted in the thirteenth century of the doctrine of purgatory, the doctrine of the 'treasury of merits' (which included the practice of 'selling' indulgences), and the practice of praying for the faithful

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departed [Pelikan (1984, IV, p. 249)]. The medieval church's penitential system, and its perceived abuses, eventually served as the lightning rod for the Protestant Reformation, especially the attack on church doctrine spearheaded by Martin Luther.

Although medieval church historians treat purgatory as a doctrinal *innovation*, little or no economic analysis has been brought to bear on the subject.[1] This paper analyzes the causes and consequences of institutional change in the medieval church by applying principles from the economics of innovation to a relatively brief episode of Church history: the invention of purgatory. Purgatory is unusual among Church doctrines insofar as it has little if any scriptural basis. According to Le Goff (1984), the doctrine was invented by the Church in the twelfth century. It was rejected by the Protestant Reformation in the sixteenth century, but defended and retained by the Catholic Church. Within Catholicism, it remains uniquely Western, never having been accepted by the Eastern Church.

To write briefly about the doctrine of purgatory, even in its narrow economic channels, without being superficial, requires a strict limitation of the questions to be discussed. We concentrate on the explicit and implicit economic incentives facing the institutional medieval church at a time when its 'market position' was challenged by new and varied institutional rivals. We do not assert that spiritual, moral, and/or political considerations are unimportant to the dynamic evolution of the Roman Catholic Church, nor do we assert that all primary source materials would support our interpretation. However, we believe that certain economic factors, taken together and interpreted within a cohesive analytical framework, provide important and non-trivial insights into the evolution of institutions, whether they be formally characterized as secular, religious, cultural, or economic.[2]

Even though the medieval church may not be considered a firm in the literal sense, there are enough close parallels to suggest that an application of economic theory can provide useful insights into its institutional behavior [Cf., Ekelund, Hébert and Tollison (1989)]. We use Dosi's paradigmatic approach which identifies the main characteristics of the innovative process, the factors that encourage or impede the development of new ideas, the

[1]Anderson (1990) is a prominent exception. He argues that the Church invented purgatory to capitalize on venial sin as a source of revenue and profit. Our argument is that purgatory lowered the price of sin (to the sinner) in much the same way that parole lowers the cost of crime to the criminal. Whereas Anderson's argument fits within a static notion of constant church memberhip, we view the church's invention of purgatory as an attempt to affect revenues through control of its membership in the face of doctrinal competition.

[2]Our analysis is consistent with the literature on the economics of religion, which assumes that people want to increase their expected utility from a happy afterlife [See Azzi and Ehrenberg (1975), Pautler (1977), Ehrenberg (1977), and Redman (1980)]. Unlike standard neoclassical analysis, both the economics of innovation and the economics of religion treat institutions and their behaviors as endogeneous rather than exogenous variables.

processes that determine the selection of particular innovations, and the ultimate effects of new innovations on industrial structure.

Our central thesis is that the Catholic Church faced economic incentives that encouraged its invention of purgatory. The new doctrine provided a means whereby the Church could increase its revenues and simultaneously increase communicant satisfaction. Our analysis is consistent with, and strengthens, the conclusions reached about purgatory by Le Goff (1984), namely that (a) the authors of the doctrine used it as a weapon in the battle against heresy (pp. 168–169); (b) purgatory forms a *system*, along with the distinction between mortal and venial sins, auricular confession, and indulgences (p. 217); and (c) purgatory was an important political force in the hands of the Church, enabling it to extend its power over the faithful into the world beyond death.

2. Opportunity, perception, and entrepreneurship

We begin by investigating the opportunities for ideological innovation in the thirteenth century. From the fall of Rome to the rise of Constantinople, the Catholic Church slowly grew to the position of a dominant firm. The broad ideological divisions were between paganism and Christianity on the one hand, and Judaism and Christianity on the other. Other competing sects within each of these broad divisions remained small, splintered, and mostly ineffectual as a challenge to the large groups. From the seventh to the eleventh centuries in Western Europe, neither the social structure nor the basically monastic character of religious culture fostered widespread dissent; nor did they encourage the range of intellectual inquiry that later spawned the growth of philosophical heresy. From the eleventh century to the fifteenth, however, dissenting movements appeared with greater frequency, attracted more followers, acquired deeper philosophical and theological dimensions, and increasingly occupied the time and mind of the ecclesiastical and civil authorities [Peters (1980, p. 3)]. Although not an exhaustive list, Lambert (1977, pp. 24, 39), identified nineteen heresies in the West during the eleventh century alone, a substantial increase over the previous century, yet fewer than the next.

