

SELVAGGI REVISITED: TRANSUBSTANTIATION AND CONTEMPORARY SCIENCE

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THE RELATIONSHIP between contemporary science and Christian dogmatic statements is one of the most neglected areas of contemporary theological thinking. One can only be amazed at the nearly complete silence of the theologian when confronted with the revolution in physics of the past fifty years. One looks nearly in vain, in contemporary discussions about Christology, creation, the Incarnation, and other basic Christian doctrines, for references to current conceptions within modern physics of what constitutes the "real world," what is at the heart of things-in-themselves. Much of the sterility of contemporary theology can be attributed to the fact that theologians have either completely ignored advances in the physical sciences as somehow having nothing to do with them, or have been content to pick up a smattering of relativity theory from a popular magazine, allude to it in a most superficial manner in discussing a particular Christian doctrine, and let it go at that. A few, however, have attempted in their own way to come to grips with the rather confusing and awesome picture of reality that is being spun out progressively in modern physics. One of these is Filippo Selvaggi, S.J., who was one of the leading protagonists in a debate on transubstantiation which began in the late forties and went on to the sixties. The debate itself and Selvaggi's name are not well known, as the debate appeared in papers in less than widely-read journals. But excellent summaries of the debates appeared in this periodical, the first in 1951 by J. T. Clark,¹ who reported the first part of the debate, and the second by Cyril Vollert,² who extended coverage of the debate to 1960.

It is not merely in nostalgia that I wish to re-examine this somewhat obscure debate on transubstantiation, nor to engage in esoteric theological showmanship. The issues at stake were important, and they are still important. I think it urgent that these issues be again raised in the context of the current debate over transubstantiation, since the issues at stake in the Selvaggi debate are not being fully represented in post-Vatican II Eucharistic theology, which is associated especially with Schillebeeckx in Holland and Powers in the United States.

¹ J. T. Clark, S.J., "Physics, Philosophy, Transubstantiation, Theology," *THEOLOGICAL STUDIES* 12 (1951) 24-51.

² C. Vollert, S.J., "The Eucharist: Controversy on Transubstantiation," *THEOLOGICAL STUDIES* 22 (1961) 391-425.

SELVAGGI

The debate begins with an article by Selvaggi in 1949,³ in which he puts forth the view that modern physics does indeed force the theologian to take a look at transubstantiation and to be at least willing to talk about this doctrine in the categories and thought-forms of modern physics. Having laid down this basic principle—a principle which should not be taken for granted and has far-reaching implications—Selvaggi proceeds to carry out a remythologizing of the doctrine of transubstantiation in terms of modern physical conceptions of reality. If contemporary physicists see things as made up of molecules, atoms, electrons, mesons, etc., the theologian must explain what he means by transubstantiation in terms of the same molecules, atoms, etc. Selvaggi proceeds to do just that. He lays the ground by pointing out that “bread” can be thought of, and most often is thought of, in a simple, popular way, which understands it as that which one eats at table, as that which looks like, smells like, and tastes like what we call bread. It is this popular conception of bread which is most concerned with the doctrine of transubstantiation.

But in this scientific age one cannot stop there. Selvaggi gives us a chemical analysis of ordinary bread, listing the percentages of starch, sugar, etc., and then breaking these down into percentages of the more basic building blocks of atoms: so much carbon, so much hydrogen, so much nitrogen. But science can now go even further and break atoms down into electrons and protons and neutrons, not to mention positrons, mesons, and the many newly discovered particles. Beyond this point, however, it seems we can go no further; and it is this picture of bread—of vast space nearly empty except for a good number of various tiny particles—that the scientist will present to us as his picture of bread. Now when the theologian talks of the transubstantiation of the bread—of the total conversion of the substance of the bread into the substance of the body of Christ—he must be able to explain this to the scientist who insists on picturing bread in terms of atoms and mesons. To refuse to take up this challenge is to refuse the task of theology itself. Selvaggi’s method of attack is straightforward and robustly realistic, much in the style of Radbertus in the ninth century. If, claims Selvaggi, bread is now to be thought of as consisting of atoms and molecules, instead of as a sole entity, then one must say that transubstantiation involves the conversion of the substance of each of the atoms, molecules, and mesons into the substance of the body of Christ. This is Selvaggi’s basic position, which

³F. Selvaggi, S.J., “Il concetto di sostanza nel dogma eucaristico in relazione alla fisica moderna,” *Gregorianum* 30 (1949) 17–45.

he upheld in a series of articles written over the next decade.⁴

COLOMBO

Selvaggi's view was challenged by Msgr. Carlo Colombo in a series of articles in the Milanese journal *Scuola cattolica*.⁵ Colombo takes Selvaggi to task for attempting to do the impossible: to "explain" transubstantiation in terms of contemporary science. He demonstrates how others since Descartes have made this attempt and have failed, for the physics upon which their explanation of transubstantiation was based had changed with new advances in science. Why Selvaggi's view is both impossible and improper is because, according to Colombo, in transubstantiation we are dealing with a purely metaphysical change as *opposed* to a physical change. The reality of the substance of the bread, as well as of the body of Christ, is a metaphysical reality and as such is completely beyond the scope of the physical scientist, who is concerned with the accidental character, or species, of things. The scientist concerns himself with measurements, with tracking electrons, with infrared spectroscopy. He is not concerned with ontological reality but merely phenomenal, i.e., accidental, reality. Thus the conversion of the bread and wine to the body and blood of Christ has nothing to do with the "reality" talked about by the physicist, for metaphysical reality and physical reality are quite distinct and irreducible to each other.

These, then, are the positions adopted by the two main protagonists in this Eucharistic debate. Two main issues are involved in these positions. The first is whether there is a continuity between science and metaphysics, or, more specifically, whether the reality of the bread and wine as described by the physicist is the same reality as described by the metaphysical terminology used in the definition of transubstantiation at Trent.⁶ The second issue is whether transubstantiation is concerned with things of metaphysics only or is concerned with things of physics as well. The two issues overlap but they are distinct. One can compare this debate with that between Radbertus and Ratramnus in the ninth century, or even with the Berengarian controversy of the eleventh century. Selvaggi can be seen in the role of Paschasius Radbertus, the thoroughgoing and somewhat naive realist, who has no compunctions

⁴ F. Selvaggi, S.J., "Realtà fisica e sostanza sensibile nella dottrina eucaristica," *Gregorianum* 37 (1956) 16-33; "Ancora intorno ai concetti di 'sostanza sensibile' e 'realtà fisica,'" *Gregorianum* 38 (1957) 503-14.

⁵ C. Colombo, "Teologia, filosofia, e fisica nella dottrina della transustanziazione," *Scuola cattolica* 83 (1955) 89-124. Later articles are: "Ancora sulla dottrina della transustanziazione e la fisica moderna," *ibid.* 84 (1956) 263-88; "Bilancio provvisorio di una discussione eucaristica," *ibid.* 88 (1960) 23-55.

