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How Do We Know?

The Science Curriculum Committee met on six or seven occasions last year. Over the summer, Joan Fisher has drafted a report for the group to consider. The reaction to it has not been promising, seeming only to crystallize the differences between the committee members on some fundamental issues.

On this occasion, Ted Pakula (Central Station's representative) is the first to weigh in. He is appreciative of the work that Joan has done "on her own time." "But, Joan," he said, "if we adopt an approach like you've suggested, all the kids are going to end up with is the ability to play with ideas, but no sense of what the ideas are for. It's all very well to opt for virtuoso intellectual performances, but how do we know the kids are not just going to use their skills for pagan ends? How are they going to learn to use their scientific abilities in service of their neighbor and to the glory of God?"

“I want to back Ted up on this one," Jim Deboer chimed in. "You may think I'm thinking too much of elementary kids, but what is really important is not that they master certain skills but that they get turned on to the wonder and beauty of God's creation. We have to emphasize more the excitement that can be found in exploring God's world. I want kids to feel as though they're a part of the world and that the world is part of them. After all, most of them are not going to be scientists or even use science in their jobs and everyday lives. What they need is a sense of what the world can give them, the fulfillment that can come from staring at a stormy sky and knowing all the forces that are at work there, or wondering enough to ask questions about it."

"I wouldn't want to argue against what you're saying, Jim," Patrick Henderson responded politely, "but I don't know if that is really science. It's certainly great to have a religious feeling, but that's not science. And let's face it, with all that I already have to get through in my chemistry courses, there's no time left for all the frills. I think a Christian scientist is first and foremost a good scientist. We're going to have good scientists only if we prepare them well for science programs in college and if we are able to send some on from there to graduate school."

Patrick doesn't want to say it out loud, but to him, Jim's and Ted's approach is just a recipe for mediocrity. What constitutes science is perfectly clear: it's in the textbooks, and what teachers have to do is to get this material across as effectively as possible. Patrick has been doing it this way for years, and although some of his students might complain of the tedium, he always sends a healthy cohort on to college science courses, The school's reputation for academic excellence depends on teachers like Patrick.

Geoff Schmidt is one of Patrick's high school colleagues; Geoff teaches physics. This is his thirteenth year at Mountain City, and his dedication to Christian teaching in large part persuaded his wife, Sue, to "pack up her Ph.D. and toddle off for teacher training," as she would explain to the curious. Geoff has become a little tired over the last few years, finding that the pressure to cover the material often gets in the way of what he most enjoys about teaching relationships with his students. Also, he really gets little scope to deal explicitly with a Christian perspective on his discipline. Now that Sue is on staff with him, however, he's gained something of a new lease of life. Her excitement and continual questioning have been stimulating and challenging. Although they haven't set about it in a conscious manner, Sue and Geoff have been putting together something of an agenda for change in the way science is taught at Mountain City. They're both too ingenuous to be capable of plotting, but something of a quiet revolution may yet be underway.

So here we have them, this mixed bunch of teachers with diverse experience and varied understandings of the place of science in the school curriculum. How are they to proceed? Is there any way that they can move out of their entrenched positions rather than digging themselves in deeper? Is making decisions about what and how they should teach merely an individual matter in the end, anyway, in that they can each go into their classrooms and lock their doors behind them, with no one really knowing what goes on? Or is it a group matter, with the negotiation of compromises and the hope of

consensus? Or are they indeed responsible in this too to a higher authority? What about the question that Ken Heard had put to them at the outset: "How should Scripture direct you as you make decisions about curriculum?"

They had prayed together at the opening of the meeting. Most of the group were quite diligent in remembering the work of the committee in their own times of prayer at home. And the general and specific tasks facing teachers were a regular part of prayer at staff devotionals each morning.

Their prayerfulness indicated an openness to God, a willingness to have him lead them in their thinking. But how self-critical were they willing to be in subjecting the specifics of their thinking to the Word of God? How much were they relying on nonbiblical views of knowledge, the world, the learner, when they now dealt with the basic issues of the curriculum?

These were the kinds of issues that had been bothering Geoff over the summer.

"I've been doing a great deal of thinking over the last few months. I was frightened we weren't going to get far beyond merely restating our positions when we met again this year. I want to suggest an approach. I know this might sound a bit heavy, but please bear with me for a while.

"Science has long been regarded as the model of what knowledge is all about. Whether we have thought of the body of scientific knowledge or of the scientific method that has generated it, we have looked on science as the ideal to which all forms of knowledge should aspire. I want to say that I think we've been sold a bad bill of goods here. Science is one way of knowing the world alongside many others: so it is a limited, partial perspective,

"And I think we have to take more seriously what we mean when we say that human life in its entirety is religion: science is also religiously colored. It's never just a neutral, objective undertaking. It always reflects a broader perspective on life, a view of what is meaningful and valuable. In that sense, it is always biased. We have to give more thought to the way in which Scripture should direct our scientific activity. The scientific competence we seek to give our kids should be approached within this sort of framework."

Ted agrees. Ted has a great sensitivity to environmental issues. He's what's known in some circles as a "bioregionalist," He grows his own vegetables, recycles fastidiously, and stresses the biblical teaching on stewardship. He has set up a food co-op in the downtown area, and was greatly influenced by his early reading of Schumacher's Small Is Beautiful. He is concerned about a "holistic" approach to science teaching, though he recognizes that the use of the word can get him in trouble in a day when New Age religion is rampant. Ted and his wife, Hennie, worship with the Mission Hall congregation and are both deeply committed to ministry to the fringe people. Their two children are not yet attending Central Station; Hennie is keen to have a third, but Ted is not sure that this is ecologically responsible.