The medieval Church attempted to deal with heterodoxy chiefly by persuasion or by force. The former urged penitence, reform, exhortation, instruction, and propaganda in converting heretics and preserving the faith. The latter exercised legal coercion against heretics and their supporters. The best-known manifestations of such force include the Albigensian Crusade of 1208–1229, and the Inquisition.

A third avenue of protecting the Church's quasi-monopoly position, generally underemphasized in historical studies, is doctrinal innovation, of which purgatory is the most striking example. Facing a 'critical problem' of the sort described by Rosenberg (1978), i.e., a decline in devotion and the loss of members (and revenue) to rival sects, the medieval church used the doctrine of purgatory as a means to maintain or enlarge its 'market share.'[3]

3. The market for purgatory: Inducements and appropriability

Following Dosi (p. (1141) we may regard the invention of purgatory as a consequence of the interplay between various sorts of market inducements on the one hand, and opportunity and appropriability combinations on the other. *Appropriability* in this context refers to those technical and institutional properties that permit innovations (which become rent-yielding assets) and protect them, to varying degrees, against imitation by rivals.

Consider the idea of purgatory in a market context. Purgatory represents the expiation of sins, a 'forgiveness' of earthly transgressions that readies the soul for entry into heaven. We treat the subject in the abstract, which allows us to ignore the particular *form* of suffering by which redemption is ultimately purchased. The closest analogy to purgatory in the business world is bankruptcy legislation, which like purgatory, 'forgives' past errors and offers the businessman a second chance to 'redeem' himself commercially. As such, bankruptcy laws lower the cost to potential entrepreneurs of participating in economic enterprise. Likewise, purgatory had the effect of giving sinners a 'second chance' to prepare themselves for heaven. Thus, purgatory offered hope, and hope, as modern television evangelism attests, can be big business!

The basic outline of the purgatory doctrine may be set forth briefly as follows. The Church held that sins had to be paid for either in this world or the next. Payment was proportioned to guilt. Grievous offenses (i.e. mortal sins) condemned one to hell if the offender died in an unrepentant state. Purgatory was of no consequence in such cases. However, sinners who repented and received absolution from a priest retained the opportunity to enter heaven, provided they did penance. Before purgatory, sins could be atoned on earth only by good works, i.e., payment rendered directly within one's earthly lifetime. The invention of purgatory essentially introduced a means of 'deferred payment,' which not only allowed atonement to be postponed beyond this life, but also allowed third parties to make payments on behalf of the deceased. The sale of indulgences meant that the Church accepted monetary payments in lieu of good works. The Church recognized,

[3]Pelikan (1984, IV, p. 249) asserts that once the Reformation got underway, the defenders of purgatory actually 'conceded that the system was liable to corruption and *had been invented to compensate for the decline in Christian devotion...*' (emphasis supplied).

and tapped, a ready demand by the faithful for support of their relatives and friends in matters beyond the grave.

With a strong demand base, the doctrine of purgatory gained rapid and steady acceptance over the next two millenia, and as it did the Church was alert to entrepreneurial opportunities. For example, initially the doctrine identified purgatory as a time of punishment during the *entire* interval between death and resurrection. But the issue of time became malleable in the hands of the ecclesiastic hierarchy. An element of calculation was introduced whereby the exact time of deliverance from purgatory depended on the quantity and quality of sins to be atoned, and the intensity of suffrages offered by the living for the dead. This accountancy, in turn, gave new force to the system of indulgences – the practice of selling release time from purgatory – which, according to Lea (1986, III, p. 28), '...led naturally to the mercantile treatment of sin and pardon ... in which the sinner is taught that God keeps an account with him, which is to be paid, it matters little how.'[4] Indulgences also widened consumption alternatives for the faithful by providing the choice of paying for sins by money rather than by deeds.

3.1. Demand considerations

Consider the comparative-statics context of a simple market model. Before purgatory, the 'price' of sin for a Catholic desirous of heaven was the amount of good works imposed by the Church to atone for bad deeds. Freed from its moral baggage, the concept of sin fits the definition of an economic 'good,' namely, an action that produces (illicit) pleasure. Before purgatory, more sin could be 'purchased' if one was willing to pay the price established by the Church, and the price was a specified amount of good works. Until the practice of selling indulgences was joined to the doctrine of purgatory, good works, not money, were the 'currency' of redemption.