⁶ By metaphysical terminology is meant mainly the use of such terms as "substance."

about talking of the Eucharistic body of Christ in what to some people seemed grossly physical terms. Colombo is seen as Ratramnus, more careful, very concerned to guard against a grossly physical understanding of the Eucharistic body of Christ in his emphasizing of the distinction between the physical and the spiritual. In the eleventh century it is Lanfranc, and the perhaps undeservedly infamous Cardinal Humbert, who defend Eucharistic realism in physical terms against the spiritualizing tendencies of Berengar, who made the same sharp division between body and spirit, between truth and reality, as Colombo makes between metaphysical and physical reality. The parallels between this recent Eucharistic debate and those of the Middle Ages are striking and show that what often pass for new problems and new approaches are really rediscoveries of old problems and old approaches under different guises, employing different terminologies and world views.

Selvaggi's main concern is to defend the reality of the Eucharistic conversion. He claims that, to do this, one must be ready to use the insights of contemporary physics to shed further light on the meaning of transubstantiation. And if contemporary physics sees bread and wine in terms of many chemical substances, then the theologian must accept this view, at least as one side of the total reality.⁷ The theologian, however, must not fall into the trap of gross empiricism and pretend that reality is merely what the scientist says it is. This would be incompatible with the doctrine of transubstantiation. But he must recognize that reality is *one*, the reality of the bread is *one*, and as such must include that picture drawn for us by the physicist. Colombo, while allowing that physics may have something to say about bread and wine on a merely physical scale, claims it has really nothing to say about change of substance. In taking this stance, he seems to be trying to guard against any dependence of transubstantiation on ephemeral physical theories. This debate went on for several years, and in reading the later articles we can see that once the initial positions were adopted, there was little change on either side, outside of some refinements. Since it is Selvaggi's particular concern that I find completely lacking in contemporary Eucharistic theology, I shall examine it more closely.

One is likely to be put off in Selvaggi's articles by their unabashed physicalism, by their talk of such profane things as electrons in what is a discussion of the Eucharist. Perhaps some might even have the same

⁷ Both Selvaggi and Colombo talk a great deal of these "chemical substances" without defining exactly what they are. I suspect that "chemical substance" is being used in a rather loose way as meaning that which the chemist recognizes as the basic building block of a particular compound. This use would not be employed by any chemist today, who would attribute no "substantial" properties to molecules or even atoms. Neither Selvaggi nor Colombo has correctly grasped modern physical theories of matter.

violent reaction to Selvaggi's articles as most have to Humbert's confession of 1079 which Berengar was forced to sign. But Selvaggi's concern was genuine: to preserve the role of the physical as an integral part of the Eucharistic conversion. In doing so he is but following patristic tradition. One need not give a detailed analysis of patristic Eucharistic thought to show that the Fathers, while they did not have a clear-cut Eucharistic theology, certainly did not think of the Real Presence in merely metaphysical terms. Nor did they imagine that the conversion involved only a metaphysical abstraction. One only has to read chapter 39 of Gregory of Nyssa's *Catechetical Oration* to see an example of the full-blooded physicalism of patristic Eucharistic theology. Thus Selvaggi was quite right in his basic assumption that one should not treat the Eucharistic conversion as merely concerned with metaphysical realities and having no relation to the physical.

Although Selvaggi's basic premise is quite valid, his application of it to transubstantiation is less than happy. It is one thing to talk of the total reality of the bread, in its physical and metaphysical sense, as involved in the Eucharistic conversion; it is quite another to draw the conclusion that the substance of electrons is transubstantiated. And this is where Selvaggi goes quite wrong; for to talk of transubstantiation of electrons is meaningless; it involves a gross misunderstanding of modern physics as well as a gross misuse of language.

To talk of the changing of substance of electrons is to completely misunderstand both the role and the nature of such particles as electrons as understood by modern physics. Selvaggi wishes to understand quantum theory as just an extension of the classical Newtonian picture. For Selvaggi, modern physics has penetrated reality more deeply than did medieval or Newtonian physics; for in the latter one thought that the body itself was the irreducible thing, that bread was a unity, and hence that one could talk about the substance of bread as a unified concept. But now physics has shown, in Selvaggi's view, that what we thought were solid bodies are in fact made up of very tiny things called atoms, and these in turn of further tiny things called subatomic particles, some of which are still being "discovered." Thus one should then transfer the action from what we thought was a single, unified mass-body to these irreducible particles which go to make up the atomic world of matter. But the point of modern physical conceptions of reality is their radical distinction from the gross world of Newtonian mechanics. It is not only that things are smaller down there; it is not only that we cannot see these things called atoms; it is not only that these particles behave in strange ways; it is rather the inherent symbolic nature of these particles which lies at the heart of quantum mechanics. When one talks of an electron,

one is talking in essentially symbolic terms and not in terms of little pellets which one can describe fully in traditional terminology. To talk about electrons is difficult enough, but to talk of their substance boggles the mind; for to do so is to confuse the situation hopelessly, talking in terms of an inapplicable conception of matter while yet professing to have abandoned the old way in favor of the new way of looking at things.

Selvaggi's crude application of his totally sound Catholic instincts about transubstantiation takes much of the force out of what he has to say in the debate. One cannot help, especially if one has had scientific training, being quite put off by his naive paste-and-scissors application of advances in modern physics to the doctrine of transubstantiation. But this should not obscure the fact that his basic concern to affirm the role of the physical in the Eucharistic conversion is a just and valid one. Even if one has a superficial sympathy with Colombo's attitude of a complete separation of metaphysics and physics, in that this position so neatly avoids all the problems of the role of the physical in the Eucharistic conversion, one must see that this position is untenable on two grounds: first, it flies in the face of one important strand of patristic Eucharistic theology; secondly, such a separation of "reality" into purely metaphysical and purely physical is philosophically and theologically disastrous.

Anyone who has followed post-Vatican II developments in Eucharistic theology will know that the field has been dominated by the school exemplified by Schillebeeckx in Europe and Powers in the United States. The writings of this school are quite familiar and need no detailed summary here. Their approach in general is from an existentialist-phenomenological viewpoint. The great strength of their understanding of the Real Presence and transubstantiation lies in the return to a serious theology of the symbol as at least part of the foundation for any theology of the Eucharist, and their insistence that sacraments must be understood in their context, i.e., in the action of the liturgy itself. For bringing back these forgotten truths we owe this school a great debt. But it must be said that this particular line has been followed out as much as can be done fruitfully. As the scholastic approach to transubstantiation was fruitful up to a point, past which the speculations on the doctrine became a travesty of that doctrine, so is it with the current approach to transubstantiation. For all its merits, it has one major flaw: it affirms no real role for the physical in the Real Presence or transubstantiation. One looks in vain in recent writings on the Eucharist for any reference to "reality" as understood by modern physics. One looks in vain for a serious attempt to come to grips with the role of the bread and wine in the Eucharistic conversion, not only as symbols, but as physical stuff.

One often finds in contemporary Eucharistic theology a complete evasion of this issue by seeking refuge in the warm and rarified world of signs and action.

EGNER

The flaws of a particular theological viewpoint or system are never so apparent as when the system is in a state of decadence and is yet being used beyond its capacity to give. This seems to be the case with Eucharistic theology today. One need not go into the aberrations of the eighteenth century, which were based upon a thoroughly decadent version of the basically sound scholastic view of transubstantiation. Such speculations as whether the Blessed Virgin were present with her Son in the host are too painful and embarrassing for the Catholic to recall. But just as the flaws of the original scholastic approach were greatly magnified and actually became dominant in the decadence of that system, so the great flaw in the post-Vatican II system is in danger of engulfing all the valuable insight contained in that system.