"You've just reminded me of something that I read about Robert Oppenheimer. When he was asked about the construction of the atom bomb, he said that it was of no consequence to him what was going to be done with it when it was built. He was just doing a job of physics! I think he said something like they would have made it any color or shape that the politicians wanted, as long as it was technically feasible, That makes me sick! I think if we try to teach science outside a social context, outside a concern for justice, we are implicitly teaching our kids to have this neutral, technical view of science. I think science has to be embedded in other, more complex, real-life settings if kids are going to learn that responsibility goes hand in hand with understanding. We don't just want our kids to know, we want them to be wise. They need more than to know about things, or that such and such is a fact, they need to know how to act in faithfulness to the Word of God,"

Joan suggests that they take a break for coffee, so the group wanders across the hall to the Middle School staff room. When they get there, they find the members of the Literature Policy Committee waiting for the urn to come to a boil. Ted asks Cal Holbrook how their meeting has been going. Ted and Cal belong to the same church, and they also see each other socially quite often.

The Lit. Committee was formed initially in response to the concerns of a number of relatively new parents in the school. Cal was at the center of these concerns, having set up an overnight simulation activity arising out of the study of Lord of the Flies with grade eight. Some of the kids had gotten too serious one of them chased another around a tree with an axe, accusing him of stealing. There had also been the incident in grade three, where the teacher had been reading The Lion, the Witch and the Wardrobe to the class. One of the fathers had told his daughter that this was ridiculous. "Everyone knows animals can't talk," he'd said,

promptly pricking the bubble of her fascination with the tale. Another, more sophisticated, parent had complained that to represent Christ as a Lion was not only not justified by Scripture, but that the theological interpretations spun around this whole metaphor were decidedly suspect. Once people got talking in the car park, witches and centaurs and all sorts of fanciful creatures came in for their share of criticism as well, so that pretty soon there were murmurings about "New Age" ideas infiltrating the school.

"Making any progress, Cal?" Ted asked, as they moved over into a corner of the room.

"Early days, early days, Ted. We've just started talking about the kind of understandings that literature embodies. Not getting too far. I'm interested in stimulating kids' imagination and creativity, but there seems to be this notion that the truth only comes wrapped up in 'facts.' Some parents seem to equate anything from fantasy literature with the occult or some form of idolatry. I sometimes wonder how well I fit in this place. You'd think that the Bible didn't contain huge slabs of Ezekiel or Jeremiah, not to mention Balaam's ass."

"Well, " Ted responded, "something Geoff just said in our group rings some bells. It's as if a scientific, intellectual way of understanding is the only model that people have of truth."

"You're right, Ted. It's like Plato saying that most people only see the shadows on the wall; they never get behind the appearance to the reality. Only the intellectuals can penetrate to the true nature of things, because they can think abstractly and form clear ideas, The rest are caught in the illusions of what they see and hear, which is always changing. The concept of a horse is the same everywhere, but every actual horse is different from every other one."

"Well," said Ted, "Plato was onto something, but I'm afraid his paganism led him to distort things quite a deal. What does it say in Hebrews? 'Faith is being certain of what we do not see.' It seems to me that the reality that we have to grasp is not first of all intellectual but religious. There is more to life than meets the eye, but truth can only be found by a response of faith to God's revelation. Not that we want to be anti-intellectual, just that the intellect is only one way of responding to the world, and reasoning can never give us the complete story."

"Okay, I can certainly buy that, but what's it got to do with teaching literature and science? I think I'm on your wavelength, but spell it out for me a bit more."

Ted didn't get a chance at this point -- a fact that left him a little relieved as the conveners were urging their groups back to work.

"See you on Thursday night, Cal."

"Sure thing, Ted -- but see if you can have an answer for me by then!

Ted and Cal are struggling with a tradition with along history in Western education. Only what can be stated in clear and logical terms is regarded as the truth. This tradition has dominated conservative Christian thinking as well. When the two come together in the Christian school setting, the effect is multiplied. History is taught as an endless collection of facts, science is presented as a series of laws to be memorized, and theology is believed to reveal the logical skeleton undergirding biblical revelation. Then, everything is assessed through multiple-choice tests, which assume that life's questions are relatively simple, each having only one right answer.

The teachers at Mountain City have taken steps in the right direction. They have begun to talk with each other; they know that a supportive, communal environment is necessary if schools are going to change. They have committed themselves to questioning their fundamental assumptions in the light of Scripture but they're not all that sure how to go about it. They have come to the point where they are not willing to take things for granted. They recognize that being a distinctively Christian school means that they have to reflect a biblical perspective more faithfully than they have thus far.

They have agreed to work with some basic guidelines. In the first place, they start from the assumption that everything that exists is created by God and is therefore basically good. Satan can distort and pervert what God has made, but he cannot destroy it. This is the second reality that they take into account. Because of Adam and Eve's rebellion, everything suffers the consequences of human sin and God's Word of judgment holds for all things. Taken together, these two principles imply that as Christians we will always see good -- and because of Christ's redemption, hope for healing -- where others see only evil, and that at the same time we will took for brokenness where others see only normality (Wolters 1985).

Education as an Outworking of a Theory of Knowledge

Scripture does not give us a theory of knowledge but it sets a direction for developing such a theory. The opening proclamation of Scripture is that the world is ordered and structured by God: it is his creation. We were made to be at home in this world. Thus, we can feel comfortable with our common sense assumptions that we are in touch with the real world in our everyday experience. We recognize our limitations, however. Being creatures, we can never have more than finite understanding; being fallen, we accept that sin distorts such understanding that we do achieve. We accept all knowledge as a gift of Christ, in whom are hid all the treasures of wisdom and knowledge. Knowledge is indeed a response to God's revelation, in his world and in his Word. To truly know is to listen to that revelation and to respond aright, to hear and to do. When God speaks, be also calls us to act, because he made us to care for his world. Knowledge brings responsibility, for it is a call to obey the Word of the Lord. All knowing is thus basically religious in character.