Likewise, if virtue is regarded merely as the ransom for sin, it takes on the aspects of an economic 'bad', no matter how 'good' it may be conceived in moral terms. This apparent perversion of customary usage must be imposed because it goes to the heart of the analysis. It underscores the fact that virtue

[4]This kind of 'spiritial accounting system', while making it easier for the Church to raise revenues, imposed certain record-keeping costs on the faithful. The problem was how to keep score. Unsure of the size of one's spiritual debt resulting from sinful behavior, the individual nevertheless received concrete information regarding his/her 'redemption units,' which were defined in the familiar terms of earthly time, e.g. days. Depending on the impact of uncertainty and a person's perference for risk, individuals may have overinsured or underinsured against damnation.

and sin are both complex forms of human behavior that involve varying degrees of 'goods-character' and 'bads-character'.[5] One degree of complexity is imparted by the element of risk that enters into the price of sin, insofar as no one knows the exact time of his or her death. This uncertainty exposes sinners to the prospect of dying in an unrepentant state, thereby being condemned to hell without benefit of remedial 'cleansing' in purgatory. Another degree of complexity consists of the theological differentiation between 'mortal' and 'venial' sins.[6] Theoretically, a mortal sin is an 'all-or-nothing' act, so that attempts to model behavioral choices involving mortal sins must resort to discontinuous functions that are zero-one variable at the act. Choices involving venial sins, however, may be modelled as continuous functions, assuming the properties of the normal demand curve.

Mindful of these obiter dicta, there is every reason to believe that at least venial sin is a normal good for most consumers (except in a few extreme cases, e.g., sainthood). Ceteris paribus, a member of the Church will commit more sin as the 'price' of sin declines; in other words, the demand curve is downward-sloping.[7] Some consumers, moreover, are always at the margin, in the sense that if they perceive the price of sin to be too high they will search for alternative moral codes that attach a lower price to sin. One aspect of Christian life in the Middle Ages is that the availability of alternative moral codes was tightly constrained and more proscribed than it is today: heretics, Jews and Muslims, for example, were treated as 'outsiders,' and officially denied entrance to heaven.

Purgatory had two consequences that tended to lower the price of sin, ceteris paribus. On the one hand, it allowed payment to be deferred to some future, mostly unknown, time and circumstance. If Böhm-Bawerk was right that consumers suffer from persistent myopia about the future, this opportunity to defer payment meant a perceived reduction in the current price of

[5]Bentham (1879, p. 30) recognized long ago that some forms of human action produce mixtures of pleasure and pain (e.g. childbirth). What was important in his felicific calculus was the (aggregate) *net* pleasure or *net* pain. The same considerations must be invoked, at the micro level, in defining good works and sin as either an economic 'good' or an economic 'bad' for a single individual.

[6]The distinction between mortal and venial sins was alluded to in the fifth century by St. Augustine, in the seventh century by St. Eligius, and in the eighth century by St. Bede. But none of this was church doctrine in any official sense. Le Goff (1984, pp. 107, 217) insists that the doctrine emerged in the twelfth century as a response to heretical challenges, and that purgatory comprises a doctrinal *system*, along with oral confession, the mortal-venial distinction, and indulgences.

[7]The medieval theologian, Segneri, recognized the economic aspects of sin by comparing penance to 'a tax laid by Christ on transgression, similar to the customs duty levied on importations....' [Lea (1896, II, p. 424)]. Lea (1896, II, p. 415) added that the practice of selling indulgences fostered 'the idea that salvation was a sort of merchandise to be bought and sold, and that sin was a luxury to be safely indulged in by those who could afford to pay for pardon.' Anderson (1990, pp. 24–25), however, argues that while the invention of purgatory lowered the price of sin in general, it *increased* the price of venial sin.

sin. On the other hand, the Church's use of indulgences, the value of which depended almost entirely on purgatory, had the effect of lowering transaction costs to those sinners with high (time) opportunity costs. The time cost involved in doing good works could be the same for two people with the same guilt, but the full cost would be higher for the one whose time was more valuable.