What I am talking about can be exemplified in the attitudes expressed in an article on the Eucharistic presence by G. Egner, which appeared in two successive issues of *New Blackfriars*.⁸ Since these articles appeared in an English journal, American readers may not be familiar with their contents. Thus, before discussing what Egner says in his essay, I shall summarize his thought briefly.

The first part of the article begins with a full-frontal attack on the Tridentine definition of transubstantiation. Egner's attitude towards that definition and towards the doctrine itself is summed up right at the beginning: "I reject what Trent said. I don't believe in transubstantiation and I think that a consecrated host is still bread precisely the way that an unconsecrated host is bread."⁹ This attitude raises many problems, not the least of which is the proper role of tradition and its binding character. But our interest lies mainly in Egner's reasoning in adopting this attitude towards transubstantiation which, as it stands, seems unacceptable for a Catholic. Egner begins with a critique of the basis of the Tridentine definition: Aquinas' use of Aristotelian terminology. Egner claims that Trent abused the Aristotelian-Thomistic terminology to such an extent that its definition of transubstantiation is "a nonsensical abuse of Aristotelian ideas"¹⁰ and a "silly account"¹¹ of the

⁸ G. Egner, "Some Thoughts on the Eucharistic Presence," *New Blackfriars* 53, no. 627 (Aug. 1972) 354-59; 53, no. 628 (Sept. 1972) 399-408.

⁹ Egner, *art. cit.*, p. 354.

¹⁰ *Ibid.*

¹¹ *Ibid.*, p. 358.

traditional theology of the Eucharistic conversion. Egner's objection to Trent is twofold: first, it adapts Aristotle's ideas in such a way that they cease to have meaning; secondly, the apparent content of the doctrine is an illusion, for it comes from an exercise in "armchair physics."¹² It is as if Trent sat down and engaged in a boulderization of the Aristotelian theory of change, in which the object is dissected into a number of rather mysterious entities called "matter," "form," "substance," and "accidents." What Trent did, according to Egner, is to "make *things* out of actuality and potentiality, to *hypostatize* them."¹³

The second part of Egner's article attacks current Eucharistic theology, especially that of the Schillebeeckx school. This view, Egner claims, is bankrupt. It survives "only by living off the immoral earnings of a disowned relation."¹⁴ Egner gives a fair summary of the latter viewpoint, seeing it based on a basically phenomenological approach, which stresses the meaning of the "world," the importance of the "symbol," of *personal* presence, as distinct from the presence of two "objects," and the "setting" of the Eucharist as a meal. But when all is said and done, Egner has no more use for this view than he did for Trent. "Transignification amounts to no more than a rather modish version of transubstantiation, and is ultimately just as empty."¹⁵

Egner points out with striking clarity the flaws of the phenomenological approach. The most glaring he calls the fallacy of replacement. This is based on the idea that "things are what they are for Christ, and that physical properties are wholly relative."¹⁶ When this is applied to the Eucharist, an opposition is set up between bread in the ordinary sense and bread as it is "for Christ." The opposition between substance and accidents of the older theology is just replaced in the newer theology by an opposition between things as they seem to be and things as they really are for Christ. And just as in the older view substance was completely outside of the physical world, so this reality "for Christ" is something that "always escapes us." Both views set up an opposition between what things actually are and what they seem to be. In adopting such an attitude, the theologian leaves the door open to philosophical scepticism of the worst sort.

What, then, is Egner's own view? First, he tells us, we begin with the reality we have before us: bread. "We know that we do eat bread and that we do not eat Christ."¹⁷ We then move onto the role played by eating in

¹² *Ibid.*, p. 356.

¹³ *Ibid.*, p. 358.

¹⁴ *Ibid.*, p. 359.

¹⁵ *Ibid.*, p. 401.

¹⁶ *Ibid.*

¹⁷ *Ibid.*, p. 405.

ritual in general and then specifically to the Passover meal. "Whatever we say of the eucharistic presence of Christ must be said in the context of the ritual meal."¹⁸ And further: "the meal is the vehicle for a union with Christ which, hinted at by eating, by ritual, by the passover, could never be achieved by human endeavour alone."¹⁹

Egner's second point is based upon the Eucharist-Incarnation analogy. We must not refuse "to let the reality of Christ's gift negate the reality of the earthly means of his giving."²⁰ This view conforms to the pattern of the Incarnation, in which the humanity of Jesus is not destroyed by his divinity, and it avoids the idea that the meal is but a camouflage for cannibalism.²¹

Egner's paper ends with five principles "useful in questions like these." The first is "a variety of source in religious belief." Investigations into such doctrines as transubstantiation should range over the whole field of religious phenomena rather than merely theology or creeds. The second principle is adjustment and accommodation. Egner rejoices in the ability of the Roman Catholic Church to domesticate unwelcome novelties by suitably adjusting its past. This process is a "selective amnesia." With regard to the Eucharist, the unhappy developments of the past—tabernacles dominating sanctuaries, Mass before the Blessed Sacrament—should be forgotten by the Church. "Instinctive forgetfulness enables . . . prayers . . . to be tacitly robbed of unwanted significance." As an example, he points to a prayer in the Mass for the twentieth Sunday after Pentecost which speaks of the Eucharist as a medicine which purges us of our sins. He asks: "Were we as shocked as we might have been?" When we pray in the *Anima Christi* "Blood of Christ, fill my veins," do we really want it to?²²

The third principle Egner calls the "need for something more." We can no longer assume an "inherited sense of fittingness." We must recognize the overwhelmingly secular nature of today's society. We must not merely perpetuate habits; we must also articulate decisions. The fourth principle is "understanding and confrontation." We must understand the Eucharist in terms of its history, just as we have done with the Bible. Further, the past must be confronted: we not only understand the past, we also pass judgment on it. Having done this to the Bible, why not to the councils? The last principle is "looseness of fit." We must recognize that no one manifestation of Eucharistic belief can do justice to the reality of

¹⁸ *Ibid.*

¹⁹ *Ibid.*

²⁰ *Ibid.*

²¹ *Ibid.*

²² *Ibid.*, p. 406.

which we attempt to speak. Looseness of fit is necessary in seeking "to understand and to confront a complex and vulnerable past . . ." ²³

Much can be said about Egner's views. Many important issues are raised: the role of tradition, the binding nature of councils, the problem of religious language. But what is of interest to this essay is his basic understanding of transubstantiation; for, as I pointed out earlier, Egner's whole attitude is a playing out of the phenomenological approach he so violently attacks. His attitude shows that that view, valuable as it has been, cannot be taken out any further than it has been; for to do so results in a denial of the belief of the Church in the Eucharistic conversion. Egner claims to have gone beyond those who talked of transignification and transfinalization, to have gone beyond this whole system. But what he has actually done is to take the basic weakness of the whole system—a lack of care for the role of the physical—and make it the basis for his own system. Egner completes radically the flight from the physical, which has always been a tendency in Eucharistic theology in the West, in his complete denial of the participation of the bread as bread in any real change in the Eucharist. Although he ends his paper with a plea for a "looseness of fit," a recognition that no one understanding of the Eucharist can do justice to the mystery itself, he nevertheless adopts an attitude that precludes any rapport not only with Trent but also with the metabolic physicalism of the Fathers.