Our everyday experience of God's meaning-full creation -- not just of "natural things" like waterfalls and birds, but of people and social relations as well -- is thus the source of genuine, comprehensive knowledge. Through creation, God speaks to us in many ways: we are called to recognize the ethical demand in the needy neighbor, the aesthetic demand in the sunset or the Sistine Chapel, the economic demand in our use of the world's resources, and so on. We (to riot impose these dimensions on the world for they are part and parcel of the richness that God has created (Lewis 1943). Not to be sensitive to these dimensions is to overlook what is of great worth, worth that comes purely from being that which God chose to make.

Thus, we are also called to respect the many-sidedness of being human, the rich variety of ways in which God enables *us* as image bearers to interact with the world. Though we each respond in. these various ways, we also have our particular strengths. God has gifted everyone and all these differing gifts are necessary for the healthy functioning of the body -- because we also each have our weaknesses.

These different ways of responding are different ways of knowing. We can therefore say that truth comes in many forms: that the truth of a bird's song, a Rembrandt painting, an amoeba tinder a microscope, or an act of compassion is as valid as the truths we can more easily express in sentences (Cooper 1986).

We are created in interdependence. Our knowledge is also a communal possession: we do not know as individuals in isolation from each other. From the learning of language to the enjoyment of some kinds of food and riot others, we are embedded in cultural contexts and we depend on each other for understanding. That we learn to speak Chinese or English and to interpret the world through its words and structures is a gift to its from God through others. When we have seen Othello, we can never look at jealousy in the same way again -- if we have eyes to see. Our everyday experience of this emotion has been transformed. When we have contemplated the notion of black holes or Einstein's theory, our view of the cosmos will have changed. When we have studied the impact of colonialism on Third World countries, our sympathy should be energized by the demands of justice.

The school is a primary site in which this interaction with others in the human community takes place. It is in part by bringing students into contact with what Matthew Arnold called "the best that has been thought and said" (much of which is organized in the academic disciplines) that they grow in understanding. We do not come to know creation as isolated individuals, but always in cultural contexts.

Classical, Romantic, and Biblical Traditions

We have said that all knowing is basically religious in character. The two major Western traditions of thinking about knowledge in various ways deny this at the same time as they exemplify it. The classical tradition, with which Ted and Cal were wrestling, does this by claiming the objectivity of theoretical and scientific understanding. The romantic tradition, on the other hand, acknowledges no reality beyond that of individual feelings. Both traditions deny a source of order and meaning beyond human experience and substitute instead a source within this experience.

It is tempting to set these traditions in opposition to each other, and then to force a choice between them. Certainly, when either one is accepted as the complete story about knowledge, they are incompatible. However, when we place them within a broader biblical framework, insights drawn from one can complement the other.

The classical tradition stresses theory and intellectual rationality. Theory uses organizing laws and concepts to interpret experience. The resulting categories allow us to talk and think about a wide range of individual things and the ways they function. In mathematics, for example, we think of the numerical and spatial functioning of things in general. We can use the same formula to calculate areas for carpeting a room as for fertilizing a field, and, in fact, we can do the same calculation without reference to any existing thing at all.

The classical tradition views rationality as the way to truth. In comparison, concrete experience of creation is unimportant. Only therorizing gives *real* knowledge. It was this tradition that led the French Revolutionaries to enthrone the goddess Reason in their pantheon. Human reason seemed to promise control over the forces of the natural and even the social world. This is also why today people often assume that there is a scientific or technological solution to all problems.

The essentialist perspective in education is a form of the classical tradition. It emphasizes passing on fixed knowledge and timeless truths to students, rather than engaging them in making knowledge for themselves. Educators in this tradition believe that the best way of understanding the English language is by a systematic study of grammar, that music theory is more important than learning to play an instrument, and that Madeline Hunter's formula-like steps of direct instruction exemplify successful education.

The romantic tradition is impatient with the classical reliance on theory. Instead, romanticism emphasizes experiencing the concrete world in its rich individuality. It focuses on feeling rather than reason, on the particular rather than the general. It is more at home with aesthetic encounters, imagination, and intuition. In the school, romanticism bases the curriculum on student needs and interests. It favors engagement with concrete materials rather than abstract calculations. In so doing, it often rejects any kind of order that would seem to inhibit the freedom of the individual; rather, it makes individual decision making the arbiter of meaning.

The romantic tradition, with its emphasis on free human action, has done great damage to the gospel proclamation that the whole world belongs to God and that we are to serve him in every area of life. In schools, it leads to practices that make individuals a law unto themselves. The acceptance of "invented spelling" by young children is helpful if it is a starting point for learning the importance of standard spelling for communication and understanding of the language. It is a distortion of the God-given order of language, however, if it is taken to mean that children can spell words in any way they choose.

With the classical emphasis on theory and rationality and the romantic emphasis on experience and imagination, educational debates are often framed as a polarization of the disciplines of knowledge and everyday experience. The traditionalists line up against the progressives. Regrettably, while each side recognizes an important aspect of our interaction with God's world, it ignores the complementary aspect.

The biblical framework, on the other hand, recognizes this complementarily. It sees as equal realities both the law of God in creation and the creatures that are subject to it. It is concerned with how to *act wisely,* that is, with how to act in *this* particular situation in a way that is faithful to the ordinances of God. Knowing the law of God by rote is but ignorance if one does not act in love; faith without works is dead. Actions in turn are judged wise or foolish depending upon whether or not they are faithful to that law. Truth is what one does (I John 1:6) more than what one says.