An obvious paradox posed by this kind of analysis is difficult to resolve on purely moral grounds. Why would the Church introduce a doctrinal innovation that encouraged sin? Here economics points toward an answer: the Church wanted to increase its membership and/or prevent existing members from defecting to alternative religions that offered strong assurances of salvation at a lower price. In other words, purgatory can be viewed as a market response to doctrinal competition, at least in part. In the vernacular of economics, there is strong evidence that purgatory constitutes a 'market-pull' rather than a 'technology-push' innovation.[8]

It has been observed that innovations, when they arise, come in clusters. This 'cluster effect' was especially obtrusive in the doctrinal activity of the medieval church during the thirteenth century. No less than three interrelated innovations emerged within a short time span – purgatory, indulgences and auricular confession.

The question of whether purgatory singularly and causatively induced the requirement of auricular confession, or vice versa, is difficult to resolve. Murray (1981, p. 279) notes that before the thirteenth century, outside of monasteries and except as immediate preparation for death, the practice of confession was far from universal. Auricular confession was not required as an annual duty until the Fourth Lateran Council in 1215, an event coterminous with the centralization of power over indulgences in the hands of the papacy under Innocent III. The theology of penance also changed at this time, shifting from a subjective to an objective criterion. Whereas before mere contrition was sufficient, after the Fourth Lateran Council the specific grant of absolution by a priest was required. This objection was the Church's way of providing a more solid guarantee of salvation. Purely subjective standards of contrition after all, might not provide sufficient information to illiterates regarding whether or not they would be saved. Insofar as the medieval world was basically authoritarian, members of the church most likely were solicitous of someone in authority validating their contritions.

Le Goff (1984) places the birth of purgatory in the twelfth century. So the idea already had currency while the innovative changes in confession and indulgences were emerging. Originally, indulgences were merely the substitution of pious works for part or all of the penance prescribed in the

[8]For a discussion of the differences between these two, see Kamien and Schwartz (1982, pp. 33–36).

confessional. An entirely new conception of indulgences arose in the thirteenth century when theologians developed the idea of a 'treasure of merits,' i.e., the belief that the passion of Christ and the superabundant merits of the saints gave the Church an inexhaustible treasure that it could apply at will to satisfy sins by offering God a quid pro quo. Thus good works became commodities capable of being transferred between traders. A further feature was that good works became 'public goods', because the Church held that communication of good works to others does not diminish their utility to the performer. The doctrine of the treasure also contributed to the concentration of authority over indulgences in the hands of the Vatican. Obviously the right to disburse 'funds' from the 'treasure' had to be closely guarded.

The entrance of the papacy into the market for indulgences may be taken as indirect evidence that the practice was lucrative. Insofar as the doctrine of purgatory emerged as a weapon against heresy, it is not surprising that the Crusades provided the initial backdrop for the commercialization of indulgences. In the first year of his pontificate, Pope Clement III (1084–1100) urged his bishops to collect money for the Crusades and authorized them to grant remission of sins to contributors in proportion to 'the quality of the person and the quantity of the subvention' [Lunt (1934, II, pp. 486–487)].[9] By the end of the twelfth century the custom of selling indulgences in connection with the Crusades was well established, the market having developed to the point that those who took vows to fight could redeem their vows by money payments, which elicited the same indulgence as the pledge to fight. Thus, Lunt (1934, I, p. 118) observed that 'the grants of indulgences to crusaders helped to develop and stimulate the financially profitable traffic in the redemption of crusaders' vows.'

It is difficult to draw definitive conclusions about the growth of revenues from the sale of indulgences because most of the receipts do not appear to have routinely passed through the papal treasury until the fourteenth century. Lunt (1934, I, p. 121) maintains that the volume of receipts from crusading indulgences increased notably in the fifteenth century, which was the approximate time that Pope Eugene IV (1431–1447) began the practice of profit-sharing between the papacy and the local churches. The share of indulgence revenue taken by the pope was commonly one-third or one-half, although there were instances of as much as two-thirds beng diverted to papal coffers [Lunt (1934, I, p. 114)].

As we noted earlier, the Crusades were coercive actions against heretics and their supporters. Indulgences which produced the most revenue for the medieval church were issued in connection with jubilees, which were special Christian celebrations spaced one hundred years apart. During the jubilee of

[9]Ekelund, Hébert and Tollison (1989) have shown that the pope also used the doctrine of usury to further the aim of increasing participation in the Crusades.