Egner claims that he wants to start with bread as it is. But he completely ignores the bread as described by the physicist. He makes the startlingly naive statement that bread is something we know when we see it, as if what the physicist "sees" is not an integral part of that one reality which is bread. He takes to an extreme the phenomenological tendency to see things merely as they are used in a human context, or merely with reference to relationships. In doing so, he does in a much more violent way just that of which he accuses the medieval theologians and the phenomenologist school: a rendering asunder of the basic unified structure of reality. This is the point that Selvaggi tried so hard to make, despite his most unfortunate conclusions. The reality of the bread includes the reality as perceived by men in its use as food, that reality as perceived by the faithful in the Eucharist, *and* that reality which is described by the physicist. To ignore the latter completely is to bury one's head in the sand and to do great harm to the richness of traditional Eucharistic theology.

Egner's appeal to the Eucharist-Incarnation analogy is neither original nor convincing. Any student of Eucharistic theology knows that this

²³ *Ibid.*

analogy is as old as Justin Martyr and was used quite freely by later Fathers. But a proper use of this analogy is actually seen in its (using Egner's own terminology) looseness of fit. If we examine the Eucharist-Incarnation analogy in the first three centuries, we see that it is used in a very loose fashion. It is only when Theodoret and Nestorius try to apply it in a direct, one-to-one fashion that the analogy breaks down. It breaks down because it is pressed beyond its valid use. One logical outcome of such an application is a Eucharistic dyophysism: the bread remains together with the body of Christ after the consecration. This invalid application of the analogy appears again among medieval theologians, such as Rupert of Deutz, who also arrives at a dyophysistic position. The Catholic Church has consistently condemned this position, and rightly so; for although there is a validity in the analogy, nevertheless in the two cases the relationship between the two terms is not the same, nor the unity which results from them.²⁴

More than ever today theologians cannot afford to bury their heads in the sands or in the clouds. Just as current moral issues must be faced by theologians, so must modern scientific conceptions of reality. The theologian must make himself familiar with contemporary physics and also change his general attitude towards the sciences. This is often that same attitude expressed by Colombo: what the physicist is saying about reality has really nothing to do with that higher reality of which theology speaks. If, however, one is to be true to a conception of reality that is free from unnecessary and false dichotomies, then one must recognize, accept, and try to understand the picture of reality given to us by contemporary science. And if one is to be true to the tradition of the Church on the Eucharist, it is quite clear that one must come to an understanding of, and an affirmation of, the role of the physical in the Eucharist, and not merely on a phenomenological level. One must make this attempt and this affirmation even if, like Selvaggi, one fails in the end.

PHYSICAL REALITY AND CONTEMPORARY SCIENCE

One of the chief flaws in most postpatristic approaches to the Eucharistic presence and conversion from Ratramnus through Egner is

²⁴ E. B. Pusey, the great Anglican divine of the last century, published in 1855 a work which stands as the best defense of this position based on a one-to-one application of the Eucharist-Incarnation analogy: *The Doctrine of the Real Presence from the Fathers* (Oxford, 1855). Pusey makes a thorough investigation of patristic teaching on this point, and if he fails to prove his own point in the end, it is only because the weight of patristic teaching is against him. But Pusey, unlike Egner, at least sees that the very use of the Eucharist-Incarnation analogy points to the seriousness with which the Fathers took the role of the physical in the Eucharist, not merely in the conversion, but also in the effect of the consecrated species on the communicant's body.

the lack of proper understanding of the nature of physical reality and its role in the Eucharist. The tendency in Western theology has been to move back and forth between the poles of ultrarealism and pure spiritualism. Ratramnus in the ninth century was reacting against what he thought to be an excessively realistic approach to the Eucharistic presence and conversion, and so he sought to somehow transcend the physicality implicit in the realist approach of Radbertus by setting up an antithesis between Christ's body in heaven and as it is in the sacrament. This approach was expanded and carried much further by Berengar, who was in reaction against the growth of medieval superstition surrounding the Mass, which he saw as the outcome of the realist approach to the Eucharist. Berengar's approach is marked by a sharp distinction between corporality and spirituality, and when applied to the Eucharist, it resulted in a presence and conversion in which corporality was excluded. Aquinas, and even Trent, can be seen, at least in part, in reaction to medieval abuses in Eucharistic theology and practice: bleeding hosts, visions of Christ in the host, etc. Aquinas' approach, like that of many before him, seeks to somehow transcend the corporality-spirituality antithesis, to somehow include them both, while at the same time avoiding the crassness of Humbert. The pendulum swung back after Trent to an ever-increasingly physicalist approach to the Eucharistic presence and conversion. Cartesianism gave impetus to the approach which sought to explain the conversion in terms of the natural science of the day. This latter approach continued in one form or another right down through the first half of the present century. In the writings of Anscar Vonier, Maurice de la Taille, Karl Rahner, and Edward Schillebeeckx, we see yet another swing of the pendulum away from the ultrarealism of the popular religious manuals of the late-nineteenth century to a more balanced approach which emphasizes the nature of the Eucharist as a sacrament and the distinctiveness of the sacramental world. This new approach has much to commend it, but it shares the difficulty of most postpatristic approaches to the Eucharistic presence and conversion: the difficulty of including physicality in the conversion and presence in such a way that the crassness of post-Tridentine theology is avoided and yet the realism of the Fathers is retained. The existential-phenomenological approach sets us out on the right track, but it fails to give a satisfactory account of the role of the physical in the Eucharist and the vital link between the physical world and the sacramental world. This link should be seen in terms of physical reality itself, and as interpreted and exemplified in the doctrine of the Incarnation.

We shall adopt the starting point of the Schillebeeckx school and stress

the importance of corporality as the sign of man's-being-in-the-world. But we want to also stress corporality not only in terms of its human context (man's body as sacrament) but also as a part of physical reality (man's body as stuff of the universe). A discussion of the nature of physical reality will show that the sacramental nature of man's body is not discontinuous with his physicality but actually arises from it.

Physics in Revolution

It is well known that physics has undergone a revolution in the twentieth century.²⁵ But this revolution has gone unnoticed by many philosophers and theologians. The new physics presents us with a conception of physical nature so radically different from that given by classical physics that the outlook conditioned by the latter is no longer viable either as a metaphysical theory or as a tacit presupposition underlying a world view. This revolution in thinking about the physical universe is the result of the development of the theory of relativity and quantum mechanics. Our "picture" of the universe as a vast collection of individualized particles (like hard pellets), externally related to one another and to the infinitely extended container of time and space but essentially independent of one another, has been transformed by relativity theory into one of a "single, continuous, unbroken space-time whole, constituted by a web of interrelated events themselves determined by the geometrical properties of the field in which they occur and from which they and the physical properties of the entities participating in them are inseparable."²⁶ Quantum theory, no less than relativity, has transformed our picture of the nature of physical matter. A particle is sometimes distinguishable, but it is inextricable as a single unity. The particle itself, once the basis of theories of matter, is now subordinated to the system or structure of which the particle is a part. The particle, once seen as a completely individuated "thing," is now seen as part of the great, complex, but unified matrix of time-space in which the particle is but evidence of a high degree of curvature of the time-space matrix.²⁷ The substance-quantity nature of the particle which was a basic feature of Newtonian physics (even if often only tacitly assumed) has been replaced with a concept which is essentially dynamic, involving both

²⁵ For a fuller discussion of the points we discuss in this section, see E. E. Harris, *The Foundations of Metaphysics in Science* (London, 1965). I am indebted to Prof. Harris for many of the ideas I bring forth in this paper on the impact of modern science on philosophy and theology.