The Bible calls us to live in trust and faith. The model for knowing is a personal relationship, sometimes person to person, sometimes person to thing, but personal nonetheless. Believing *in* is prior to believing *that,* and doing, living, and abiding in the truth have primacy. We begin with the context of involvement, not spectatorship, with action and response. To know the truth is to walk in the way, to obey Christ's commandments. Rather than seeing action as an *addition* to knowledge based in experience or intellect, we recognize that our knowledge begins and ends with whole-bodied interaction with creation.

But the Wisdom Literature highlights that creation confronts us in often puzzling ways, when we have to act but cannot act mechanically, merely by applying some rules. A particular situation calls for a unique decision. It calls for the responsible exercise of freedom, for judgment and discernment, for wisdom. In calling us to obey his commands, God never takes this responsiveness away from us: it is at the heart of being made in his image. We are called to active engagement with God's world.

Consider the advice of the wise man (Prov. 26:4, 5):

> Do not answer a fool according to his folly,
> or you will be like him yourself.
> Answer a fool according to his folly,
> or he will be wise in his own eyes.

Before we know which directive to follow, we need to take into account the complex richness of a particular situation. Like a doctor making a diagnosis, we need to focus our "expert knowledge" in a judgment of what is best for this particular person. As teachers, sometimes we need to reprimand a student publicly and sometimes we need to wait for a quiet conversation: it will depend in part on who the student is and on the likely reaction.

Christian schools need to recapture the concrete and individual dimensions of experience. Here is the proving ground for wisdom; here is where faith responds to the law of God. Unfortunately, we too often see teaching that relies on information being transmitted in simplified, abstracted form, rather than active engagement with the meaning-rich creation. Even attempts to be concrete can become excuses for classification activities:

Grade seven science teacher: Okay, kids, I've got this big box of about thirty rocks here. What I want you to do is to pick them up and look at them and see how many of them you can name. You should check each rock against the list of rocks and their characteristics that I have given you. Then you should write the name of each rock you identify in your book and copy down the description,

School learning can include both experiencing and theorizing without polarizing the two. Moreover, given what we have said in chapter 6 about ways of knowing, insight into God's world comes not only in concrete experience and theorizing, but through many other avenues as well. This growth in knowledge involves a *rhythm* of *immersion* in experience, *withdrawal* and *return* (MacMurray 1969).

Normally, we are immersed in experience, playing freely and trustingly in creation. This might be in conversation with friends, a walk in the park, the reading of a book, or the eating of a meal. But at times it is necessary to stand back and analyze a situation or to struggle with, for instance, an ethical challenge. Solving a difficult mathematical problem may require abstract theoretical reflection. Making decisions about the family budget, however, though it will require calculations, will be more a matter of ethical judgment. We will have to consider which actions will be the most beneficial for those for whom we are responsible. A threatened rift with a loved one will also require focused ethical insight, which is neither the direct application of abstract principles nor a mere reliance on previous experience (because no situation simply repeats an earlier one). On such occasions, we distance ourselves from the situation in order to reflect on it. In most cases, this reflection will not be theoretical at all, because we are not looking to formulate general principles. Such reflection will more often have a concrete focus, a concern with how to act faithfully here and now. Only after deciding on a response do we act, in this sense returning to immersion in concrete experience again.

Such a rhythm, we believe, should characterize school learning, both in the classroom and outside it. We first immerse students in a situation, broadening their experience by asking them to read a novel, paint a canvas, read an article from a newspaper, conduct an experiment, explore a forest, visit an abattoir or a council office, engage in a simulation game, or hold a debate. Then we invite our students to stand back from time to time to focus on the world in various ways. This focusing might be aesthetic or ethical, or it might be analytical. The purpose of this focusing is that they might act in more informed and responsible ways, that they might respond purposefully. We seek both to broaden and to deepen our students' experience in a complementary manner.

We have structured this book to reflect this rhythm. We have used the vignettes as a way of recreating concrete experience and "immersing" you in everyday situations, with the richness of diverse personalities and perspectives. Then we have invited you to stand back for a time to reflect with us on the issues these situations raise. In this way we hope you will return to your classrooms with greater insight into how to think but, more importantly, how to act.

Different Ways of Knowing

Cal and Ted belong to a Bible study group that meets on Thursday evenings. After a light meal, they spend an hour or so studying Scripture. At the moment they're working their way through 1 John. Of particular interest has been John's linking of knowledge, obedience, and love. Knowledge of God seems to be closely connected with actions. Afterwards, while they're having coffee and a slice of pie, Cal is keen to pursue his Tuesday conversation with Ted, After a little prompting, Ted warms to the subject.

"What I am groping towards is this. The fundamental reality is religious. We confess this, we proclaim that everything is religion, that Christ's lordship extends to every square inch of creation, but we continue to teach our subjects as if they contain the whole truth, as if we can teach the facts of science and then add some biblical references to them. And I think that the problems you are having with fantasy literature relate to this issue as well. People don't look at fantasy as a God-given, created way of responding; they view it with suspicion because it doesn't seem to speak the truth. And they approach it moralistically or theologically

rather than as literature, literarily. Granted, fantasy, just like any other kind of writing, can serve idols rather than the Lord, but the problem is one of religious direction rather than the fantasy form itself."

"Okay," Cal responded, "so I said that lots of people seem to have a one dimensional view of reality, Everything is sort of 'thin,' there's no texture, no complexity. The facts, man, just the facts. Fantasy opens up different windows on reality, but people don't want to look through them. Sometimes I think they're scared of what they will see. But what's the connection you think can be made?"