1300, Pope Boniface VIII (1294–1303) began the practice of issuing a plenary indulgence (i.e., complete remission of sins) to those pilgrims who visited Rome a specified number of times during the jubilee year. Although there was no direct fee for this indulgence, visiting pilgrims left large voluntary offerings at Vatican churches [Lea (1896, III, p. 205)]. The Vatican was astute enough to recognize a financial windfall. Merchants and politicians were also quick to recognize the beneficial effects of the jubilee, and in an early example of the 'convention city' effect, a Roman delegation successfully petitioned Pope Clement VI (1342–1352), the fourth Avignon Pope, to shorten the interval between jubilees. The pope obliged by cutting the interval between jubilees in half, and according to Kelly (1986, p. 219) the jubilee of 1350 produced large economic benefits for Rome.[10] Thereafter the voluntary offerings left by pilgrims visiting Rome provided a rich, occasional source of direct income to the papacy and indirect income to the city of Rome.

Under these circumstances, public-choice theory predicts that city fathers outside of Rome would have lobbied the pope to extend the benefits of the jubilee to their cities as well. Historical records do not permit the actual documentation of lobbying efforts, but it is a matter of record that Pope Boniface IX (1389–1404) extended the privileges of jubilees to cities (and countries) beyond Rome by making indulgences obtainable for the cost of the journey plus the amount the pilgrim might have offered at the Roman shrines [Lunt (1962, p. 468)].[11] Since Boniface IX was residing in Rome and presumably facing strong political pressures from Roman aristocrats and merchants, the relative political demands should have favored keeping the money at home. However, if pilgrims had difficulty getting to Rome, dispersion of benefits provided additional sources of revenue that would otherwise be lost. Thus it was that the new rules allowed seekers of grace who were 'truly penitent and confessed' to be granted an indulgence in return for a certain number of visitations to specified neighborhood churches.[12]

Over time, the interval between jubilees was gradually shortened to twenty-five years or less; the amount which the recipient of the indulgence had to pay was reduced from the whole cost of a journey to Rome to about one-fourth as much; and profits were divided between local churches and the

[10]It is interesting to note that Rome returned to the control of the Avignon Pope in exchange for receiving the 1350 jubilee. The Roman merchants and politicians were undoubtedly sensitive to the (Keynesian) multiplier effects of visitors' spending in their city.

[11]This event contradicts Stiglier's theory of regulation, which asserts that concentrated groups (Romans) would dominate over dispersed groups [Stigler (1971)]. Because these events occurred during the Papal Schism, an alternative explanation for the extension of jubilees may be the 'chaos and insecurity of the times.'

[12]Kelly (1986, p. 231) writes of Boniface IX: 'Under him the papal conferring of benefices ... became a matter of barefaced marketing, with ... offices sold for cash down to the highest bidder...; the commercial possibilities of indulgences were exploited to the full....'

papacy.[13] Pope Clement VII attempted to build additional demand for jubilee indulgences by suspending all plenary indulgences administered locally the year before the jubilee of 1525 [Lunt (1962, pp. 465; 498)].[14]

3.2. Supply considerations

Churches commonly 'sell' a variety of 'products' to their members, including solace in this life, an array of 'social services', and most importantly for the current analysis, assurances of eternal salvation for those who adhere to specified codes of moral behavior. From a customer viewpoint, purgatory was valuable because it provided a 'second chance' to be saved, even if one died in an unrepentant state. It could be expected, therefore, that purgatory would have a positive impact upon church membership, religious participation, and church revenues.[15] Given the level of anticipated demand for purgatory, therefore, was it reasonable to expect an economic benefit net of costs?

Many writers have drawn a connection between a firm's size and its ability to successfully marshall resources needed to develop and introduce new innovations. In this connection, the medieval church had a distinct advantage, because it dwarfed other religions in terms of wealth and power. Since the inventors in this case were church theologians (i.e., the Scholastics), it is also important to note that the Church had invested heavily over the centuries in building a *knowledge base* capable of supporting doctrinal innovations.[16] In other words, it could draw on information inputs, specific knowledge, and human capabilities, at a relatively low cost.

[13]This profit-sharing itself was probably an effort by the papacy to keep agency problems under control. As Lea (1896, III, p. 13) recognized, once the utility of indulgences to the papacy had been demonstrated, 'it was part of wisdom to prevent competition, which might destroy their value, if every bishop and every abbot in Christendom was authorized to issue them for the benefit of his cathedral or his monastery.'