²⁶ Harris, *op. cit.*, p. 37.

²⁷ Cf. Harris, pp. 140-42. Also M. Capek, *The Philosophical Impact of Contemporary Physics* (New York, 1961). Capek deals most thoroughly with the radical differences between classical and modern physics and the implications for philosophy.

space and time. The particle itself is thought by some physicists to be a misleading concept, and they would prefer to speak of *events* instead of particles.²⁸

The metaphysical conception engendered by the theory of relativity is one in which the time-space continuum functions as the primordial stuff or substance of the material world. The philosophical importance of all this is summed up in Eddington's desire to "make vivid the wide inter-relatedness of things."²⁹

For those who believe firmly, as does this writer, that philosophy and theology must not only take account of the picture of physical reality given to us by modern science, but also be in a state of sympathetic resonance with that picture, the holistic ("wholistic") conception of physical reality given by modern science must surely profoundly affect thinking in philosophy and theology. Contemporary philosophy, to be in harmony with science, should expound a metaphysic which is holistic in type, and a logic of order, system, and structure.³⁰ So, too, must theology proceed along these lines, shunning those metaphysical assumptions which lead to a highly dualistic and dialectical theology.

A second important feature of the modern conception of physical reality is the recognition of its basic symbolic nature. Max Born, one of the leading figures in the revolution in modern physics, points out that the opinion is often expressed that the use of symbols is mainly a matter of convenience or shorthand. "Yet, I think," says Born, "the problem is deeper . . . the symbols are an essential part of the method for penetrating into the physical reality behind the phenomena."³¹ This statement requires further explanation, lest, due to the ambiguous nature of the word "symbol" in modern parlance, the very opposite is understood from what Born means.

It was the seemingly paradoxical nature of particles which led to the abandonment of a mechanistic-pictorial view of physical reality and the adoption of analogy and symbol to describe material particles. The reader may be familiar with the wave-particle duality which is exhibited

²⁸ "If space and time are fused together into the dynamic unity of space-time, which itself was fused with its content, i.e., matter and energy; if furthermore, there is a substantial evidence for the pulsational character of time-space, the character which matter itself in virtue of its fusion with time-space must share, the assertion that what we used to call a 'particle' is in truth a string of successive events will become less paradoxical" (Capek, *op. cit.*, p. 259). For a similar view of the fundamental place of events, see A. N. Whitehead, *Concept of Nature* (Cambridge, 1920) esp. chaps. 4 and 7.

²⁹ A. Eddington, *The Expanding Universe* (Cambridge, 1933) p. 104. Cf. Harris, *op. cit.*, p. 101.

³⁰ Harris, p. 159.

³¹ Max Born, "Symbol and Reality," *Dialectica* 20 (1966) 143.

by particles at the atomic level. Sometimes electrons behave like particles (one can measure their mass) and sometimes like waves (they exhibit diffraction patterns). Plainly, to say that they are both particles and waves would be paradoxical. But it would not be paradoxical to say that an electron is somewhat like a particle and also somewhat like a wave, i.e., to describe the particle in terms of analogies with familiar concepts which can be pictorially imagined and represented. But this use of analogy is but a resting place on the road to realizing that the theory of matter, with its concepts provided from a mechanistic-pictorial view of matter, could no longer either be expected to describe reality pictorially or to be in a one-to-one correspondence with it. It is at this point that a significant break-through is made in assigning theoretical imagery to that of analogy and symbol, at the same time fully realizing that the analogies are imperfect and the system is only partially described by the analogy or symbol.

Furthermore, there is no attempt to try to "picture" these symbols of reality in any of the ways familiar to the mechanistic-pictorial representations of "classical" physics. A further step is to adopt, in the case of the resolution of the wave-particle paradox, purely mathematical symbols as in quantum mechanics, and to abandon all hope of understanding these symbolic representations in a pictorial way. Now this state of affairs will be most distressing to those whose conception of physical reality demands that it be able to be entirely pictured by the human imagination, and that it bear a one-to-one correspondence with the symbols used to represent that reality. But that is the whole point of the new approach and why one can with no exaggeration call the revolution in physics of the last fifty years more far-reaching than that of the Copernican revolution in the sixteenth century.²²

Modern physics also destroys "simplicity" as the basic substratum of physical reality. There has always been a search for an ultimate particle, the indivisible building blocks of nature, whether one called them monads or atoms. It has been assumed in this search that physical reality was simple in essence, and that it would only be a matter of time until the simple, indivisible building block of matter was found. But the evidence is all to the contrary. The further one examines physical reality at the atomic level, the more complex that reality shows itself to be.

²² "The fact that the classical kinetic scheme has proved to be inadequate for understanding contemporary physics means the end of all hopes of interpreting the constituent elements—or rather events—of physical reality in sensory (visual-tactual) terms. Human imagination is clearly incompetent to provide the material from which a satisfactory model of matter can be built . . . Abstract mathematical constructs seem to be today the only way, not to reach, but to *represent* the structure of the transphenomenal plane" (Capek, *op. cit.*, p. 398).

From salt crystals we go to ions, from ions to atoms, from atoms to the ever-increasing number of "elementary" particles and mysterious forces which make up the world of the atom. One can picture (in a strictly analogous sense) various levels or hierarchies of reality as one descends into the "well" of the interior of matter. We are always tempted to stop at one level and claim (and hope) that this is the "substantial" ground level, beyond which one cannot or need not proceed. But the empirical evidence is such that this ground level does not exist. As H. K. Schilling points out, it may happen that some day such an order of ultimate simplicity may be found; for it is part of the modern approach to be open to the unexpected and paradoxical. "But there is neither historical precedent nor empirical evidence to support such an expectation."³³

What conclusions can we draw from this view of physical reality, which becomes more and more complex the further we probe into its depths, and which can be represented only by symbols and analogies? Our conclusions, like our presentation of this most complex matter, must be modest. But out of this revolution in ways of thinking about physical reality comes the profound awareness of the *mysterious* nature of physical reality. This does not mean that nature is mysterious only in those parts of it that we do not yet understand, but that with enough time and work man will be able to cover all these unfortunate gaps in our knowledge. It means that the limitless internal depths and content of physical reality, with its hierarchies becoming more and more complex as we probe deeper and deeper, point to and strongly suggest that *ineffability* of physical reality, a reality which is essentially unfathomable and mysterious.³⁴ The abandonment of the pictorial view of matter, and its replacement by a description in terms of analogy and symbol, show the fundamental place of the symbol in reality itself, not as something which merely stands for the atom beyond the symbol, but as the way in which reality manifests itself to man-in-the-world.