"Well, in science I think we rely too much on textbooks, and the textbooks almost all have the view that knowing means having the right words, the right formulas. The view is that truth is contained in precise, logical statements and that these propositions are pretty much true by definition. Even when it's not just a matter of definition, we're content to have our kids approach things as if it were. We don't want them to do real experiments; we just give them exercises to illustrate the propositions. They already know the answer before they start, and if the 'experiment' doesn't go the way it should, it's because the kids made a mistake, no less -- not that they should see what they can learn from what they did. We're scared of getting them to really hypothesize and explore. Learning is just a matter of memorizing, of following the rules so that you arrive at the answer that the teacher has predetermined."

"I'm going to make a bit of a jump, Ted, but you've just reminded me of something. When I was doing a summer course, I was talking at lunch with someone in the business department at Bethlehem College. He said that when he was meeting with representatives of the business community in his city, a common complaint they had about graduates of the college was that they were socially inept, in the sense that they didn't know how to relate to people in the broader community.

"Now it seems to me that we can generalize that observation somewhat. Our Christian schools and colleges might be very good at turning out academic achievers, people who can apply academic knowledge in academic contexts, but what sort of use are these people able to make of that knowledge? How have they learned to apply it in real-life situations? And even if they are socially adept, in terms of being able to make polite and interesting conversation, of being able to rub shoulders with 'ordinary' people, I would want to ask a further question. How willing and able are they to apply their knowledge in pursuit of social justice?"

"Listen, Cal, you're on the track of an agenda that goes beyond what either of our committees will be able to address. Do you think anyone will buy it?"

"Well, I don't know about Ken. He's more into damage control than rocking the boat. But I reckon we've got to get into some basic issues if we're going to do things any differently in our schools. I mean, what's the point of Christian schools if they just do the same things as the public schools, even if in some cases they do them a little bit better? That might just mean that we are providing an elitist education for those parents who can afford it -- though I know many parents work mighty hard to pay for it. We may as well pack up and go home. It would sure make some parents happy if they didn't feel pressured or even compelled by the church and their friends to spend all that money on their kids' tuition.

"I would think," Cal continued, "that if we're going to break out of the mold of a worldly view of education, one thing we have to get really clear on is what the Bible tells us about what it means to be human. I think the Bible leads us to believe that the real core of our humanness is our relationship with God, that the meaning of human life is found not in any one of the ways in which we function in the world, nor in all these ways added together, but in who we are before the face of God. Now right through the history of people thinking about the nature of people, all sorts of answers have been given. The dominant view has been that being human rests primarily in our ability to function rationally. Everything else about being human comes from our animal nature, or some such, and so is not to be taken seriously, is certainly not to be regarded as a source of real understanding about things.

"Then you have these other stories -- humans are basically emotional beings, humans are characterized by their capacity to make things, they are purely social constructions, what their society makes them to be, that it is in language that one finds the heart of humanness and so on. Now I think each of these views identifies something significant about human nature. And I think a biblical perspective frees us from having to locate the whole truth in any one of these ways of functioning at the same time as it releases us from having to deny the reality of any out of fear. We wish to acknowledge the richness, the many-sidedness of being human, and that there is more to learning than can be expressed in propositions,"

"So let me see if I can sum it up, Cal. When we look at fantasy literature, for instance, we can say that it's one expression of the richness of being human, that we shouldn't be frightened of it, that Christ's redemption touches this area of life as much as any other? That the whole person is created in the image of God, that the whole world is God's world, and that everything in it is ordered by his law?"

"Yeah, something along those lines."

"All right, but I still have some problems. Suppose some book or film promotes a sinful point of view, how can that be justified? I mean, you can't just say anything goes."

"True enough, Ted, but let me push you back a bit. Every book or film except the Bible, of course-is going to promote a sinful point of view, in one way or another. I don't think we should get into the position of saying, 'Lo! There is sin. Over there is grace.' This side of Christ's return, the wheat and the tares grow together. Sin and grace are intertwined -- but where there is sin, grace abounds! No, I think the real issue is sorting out the overall religious direction of something and seeing how this distorts the bits and pieces with which it deals -- and also where the true nature of things has been revealed, by God's grace. All people live in God's world and are sustained by his grace. They can't help but bump up against the reality that is God's world."

Hennie had been listening for a while, her arm slipped through Ted's. "My experience of church and Christianity has sure changed since I met Ted," she commented. "Maybe it's because he's not from North European stock, or perhaps it's his Catholic background. But our traditional Protestant way of approaching things seems often too abstract, too intellectual, as if there's no real flesh to the gospel. I think even in the way that we worship there's too much emphasis on head knowledge, and in our schools we've talked too much about world view and not enough about ways of being and doing in the world. What I want to achieve most of all with my own children is that they see God's presence in all the ordinary things of life, just like we see things of greatest significance in the bread and the wine, We commune with God through the things he has made. The creation is God's and our playground. He gives us all these wonderful gifts -- food, family, and friends, the air we breathe, the music we listen to -- and we have to offer each one back to him in thankfulness, in his service."

This sparks off an idea for Ted, "I want to relate this to the whole idea of responsive discipleship that we're working with at school. We are made to be connected with the rest of creation in fruitful ways. Sin has alienated us, but Christ brings us back. We have to learn to respond in all that we have been made to be -- intellectually, but also emotionally, morally, culturally, and so on. I think too often we've thought of a faith response as assent to propositions, and not enough in Romans 12 terms of a whole-bodied response.