[14]Lunt (1934, I, pp. 124–125) notes that jubilee indulgences were particularly prized by the faithful because it was commonly believed that they 'provided pardon of the guilt as well as the penance, a belief which was sometimes fostered by the agents who administered the indulgences locally. The consequence was a ready sale and a large revenue for the papacy.'

[15]Commenting on the extension of indulgences to the dead, Lea (1896, III, p. 319) underscored the institutional incentive for the Church to become a product innovator: '... the struggling Church would have had slender chance of securing converts if it had disclaimed all power to succor the dead and had admitted that it abandoned them to the justice of God, while proclaiming under divine sanction a code of morality far more rigid than that accepted by the easy-going gentile world, and insisting on the infinite disparity between the present and future life.'

[16]Given its institutional makeup, the medieval church was in fact a kind of early think-tank, perhaps the first formal R&D organization. Through its network of teachers and philosophers it was actively involved in building a doctrinal *knowledge base*, which, ironically, drew freely from pagan Greek philosophers as a fertile source of ideas.

In addition to its production and distribution cost advantages, the Catholic Church operated within a legal and institutional framework that allowed it to protect its doctrine as a rent-yielding asset. The medieval church held wide sway over the minds and fortunes of Christians, a fact reflected in the close connecton between civil and ecclesiastical governments [Southern (1970, p. 24)]. Yet Christianity was, and is, more of a trans-national force than a trans-cultural one. Within the confines of Western Christendom, appropriability conditions favored the medieval church. Outside of those confines, it was more difficult for the Church to appropriate economic rents.

3.3. Innovational externalities

Technological innovations typically involve 'public' and 'private' aspects, and the appropriability of the economic returns from innovation clearly depend on the latter. We have already noted how the synergy between purgatory and the doctrine of 'treasure' produced positive externalities for the faithful. It is possible that this doctrinal synergy generated a structured set of innovational externalities which the Roman Church attempted to internalize as a collective asset, one that became institution-specific, and, as such, shaped the incentives and constraints to further innovations that could be expected to arise from a given set of economic signals. In other words, a major innovational step like purgatory, when linked to other doctrinal alterations like confession and indulgences, may have set the innovational trajectory of the Catholic Church from that point onward, establishing a kind of 'doctrinal irreversibility' that could be expected to constrain future innovational patterns in the face of economic and/or doctrinal rivalry. Thus, when confronted with the challenge of the Protestant Reformation, the Catholic Church found its ideological maneuverability severely constrained. For example, Pelikan (1984, IV, pp. 274ff) notes how the Reformation forced the Catholic Church from a 'pluralist' to a 'particularist' position on key doctrinal issues, including the nature and locus of authority, the doctrine of justification, and the doctrine of original sin.

Ultimately, the issue of whether purgatory is a technological improvement or a demand improvement is problematical. On the one hand, it might be regarded as a technological improvement from the standpoint of a large, well-organized priesthood acting as intercessionary agents in the salvation industry. On the other hand, the absence of purgatory from most Christian religions, as well as from Islam, which also has a well-defined, but more materialistic, heaven and hell, suggests that purgatory was a demand improvement within the context of a fairly well-developed penitential system. Regardless of its categorical status, however, purgatory can be treated as a unique *innovation* because heterogeneous religions, like heterogeneous goods, are most susceptible to specific improvements.

4. Effects of innovation on 'industry' structure

In this section we attempt to distinguish between the factors that *induce, stimulate*, or *constrain* ideological change from the *outcomes* of the changes themselves [Dosi (1988, p. 1145)]. Specifically, we examine the effects of purgatory on 'industry' structure, taking it as axiomatic that industrial performance and industrial structure are endogenous to the process of innovation, imitation, and competition.

As a supplier of ideology and other intangible products, the medieval church enjoyed certain monopoly advantages, including market dominance, 'brand loyalty', the ability to segment markets by different demands, and institutional barriers that prevented arbitrage and retrading. In sum, the conditions were ripe for engaging in price discrimination, an opportunity given new vent by the introduction of purgatory. Given the somewhat ambiguous distinction between mortal and and venial sins (intention, not action, was the controlling factor), what the faithful required was a method of discerning between the two, and a means of obtaining individual guidance on appropriate penances. The confessional at once provided this service and gave priests a unique device for discerning levels of individual demand among penitents. In any specific locality or parish, especially in the agrarian setting of medieval Europe, most parishoners were known to the priests [Le Roy Ladurie (1978)]. Murray (1981, pp. 303–304) notes that confessors commonly had long-term associations with their penitents, which gave them intimate experiences of other people's lives. This knowledge included the income profile of each penitent and other pertinent characteristics regarding wealth and tastes. Consequently, penances in the form of direct, charitable donations and/or the sale of indulgences could be meted out by the priest-confessor in close accord with the individual's demand for salvation. In these circumstances, markets were more or less naturally divided because arbitrage and retrading were impossible. Moreover, the secrecy of the confessional precluded tariff schedules from being published.