Application to Eucharistic Conversion

We now proceed to the admittedly delicate task of applying these insights into physical reality to the problem of the Eucharistic conver-

³³ H. K. Schilling, *The New Consciousness in Science and Religion* (London, 1973) p. 101.

³⁴ *Ibid.*, p. 118. We have not spoken about physical reality on the macroscopic level. This is treated very well by A. R. Peacocke in *Science and the Christian Experiment* (London, 1971) esp. chaps. 2 and 3. At this level the hierarchies of being (from rock, to one-celled animal, to fish, to mammals, to man) are *more* than the sum of their lower parts. Each level includes all the levels below it, but the higher level is still in a sense discontinuous with the lower levels in its organization and structure, which gives it a character *sui generis*. Peacocke also develops the implications of this "organismic" view of evolution for the Christian doctrines of creation, redemption, and Christology in general.

sion, specifically to the problem of the missing link in the contemporary Eucharistic theologies of Schillebeeckx and others. Despite the great strengths of the latter approach, the system suffers from one major flaw: a failure to give physical reality a positive role in the Eucharistic conversion. This failure shows up in the tendency to sharply distinguish between the natural or physical world and the sacramental world, and to completely divorce the Eucharistic conversion from the bread and wine as physical realities.

We must proceed along these lines with great caution, for we are in no way attempting to "prove" the Eucharistic conversion using contemporary scientific terminology. This has been the mistake of so many who wished to take the physical world seriously in their treatment of the conversion, e.g., Descartes and Selvaggi. But neither shall we talk of the wavelike particles of bread, nor shall we speak of the transubstantiation of protons and electrons of the atoms of wine. We will instead show how the nature of the sacrament as sign, as symbol, is rooted in physical reality itself.

First we must clear the decks, so to speak. Given the mysterious and essentially symbolic nature of physical matter and the holistic nature of physical reality, Egner's position is seen to be not at all a viable one. His position is founded upon that very atomistic, mechanistic, dualistic view of reality which has been repudiated by modern physics. Any position which completely dismisses the rich hierarchies of reality in that which one calls bread, seeing it just as a piece of cooked dough (to which man has affixed a meaning), whose chemical analysis yields all there is to know about its physical reality, is at complete odds with the conception of reality as ineffable, symbolic, and mysterious. And his complete dismissal of this hierarchy of reality as of no use when talking about sacramental realities flies in the face of the holistic approach of modern science.

When we turn to the Selvaggi-Colombo debate, we can see how both writers were partially "right" in their positions. Selvaggi quite rightly insisted that the physicality of the bread must take part in transubstantiation, for physical reality is no less a part of the mystery of the bread's becoming the body of Christ than is the "giving meaning" to the bread in the context of the sacramental action of the Eucharist. But Selvaggi is still locked into a pictorial-mechanistic conception of physical reality which not only talks of electrons and protons as if they were tiny individuated pellets (even if he must know better) but also seems to think of these particles as somehow the basic, simple elements of bread. Selvaggi confuses the role of the physical in the conversion. It is not at all a matter of positing the transubstantiation of protons today, and then

positing the same of all new particles which are found tomorrow. It is rather to recognize that the physical reality of bread is not exhausted by a chemical analysis of the bread-stuff, nor by a nuclear magnetic-resonance spectrogram of its components. The physical reality of the bread is in itself just as mysterious and ineffable as the reality of the consecrated host which we call the body of Christ and is an integral part of that higher level of reality in which the Church's sacraments function. Colombo's fear of allowing the physical reality of the bread is well founded in reaction to the gross physicalism of so much post-Tridentine Eucharistic theology. But his rejection is further based on the assumption that looking under a microscope and carrying out certain tests will tell all there is to tell about the physical nature of bread. And if the analytical chemist cannot detect a difference between a consecrated host and one that is not consecrated, then one must conclude that the physical reality of bread cannot possibly be involved in the conversion. One must then flee to the much safer ground of the sacramental world, the world of analogy and symbol. But that is the whole point of the view of physical reality we have tried here to present: it is itself mysterious, partially hidden, symbolic. One might say that matter itself is sacramental. So there is no need to posit, as do Vonier, Colombo, and Schillebeeckx, an unbridgeable discontinuity between the physical reality of the bread and the sacramental reality of the body of Christ; for the sacramental world is not a world completely separate from the physical world, but it is that world in which the essentially symbolic nature of reality is recognized and allowed to fully *be*.

What we are proposing, then, is that the sacramental world should be seen as continuous with and including the physical world, as that hierarchy of being which exemplifies and makes explicit the basic symbolic nature of all reality. But we shall now say that there is in a sense a discontinuity between these two levels of reality. When one is examining either microscopic or macroscopic manifestations of physical reality, one finds that while a higher hierarchy of being includes all those below it (or above it, depending on where one starts), the nature of the higher level cannot be explained solely by those levels from which it has evolved. On the atomic level this is formulated in the Pauli exclusion principle, a corollary of which is that the properties of the ordered whole are discovered to be different from the sum of the properties of its parts, and a special creative significance is conferred upon structure and organization. The same principle is seen at work in biological evolution, in which a species cannot be explained merely in terms of the lower species from which it evolved, but is somehow something "more" in its organization and structure. This type of discontinuity is seen most

strongly in man himself.³⁵

Using the just-discussed physical principle as an analogy, we can see how the sacramental world is at once continuous with and discontinuous with the world of physical reality; for the world of the sacraments (and here we mean the Church's seven sacraments), while they are grounded in physical reality, cannot be explained as merely the sum of the physical parts which make up the sacrament—not merely oil, water, or bread and wine. Nor can they be explained merely in terms of the words which make up the rites nor merely in terms of liturgical action. They must be understood in the context of that hierarchy of reality which is the sacramental world, which has its distinctive organization, language, logic, and structure. One of the greatest contributions of the phenomenological school of Eucharistic theology is its insistence that the Eucharistic presence and conversion can be understood only in the context of the sacramental action of the Eucharist. We have arrived at this same conclusion from a rather different approach. But we have hopefully avoided the complete break between the world of the physical and the world of the sacrament that so often characterizes the contemporary approach.

We now turn to apply our view of physical reality to the problem of the Eucharist-Incarnation analogy. One cannot help but notice the constant reappearing of this analogy in Eucharistic theology from the early Fathers to the present day. It is true that the analogy has often been misused in such a way as to deny the fulness of the sacramental mode of being or to posit a crude picture of the Eucharistic conversion which confused union and change. But even when this analogy was used incorrectly, the basic intuition that there is indeed a vital link between the Eucharist and the Incarnation is indeed well founded. The link is vital, for one cannot develop a full-blooded Eucharistic theology which is rooted in patristic thought without fully accepting the implications of the Incarnation not only for men but also for matter itself. When the effect of the Incarnation on matter is forgotten, or denied, whether due to Monophysite tendencies in Catholic theology or to Manicheism in Protestant thought, one ends up with a seriously flawed and anemic Eucharistic theology.