“I think we can come at it from the angle of our relationships. We stand at the intersection of all sorts of relationships, and to be in relation to God and neighbor -- in relation in ways that are faithful to God's purposes – this is our calling. It's a calling to openness and trust, to awareness and sensitivity, to empathy and compassion, I think school is one place -- only one place, but in our culture, a very important place, all the same -- where this responsiveness is to be nurtured. Someone put it in terms of the fact that now that nothing created can have absolute importance, then everything is of absolute importance. Now that we are freed from the worship of things that God has made by our worship of him, we can really take everything he has made seriously, without fear of idolatry, without fear."

We have argued in this and the previous chapter that we should recognize a range of different ways of knowing and that our schools should promote students' growth in these. The problems that Cal is having with fantasy literature and in his reflections on social knowing arise in large part from the more restricted classical view of knowledge that predominates in our society. The situation is complicated by the challenge that comes from time to time from the romantic tradition, when it suggests that feeling and expressiveness are all that is important. Because the problem with fantasy literature arises more specifically from the difficulty that we often have with aesthetic imagination, we will turn our attention to aesthetic knowing. This will serve as an example of the various ways of knowing.

The aesthetic is part of our everyday experience, given in and with our experience of things. We may not always be conscious of it, but it is implicit in the choice of colors in someone's clothing, in the blight of beer cans along a highway median, and the fragrance of a magnolia blossom. The aesthetic is seen in the way we furnish and decorate our classrooms, the playful care with which we select words and structure sentences, the humor and lightness of touch with which we manage interactions with students, the music we play and the songs we sing, and the brightness of displays with which we enliven classroom life.

But in addition to this everyday experience of the aesthetic, there are moments of heightened aesthetic sensitivity that stand apart, as when someone gasps at a sunset or points excitedly to a bursting rose bloom. We may think of the artist (though such sensitivity is open to the artist in each of us) who decides to take a littered highway as a subject for a painting. The interplay of colors, when portrayed richly in oils, is perhaps also a metaphor for a wasteful society. The artist has approached the scene aesthetically, first imagining and then crafting a new aesthetic object. In the midst of crafting the painting, the artist stands back from time to time to contemplate and to ponder-what would be the appropriate color, texture, tone, patterning -- before returning to the canvas. This is the aesthetic way of knowing.

Chaim Potok seeks to portray the aesthetic way of knowing in some of his novels. In *The Gift of Asher Lev* (1990), the artist tries to explain it to a group of yeshiva students. After drawing three representations of a ram on the board -- a childlike version, a "realistic" drawing (though, as the artist points out, the children have never seen a ram of that size or color) and a more abstract form -- a student suggests that the third is "an inside look at the ram," a look from the artist's inside. He explains: "Art begins when someone who knows how to draw... interprets, when someone sees the world through his own eyes. Art happens when what is seen becomes mixed with the inside of the person who is seeing it. If an exciting new way of seeing an old object results, well, that's interesting, isn't it? That's the beginning of serious art" (Potok 1990, 134-35). He then goes on to draw their teacher in the style of three different artists: Matisse, Modigliani, and Picasso. It is obviously Miss Sullivan, but....

We are suggesting that the nurturing of such aesthetic insight, among their ways of knowing, is an important task of the school. Teachers will help students' aesthetic insight to grow as they show they value it by the attention they give to such response, by seeking regularly both to model it for and to elicit it in their students, by broadening their experience of aesthetic responses to creation, and by challenging them to deepen their own aesthetic way of seeing the world.

We may also stand back from our everyday experience in order to form clear ideas about its aesthetic dimensions. With a theorist's concern for generalizations and patterns, the concrete instances are of interest as examples, not in and of themselves. Thus, a teacher may lead students to compare the styles of twentieth-century painters in order to be able to explain the relationships between them, the interplay between Picasso and Matisse or between Dadaism and Surrealism. The problem is that it is so often this theoretical reflection on aesthetic experience (or other modes of experience), rather than aesthetic experience itself, that is central to the school curriculum.

Schools have a special function in our culture. They set about to lead people in learning in a systematic way. Their activities are directed largely by a carefully planned curriculum. But schools should seek to lead not only in learning, but also in reflecting on and about learning. This is not such a major concern of others who help people to learn in other contexts. In the every day world, education is largely tacit. Instructional conversation is immersed in the particular practical context, as when a driving instructor leads a learner through a series of interrelated skills and expectations. In schools, however, much more needs to be made explicit, for in schools students should be taught to understand and to reflect critically on what they are doing (Bowers 1987, 144). We want students not only to act, but to act purposefully, and for this reason we invite them to stand back and examine their ordinary experience.

The danger that arises from this emphasis on reflection is that it is often separated from its context. This happens not only with the way that areas of study are introduced but also in the failure to reintegrate vocabulary, concepts, and theory with everyday experience (Bowers 1987, 144). This is not an inevitable outcome of a school's role. Teachers err when they focus on giving reasons for actions without ensuring that students have the experience for which the reasons are an explanation: words require a supportive context. If theoretical and other kinds of understanding are to be translated into wise action, schools must enable students to integrate this understanding with concrete experience. Just as inadequate, of course, is when teachers simply ask students to do without any thought as to why they are doing it.

The Rhythm of Learning

We have described growth in knowledge (learning) as a threefold rhythm. The first "beat" in this rhythm is *immersion* in experience; the second is *by withdrawal* from experience, a distanced focusing on it; the third is by *return* to experience in a purposeful response.

When one finds out more about the water by splashing around in it, or more about a person just by "wasting time" with them, or more about a character by reading further in a book, one learns through a fuller, broader, richer *immersion* in experience. This is "playing around" with the world, a quality we must help to flourish. Unfortunately schools tend to inhibit such activities, emphasizing instead what is really the last step in the chain, that of testing the answer. Elbow (1986)

remarks on the foolishness of this approach, because it is limited to the refinement of what is already known rather than to the generation of anything new. Order and. logic can only lead to what is already implicit in the premises; they "are useless unless you have fecundity to impose on them" (Elbow 1986,30).