Papal bulls dealing with indulgences allowed for differential pricing, broadly conceived. Vatican financial records provide surprising detail. There is one recorded instance of a three-tier pricing system, whereby the highest price was paid by the rich, the next highest by those of modest means, and the lowest by everyone else [Lunt (1962, p. 494)]. In Scotland during the jubilee of 1475, a five-tier pricing schedule was imposed [Lunt (1962, p. 586)]. By far the most elaborate recorded differential pricing scheme was drawn up by Jasper Ponce, the papal agent to England during the pontificate of Alexander VI (1492–1503). Ponce's schedule of 'gifts' for a plenary indulgence included three categories of givers (i.e., laymen owning substantial *real* property; laymen owning substantial *movable* property; and *clergy* owning substantial real property). Each category contained four to seven separate tariffs based on discrete ranges of annual personal income [Lunt (1962, pp. 603–604)].

It follows that the doctrine of purgatory provided the Church an opportunity to enhance its revenues and its power by offering differential prices for assurances of salvation to different demanders. The fact that different demands existed among occupational groups is clearly established by Le Goff (1984, p. 328), who notes that the doctrine of purgatory had special appeal to the members of certain professions who were generally held in contempt by society, e.g. userers, barber-surgeons, and so forth.

During the Protestant Reformation, Luther made purgatory a central aspect of his brief against the Church. Most especially, Luther denounced the Church's revenue-maximizing efforts involving the sale of indulgences, eventually choosing to abandon altogether the belief in a third world between heaven and hell. Other nascent sects who raised similar challenges to the Church's doctrinal authority followed suit on this issue. Protestantism came to distinguish itself from Catholicism by eliminating the 'middle man.' In Protestant religions the sinner is required to deal directly with his God; he must be guided by individual conscience, as long as life lasts, in making the repentance and self-improvement that may win justice from his Creator. Protestantism in general comprises a set of beliefs that is less authoritarian than Catholicism.

The analysis presented here provides some useful insights into why Luther, Calvin, Zwingli, and other reformers returned to the all-or-nothing circumstances of heaven and hell. Over time, the Church employed increasingly intricate price-discriminatory schemes in its sale of indulgences, thereby moving (in the limit) closer and closer to first-degree price discrimination, and capturing most, if not all, consumers' surplus. Faced with an increase in the full price salvation, certain (Roman Catholic) demanders were likely pushed to the margin of purchase. Luther's innovations provided an all-or-none offer of the afterlife with a still lower entry price (i.e., salvation was determined by faith alone). The proof of this is that Luther successfully used the financial abuses of the Church regarding indulgences as a handle to gain entry into the market. In the end, Luther and other religious entrepreneurs gained customers by offering consumption choices that moved some individuals to higher indifference curves by changing the budget constraint. This seems consistent with Pautler's (1977) results that church membership responds to changes in relative price. Ultimately, the Catholic Church's shortsighted attempts to milk consumers' surplus from the faithful were self-defeating, and eventually purgatory, indulgences, and confession lost force in religious markets subject to considerable competition, e.g., in the United States.

Another factor in the success of the Reformation may have been the production technology of religion. Luther may have been justified in claiming that the complex Catholic religion was no longer believable. After all, if promises were all that mattered in religion, the Reverend Ike would dominate the U.S. religious market. Other technical and cultural factors obviously shaped the Reformation, too. Thus, the invention of printing, the spread of literacy, the growth of self-consciousness that accompanied the Renaissance, and various other elements of economic and cultural evolution impinge upon a general theory of doctrinal change.