It is no accident that the rediscovery of the implications of the Incarnation for the material universe has been mainly the work of theologians whose training has been as scientists. A. R. Peacocke is one of these scientist-theologians, and he summarizes the material implications of the Incarnation in this way: "Men's understanding of nature was in

³⁵ Cf. Peacocke, *op. cit.*, chaps. 2 and 3; also Teilhard de Chardin, *The Phenomenon of Man* (London, 1955), where he discusses the "law of complexification" (pp. 48 ff.).

the end transformed because if God had become fully man . . . then the world of matter organized in the form we call a man must have been of such a kind that God could express himself in it explicitly, as well as implicitly by sustaining that world in being."³⁶ The Incarnation in Christ is a repudiation of all attitudes to the stuff of the world which saw it as evil or somehow alien to the Creator. It is a repudiation of that attitude which depreciates the role of the flesh in man's salvation and regards the body as a prison from which the soul escapes at death.

Our understanding of the meaning of Jesus Christ must also be profoundly enriched by taking heed of the material aspects of the Incarnation. For when we do so, Christ becomes not only the divine Redeemer of souls, the Lamb slain for the sins of the world, the individual Savior, but also the ratifier of the essentially sacramental nature of the world itself. "The significance of the Incarnation of God in a man within the created world is that in the Incarnate Christ, the sacramental character of that world is made explicit."³⁷ In saying this, we are echoing the conclusions of those contemporary theologians who talk of Christ as the supreme sacrament of God. But we reached these conclusions, not specifically from considering man as symbolic being and then working to the Incarnation as God's manifestation of Himself in the making flesh of the Logos, but by considering the basically symbolic nature of reality itself, out of which comes Christ the God-man, at once continuous with symbolic reality and also discontinuous in infinitely extending that reality.³⁸

My main objection to the approaches to the Eucharistic conversion by the post-Tridentine theologians and some contemporary ones, from the Cartesians to the phenomenologists, is the misunderstanding of the role of the physical in the Eucharist. When we look at the systems of Descartes and his followers, we see that their error was to treat matter—the bread and wine—as somehow closed and alien and dead. It was a conception of physical reality which did not take into account either the continuity of matter with man or the richness of the reality of matter. Descartes's picture of transubstantiation as the infusion of Christ's soul into the bread is basically unsound in that it sees the Eucharistic conversion as an extrinsic process by which the inert physical substance of bread is vivified in Christ's joining of his soul to the bread.

³⁶ Peacocke, *op. cit.*, p. 157. Cf. also Peacocke's summary of his approach to the Eucharist in *Thinking about the Eucharist* (London, 1972) pp. 14-37.

³⁷ Peacocke, *Science*, p. 180. Also see D. E. Jenkins, *The Glory of Man* (London, 1967) pp. 53-54: "So Jesus Christ is all that is involved in being man including the possibility of analytical reduction to whatever are the units of the stuff of the universe."

³⁸ Cf. K. Rahner, *Theological Investigations* 4 (London, 1966) 238-40.

Furthermore, Descartes and his followers completely ignore the sacramental nature of the conversion, and so disregard the discontinuity between the two levels of reality. This disregard for the *sui generis* character of the sacramental world (which is nevertheless grounded in and includes the physical world) leads to the crude physicalism of the popular nineteenth-century devotional manuals.⁹⁹ These attitudes, seen again in Selvaggi's work, manifest a complete disregard for the peculiar structure, organization, and meaning which are characteristic of sacramental reality.

If Descartes and his many followers forgot the sacramental nature of the conversion and confused the role of the physical in the Eucharistic conversion, many contemporary Eucharistic theologians are guilty of the opposite error: of stressing the discontinuity between the two worlds to such an extent that the vital link between the physical world and the sacramental world is completely lost. This attitude was fostered by the reaction against the mistaken physicalism of much post-Tridentine Eucharistic theology. But it is also fostered, as seen in the case of Egner, by a false understanding of physical reality, a blindness to its richness, its openness, its mystery, its symbolic nature.

One danger contemporary theologians face is the acceptance of a superficial and often erroneous explanation of the philosophical import of modern physics. This can be seen in Schillebeeckx' assertion, which he never explains, that quantum mechanics has forbidden one to take seriously any longer the concept of "substance" or to talk "substantialist language." While admittedly the relevance of substantialist terminology has been debated with vigor during this century, there are still a considerable number of physicists who would disagree with Schillebeeckx' blanket assertion. Furthermore, if we examine the writings of contemporary scientists who have an interest in either philosophy or theology, such as I. G. Barbour, A. C. Peacocke, H. K. Schilling, and Michael Polanyi, we find a complete rebuttal of the view that quantum mechanics necessitates an atomistic-analytical philosophy which makes substantialist talk meaningless. Nor does quantum mechanics dissolve reality into mere spirituality or ideas. There is a consensus of the writers mentioned above that if there is any philosophical system or viewpoint which is most compatible with modern conceptions of physical reality, it is that of "critical realism." But even if one does not accept this

⁹⁹ For a good example of one of these devotional manuals, see J. B. Dalgairns, *The Holy Communion, Its Philosophy, Theology, and Practice* (Dublin, 1867). Dalgairns spends much time discussing such things as whether Christ can physically see the people sitting in the pews while he is in the monstrance. He decides this question in the affirmative and then goes on to give his guess as to the physical mechanism of this process.

consensus, the point is that the current move away from positivism in scientific thinking leaves us with the situation that today theoretical physics is compatible with all sorts of philosophy. Neither does quantum physics make the concept of "substance" meaningless, even if modern science has broken away from the common standpoint which identifies the real with the concrete.⁴⁰ But one must not dwell too seriously on the notion of substance, its relevance or irrelevance, in discussing transubstantiation today; for as the latest change-word to be accepted by the Church to affirm the Eucharistic conversion, transubstantiation does not depend for its own relevance or irrelevance on any one strict, philosophical definition of substance.

We have shown the important role which the Eucharist-Incarnation analogy plays in providing the link between the physicality of the bread and the sacramental action of the Eucharistic conversion. With this background one can perhaps understand more fully the Church's adoption of the model of "change" to account for the belief that before the consecration there is only bread on the altar, after the consecration there is the body of Christ. The implicit manifestation of God in matter was made explicit in the Incarnation, when the matter of Jesus' body, which was continuous with the stuff of the universe, was taken up into the Godhead. In this event we call the Incarnation, the implicit potentiality of matter itself to be God-bearing was shown forth. To paraphrase the Greek Fathers: God became stuff of the world in order that that stuff might become God. This potentiality is actualized (or the Incarnation is extended explicitly) in Jesus' *act* of associating his body—bones, flesh, protons, ineffable mystery—with the bread and wine at the Last Supper. This act of association, mirrored in the early Church's identification of the consecrated bread and wine with the body and blood of Christ, is a letting-be of the essential potentiality of matter to bear God's grace for man.