The second "beat" in the rhythm of learning is *withdrawal,* when we mentally stand back from experience in order to focus on it in a particular way. This withdrawal may be because creation poses a problem to us. Creation is dynamic and active, and demands responses. Trees grow, people are unpredictable, institutions change, and we may not just sit back and watch. Withdrawal may also come because sometimes we pose a problem to creation: we see a stewardship problem in the city's use of water, ail ethical problem in the way the administrator has disciplined a student, or an analytical problem in deciding how to organize an itinerary. It will obviously be a primary responsibility of the teacher both to pose problems to students and to help them learn to pose problems themselves.

Let's think about these two kinds of problem-posing from the point of view of a teacher. The first kind occurs, for example, when I am confronted with a student who seems perpetually uninterested: I am called to respond in a pedagogically effective manner. I am responsible to search for strategies that will engage the student, or to dig down into underlying causes. I may not do so, of course, but either way I have learned something about the call to exercise my craft more faithfully, as well as about myself. Rather than being comfortably immersed in my experience, I face an "arrest" in it (Oakeshott 1966), a kind of a hiccup that intrudes in the normal flow of experience, calling me to reevaluate and perhaps to change course. Another example might be when as a teacher I receive a number of complaints from parents about my use of fantasy literature: what was to me unproblematic has suddenly become very much so!

The second kind of problem-posing occurs when I actively pose a problem to the world. This would involve deciding to see a situation as, say, one of pedagogical concern, when this is not written on the face of it. Although I have felt quite comfortable working through the textbook and there have been few complaints from the students and none from the administration, I may decide to experiment for a time with alternatives. I decide to view a situation as a problem when others have not perceived it as such.

Whether or not I have correctly perceived a problem is of course a matter of wisdom and discernment. Seeing problems where there are none, or overlooking significant problems in favor of less important ones, is not going to be helpful. Problem-posing, as a way of coming to know, is governed by the laws of God. The fool is the one who does not act in conformity with God’s law, does not see things in their right relationships to God and to each other; the wise person, however, is firmly rooted in the Word of the Lord. Such a person is able to discern what problems are most crucial.

The third "beat" in the rhythm of learning is that of *return* to experience in action, when we do something in and to the world on the basis of our standing back and focusing on it in a particular way, Our response is then purposeful and informed. We embark on a particular project, whether small or large scale. We seek to carry through certain carefully chosen intentions. We are committed to a course of action. Our response is not entirely a reaction to a stimulus, but the responsibly considered step of a personal agent, as befits one made in God's image (Oppewal 1984). This applies whether we are seeking to determine an "unknown" in an algebraic equation, deciding to purchase a product from a supermarket shelf, determining a stance on our nation's involvement in an international conflict, or evaluating the rightness or wrongness of a character's actions in a novel. Schools should be places where this attitude of careful reflection, of "thoughtfulness" in all its connotations, is nurtured, guided, and practiced.

We may think of this rhythm of learning as giving rise to two different ways in which our knowledge grows. In the first way, through immersion in experience, we learn as our encounters with the world *extend and broaden.* In the second way, our knowledge is *deepened* as we stand back from the experiential world through problem-posing and return to it in purposeful responding.

Rhythms are good to dance to, if you're so inclined. We can imagine one of those floor diagrams that marks out the steps for us. It would be in the shape of a. triangle. The base of the triangle represents our immersion in experience, and we may move back and forward along the base, extending and enriching our experience. The two sides represent withdrawal and return: we step back at one point, moving along one side to pause at the apex, but return to the base at a different point, to act with deepened insight. We have developed a new way of seeing and being in the world, which may now be incorporated in our everyday experience.

The broadening of knowledge is relatively straightforward: the cognitive structures are already established, and new experiences slot readily into place, enriching understanding gained previously. Solving a long division problem when I have mastered the process is no great challenge, though it might well consolidate that understanding and increase my confidence,

Even writing a haiku might become second nature for some. The teacher will seek to enrich and solidify student experience, without promoting monotony.

Lest the preceding be misunderstood, we should make it clear that we are referring to the learner's own cognitive structures, and not to the structures of knowledge that secular scholarship often holds to be objectively established and religiously neutral. As Christians, when we confront the "truths" of the disciplines, we should always be aware of the challenge implicit in them. They reflect religious commitments that are in conflict with the gospel. They therefore pose problems to which we should respond with a critical stance. This need for spiritual discernment will be central as we seek to deepen our knowledge in faithfulness to the Lord.

Obviously, then, the deepening of knowledge is more complex than its broadening. It involves the development of new knowing structures, the construction of new categories of insight. When we face a mathematical problem that we do not have the resources to solve, we need to develop new strategies. Or we come to view aesthetically something that we previously did not, much as Wordsworth discovered the joy of lakes and mountains, or our students (we hope!) discover the joy of Wordsworth. What was previously *just there,* perhaps even "boring," is perceived in a fresh light. We have learned, because we have seen connections that we previously did not see.

Much of teaching involves challenging students with a new way of looking at things and helping them to make connections they would not otherwise think of making. The challenge is to invite them to make connections that are neither so remote as to promote disinterest nor so threatening as to arouse anxiety. The teacher must evoke just the right amount of tension that students will want to take the step into the new and hitherto unknown, so that they are eager to make connections between previous and proffered understanding. Piaget describes this necessary step in learning as "disequilibrium"; Dewey says that the most important question to ask about any proposed educational experience concerns the quality of problem it involves. We are saying that we want students to be open to God's presence in his world, so that they are able to hear him speaking and will respond in active obedience.