On the one hand, an economic interpretation of the invention of purgatory supplements historical explanations of purgatory and the Protestant Reformation. On the other hand, applying the tools of contemporary economics to historical processes suggests that, at least in part, the dogma and doctrine of the medieval Church was endogenous to the operation of medieval society. Church doctrines, such as purgatory and usury, were possibly as much a part of the interplay between market forces as they were the result of exogenous Church pronouncements that claimed to define the spiritual and moral interests of the faithful. By the same token, the Protestant Reformation cannot be completely explained by its environmental setting. It should be viewed in part as the outcome of endogenous, economically inspired manipulations of Church doctrine in the centuries before the full-scale emergence of competitive religious markets.

5. Conclusion

This paper focuses on innovation as a key element in the episodic behavior of what is usually considered a noneconomic institution, the medieval church. By adopting the basic premise of the economics of religion and interpreting the stylized facts of medieval church history within the paradigm of the economics of innovation, we have established an economic rationale for the invention of purgatory. This rationale is not merely consistent with the judgment of church historians, it also points toward a general theory of why institutions and doctrines emerge in the first place, and how they change over time.

References

Anderson, Gary M., 1990, Invest now for your (eternal) retirement: The economics of the medieval Christian afterlife, unpublished manuscript (California State University, Northbridge, CA).

Azzi, Corry and Ronald Ehrenberg, 1975, Household allocation of time and church attendance, Journal of Political Economy 83, 27–56.

Bentham, Jeremy, 1879, An introduction to the principles of morals and legislation (Clarendon Press, Oxford) [1790].
Dosi, Giovanni, 1988, Sources, procedures, and microeconomic effects of innovation, Journal of Economic Literature 26, 1120–1171.
Dosi, Giovanni, Christopher Freeman, Richard Nelson, Gerald Silverberg and Luc Soete, eds., 1988, Technical change and economic theory (Columbia University Press, New York).
Ehrenberg, Ronald G., 1977, Household allocation of time and religiosity: Replication and extension, Journal of Political Economy 85, 415–423.
Ekelund, Robert B., Jr., Robert F. Hébert and Robert D. Tollison, 1989, An economic model of the medieval church: Usury as a form of rent seeking, Journal of Law, Economics, and Organization 5, 307–331.
Ekelund, Robert B., Jr. and Robert D. Tollison, 1981, Mercantilism as a rent-seeking society (Texas A&M University Press, College Station, TX).
Kamien, Morton I. and Nancy L. Schwartz, 1982, Market structure and innovation (Cambridge University Press, Cambridge).
Kelly, J.N.D., 1986, The Oxford dictionary of popes (Oxford University Press, New York).
Lambert, Macolm, 1977, Medieval heresy (Holms & Meir, New York).
Lea, H.C., 1896, A history of auricular confession and indulgences in the latin church, 3 vols. (Lea Brothers & Company, Philadelphia, PA).
Le Goff, Jacques, 1984, The birth of purgatory, trans. A. Goldhammer (University of Chicago Press, Chicago, IL).
Le Roy Ladurie, Emmanuel, 1978, Montaillou: The promised land of error (George Braziller, New York).
Lunt, W.E., 1934, Papal revenues in the middle ages, 2 vols. (Columbia University Press, New York).
Lunt, W.E., 1962, Financial relations of the papacy with England, 1327–1534 (The Medieval Academy of America, Cambridge, MA).
Murray, A., 1981, Confession as a historical source in the 13th century, in: The writing of history in the middle ages, ed., R.H.C. Davis and J.M. Wallace-Hadrill (Clarendon Press, Oxford).
Nelson, Richard R. and Sidney G. Winter, 1982, An evolutionary theory of economic change (Belknap Press of Harvard University, Cambridge, MA).
North, Douglass C., 1981, Structure and change in economic history (W.W. Norton, New York).
Pautler, Paul A., 1977, Religion and relative prices, Atlantic Economic Journal 5, 69–73.
Pelikan, Jaroslav, 1984, The Christian tradition, volume 4: Reformation of church and dogma (1300–1700) (University of Chicago Press, Chicago, IL).
Peters, Edward, ed., 1980, Heresy and authority in medieval Europe (University of Pennsylvania Press, Phaledelphia, PA).
Redman, Barbara J., 1980, An economic analysis of religious choice, Review of Religious Research 21, 330–342.
Rosenberg, Nathan, 1978, Perspectives in technology (Cambridge University Press, London).
Southern, Richard W., 1970, Western society and the church in the middle ages (Penguin Books, Baltimore, MD).
Stigler, George J., 1971, The theory of economic regulation, The Bell Journal of Economics and Management Science 2, 3–21.