Again, we can use the Eucharist-Incarnation analogy to see why the Church has consistently clung to the model of "change" and rejected those interpretations of that very analogy which posited a model of "union" of Christ and the bread. The "union" model seems to assume that matter itself is alien to God and could not in itself be the possibility

⁴⁰There is indeed a variety of interpretation of quantum mechanics. For the view that it is in fact compatible with hylomorphism, cf. R. Masi, "Teologia, eucaristia e fisica contemporanea," *Doctor communis* 8 (1955) 31-51, and W. A. Wallace, "Thomism and Modern Science," *Thomist* 32 (1968) 67-83. For a reinterpretation of the concept of "substance," see Sir Arthur Eddington, *The Nature of the Physical World* (London, 1935) pp. 264-67, and W. H. Watson, *Understanding Physics Today* (Cambridge, 1963). Watson gives a reinterpretation of substance in terms of relationships between events; cf. esp. pp. 51-52, 147-48, 208-10.

of the very means of God's grace without an extrinsic act by which Christ joins himself up with this inert matter to make it a vehicle for giving himself to men, much like a passenger in an automobile. But the Eucharistic conversion is a change implicit in all matter. Christ's association of his body and blood with the bread and wine in the words "This is my body . . . this is my blood" frees this essential power of the bread and wine to become really and truly that body and blood.⁴¹

In the Eucharistic conversion the possibility inherent in all matter is actualized. The Church's calling this change "substantial" and insisting that the bread no longer exists as mere bread after the conversion is not only defensive dogma. The change is substantial in that it involves the total reality of the bread, which includes not only the hierarchy of reality which is that of man's "giving meaning to," but also the complete hierarchies of its physical reality, whose nature is ineffable and symbolic. With the freeing of the potentiality of the bread to become Christ's body (the potentiality made explicit in the Incarnation and actualized by Christ at the Last Supper), it would offend against reality itself to refer to the consecrated bread as mere bread; for that bread, essentially symbolic, is now the symbol of Christ's body and therefore *is* Christ's body.

It is no surprise that Teilhard de Chardin is among those who have tried to recapture the "wholeness" of patristic Eucharistic theology by taking the physical world seriously and positively. Teilhard's writings on the Eucharist are neither systematic nor free from ambiguity. But as a scientist and Christian priest, he had a profound sense of the role of matter in the Eucharist. It is indeed ironical that Teilhard has been often accused of an excessively mystical approach to the Eucharist, one which is not quite in line with the realism of orthodox Catholicism. Those who make this charge completely fail to understand Teilhard's understanding of physical reality. He fully accepts the givenness of physical reality, the thinghood of things, the *en-soi*. But as a scientist, he cannot help but see that physical reality is charged through with mystery, that the whole of

⁴¹ Christ's association of his body with the material bread is a necessary step in understanding the reality of the Eucharistic conversion. The Church has always known this in her insistence on the centrality of the words of institution in the Eucharistic rite. The transformation of all matter begun in the incarnate life of the Logos, though known to be ongoing, is still hidden and not yet able to be pointed out with any specificity. Christ's association of the bread and wine with his body and blood (his assimilation of the bread) is a specific instance of this hidden transformation of matter in Christ made as explicit as possible in the sacramental action of the Eucharist. A Eucharistic theology which does not take seriously the importance of the performative action of Christ's Verba as his explicit association of himself with the matter of bread and wine is deficient and anemic.

the cosmos is of a sacramental nature.⁴²

Teilhard, more than any twentieth-century theologian, recognized the implications of the Incarnation for the material world: "The Incarnation means the renewal, the restoration of all the energies and powers of the Universe; Christ is the instrument, the Centre, and the End of all creation, animate *and* material. . . ." ⁴³ Christ lies at the very heart of the mystery which is physical reality, so that every bit of stuff in the universe is caught up in the ongoing process of transfiguration towards that final end when all will be all in Christ. For Teilhard, the Eucharist is the sign and the first fruits of this transformation of the universe, a transformation which is a divinization. The Eucharistic conversion is a real foretaste of the complete transformation of matter in Christ. "The central mystery of transubstantiation is aureoled by a divinization, real though attenuated, of all the Universe."⁴⁴ For Teilhard, the Eucharistic presence and conversion, while primarily associated with the Eucharistic host, in a real sense overflow the boundaries of the host and spill out into the universe itself. The consecration of the host is part of the ongoing, hidden consecration of the universe. The host is the locus of Christ's body, but Christ cannot be contained by the host. The host is like a "blazing hearth from which flames spread their radiance. . . ."

Thus when the phrase "Hoc est corpus meum" is pronounced, "hoc" means "primario" the bread, but "secundario," in a second phase occurring in nature, the matter of the sacrament is the world, throughout which there spreads so to complete itself, the superhuman presence of Christ.⁴⁵

With the approach taken by writers like Peacocke and Teilhard, we seem to have in a real sense returned to a more patristic way of thinking about the Eucharist. We see in this approach much of the wholeness and richness which characterized the Eucharistic writings of the Fathers. With the rediscovery of the mystery and depths of physical reality itself has come a renewed understanding of the nature of the sacramental world. By grounding the sacraments in the sacramentality and mystery of the physical—without confusing the two levels of reality—one

⁴² "No one understands so fully as the man who is absorbed in the study of matter, to what degree Christ, through his Incarnation, is interior to the world, rooted in the world even in the heart of the tiniest atom" (*Science and Christ*, tr. R. Hague [London, 1965] p. 36).

⁴³ Teilhard, "Pensées," in *Hymn of the Universe*, tr. G. Vann (London, 1965) p. 144.

⁴⁴ Teilhard, "The Priest," in *The Prayer of the Universe* (London, 1973) p. 159.

⁴⁵ Teilhard, "My Universe," in *Science and Christ*, p. 65. See also *The Divine Milieu*, (London, 1960) p. 115: "As our humanity assimilates the material world, and as the Host assimilates our humanity, the eucharistic transformation goes beyond and completes the transubstantiation of the bread on the altar."

overcomes to a great degree the duality which has characterized and plagued Western Eucharistic theology since at least the ninth century: duality between type and figure, corporality and spirituality, symbol and symbolizandum. The holistic understanding of reality advocated by modern science frees us from having to make a priori definitions of concepts like "symbol" and "sacrament" as if they were totally discontinuous with the rest of reality. The Incarnation itself is seen not only as the break-in of eternity into time, with its implications of discontinuity, but also as arising from and coming out of physical reality itself as an essential possibility all along.

If the Eucharist is understood as a making explicit here and now what we have always known, what we were told in the Incarnation, what was ratified in the Resurrection—the essentially good and godlike character of material reality—then one need not fear to include the positive role of the physical reality of the bread and wine in a theology of the Eucharistic conversion. A strong injection of the physical realism of Fathers like Gregory of Nyssa and John Damascene (a view which is consonant with that expounded in this paper) is what is desperately needed in contemporary Eucharistic theology if we are to avoid negative and sterile positions like that of Egner. Those who have done perhaps the most in rescuing Eucharistic theology from the confusion of the long post-Tridentine era, Schillebeeckx for example, must be reassured that the physical reality of bread and wine is neither something that can be explained away by a microscope or chemical analysis, nor is it something that must be kept at arm's length when talking of the Eucharistic conversion lest one appear to overstep one's bounds; for the Christian understanding of material reality as set forth in the doctrines of creation, Incarnation, and resurrection certainly does not clash with the conception of physical reality offered by modern science. Far from it, they may be seen to be mutually supportive:

... it looks as if Christians, starting, as it were, from one end, with their experience of God in Christ through the Holy Spirit acting in the stuff of the world, have developed an insight into matter which is consonant with that which is now evoked by the scientific perspective working from matter towards man and beyond.⁴⁶

⁴⁶ Peacocke, *Science*, p. 184.



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