"When I asked you to read this book," Cal Holbrook explained to the grade sevens, "I said that the first thing I wanted you to do was to enjoy it. Authors don't write their books so that they'll be studied in schools: they write them so that people will enjoy them. In a sense, when we start to analyze a book, we kill it. But I hope I'll be able to give you a deeper enjoyment of the book than you originally had, and if not, sometimes schools have to sacrifice some books for the sake of your deeper appreciation and understanding of other books.

"Okay, I know already that some of you have had problems with this book because it's fantasy; and I know that some of you enjoyed the book but your parents had problems with it. So I think we're going to have to do some talking about that. But first, I want you to work in pairs, telling each other what it was that you most liked about the book. After you've done that, I want you to try to find two words that best seem to sum up the theme of the book, I want you to try to find two words that are opposites."

After the students had talked with each other for fifteen minutes, Cal drew their attention back to the front of the classroom.

"I want you to give me your pairs of words so that I can write them up on the board. Thanks, Sara, what do you have?"

Cal compiled a list of terms, which he called "compressed conflicts" or "binary opposites." "Hopeless hope," "courage and cowardice," "vice and virtue," "black and white," "suffering joy," "sacrificial salvation," "love and hate," "anger and compassion" -- the students had done a good job, some of them making suggestions that were perceptive and also creative, some of them sticking with more conventional categories. But Cal was pleased that all of them had stood back from the novel far enough to be able to articulate at least some themes.

"Thanks, Grade Seven, you've done a splendid job. Now, I want you to choose a couple of terms -- not your own, but someone else's -- and I want you to draw two columns, with one word at the head of each column. Then I want you to list characters or incidents in the novel that best illustrate the particular term.

After the class has been working for some time, Jo raised her hand. "What's your problem, Jo?"

"Well, Mr. Holbrook, sometimes I want to put a character under both columns. They just don't seem to fit neatly in one or the other. Like, sometimes Hadrach does things that are really courageous and sometimes he runs away from things he should do,"

"Good question, Jo. What do the rest of you think of that? Have you had the same difficulty, or is it always straightforward? I tell you what, given the time we have left, we won't talk about it further now, but for homework I want you to do one of two things. I want you either to work out a two-minute dramatization of an event from the point of view of one the characters, or I want you to write a one-page perspective on an incident as if you were one of the characters. We'll start tomorrow's class with some drama and some readings.

"I want you to make sure you've got the whole list from the board copied down, and then you can go."

Cal's goals were fairly simple. He wanted his students to enjoy the book first of all. Through his classes, he wanted them to develop a love of literature and reading. He knew that good books bring students into contact with situations that most of them will never actually face in real life, but that are close enough to what life is about to make them more sensitive and better equipped to handle such situations when they arise. He knew that imaginative literature can give a way of seeing ordinary events that heightens students' perceptions of the real issues at stake, particularly the issues of what values should be adhered to, what views of life best promote justice and shalom, and which lead to evil and destruction.

Cal didn't draw sharp lines between kinds of truth. He knew that nonfiction is not just a reporting of the facts but involves interpretations, that fiction in general is a reshaping of experiences that people have actually had, and that fantasy literature is just at one end of the spectrum of an imaginative response to human experience. He had also lived long enough to know that "truth is often stranger than fiction," and that some things that really happened to people would not be believed if they were included in a novel. Sometimes, fiction can be the best way of preparing people to be realistic.

Of course, he also knew the problems that some parents had with fantasy literature. At one point, his job had been on the line, and he and Ted Pakula had talked at length about the issue. But for Cal, literature is a main avenue by which the school can sensitize students to the ways that religious vision shaped people's decisions. His primary goal was to challenge his students to think about the perspective that was driving the actions of characters. With older students, he also concentrated on the perspective that led the author to build the imaginary world that he did. He knew this kind of standing back from the experience of a novel, to reflect critically on the author's presuppositions, is most difficult -- but also most crucial. Schools had to help students not take things for granted, in all sorts of ways.

Many years ago, Cal heard Francis Schaeffer say that reading a modern novel or going to a movie was like going to war. Schaeffer had said that this kind of experience was necessary if Christians were to be equipped for spiritual warfare, and Cal agreed, He was somewhat more positive than Schaeffer, however, accepting that no one could escape from the envelope of God's grace. He knew that Christians could learn important things from non-Christians not just how to fight them. He had a deep-down assurance that the whole world belongs to God, that idols have no ultimate power, and that to the pure, all things are pure. He also believed -- he remembered Augustine saying something similar -- that the gold and silver of the pagans, all their cultural and intellectual achievements, belonged in the end to God's people, and that they would find their place of praise to God in the new heavens and the new earth. From time to time, fantasy, with its recurrent picture of the victory of Good, gave Cal glimpses of the new creation. He knew the risks involved, when human (or pseudo-human) actions seemed to bring salvation, but he also knew the gospel. There were some risks he felt warranted to take.

Safe Risks

A biblical perspective on knowing differs from any secular perspective because it assumes that we are at home in creation: we know the One who built the house. As Christians, we do not start from a position of doubt. We confess that the fear of the Lord is the beginning of wisdom. Standing in a personal relationship with the Creator of all things, we know we were made for this relationship and for a special relationship of dominion with creation. When God brings the animals to Adam so that he might name them, he witnesses that humankind has the calling to participate actively in both discerning and shaping meaning. The animals *may be* distinguished and named, and Adam is fully *capable of doing* the distinguishing and the naming. He is called to be imaginative and creative in responding to creation.

And when Adam does this -- when we do this! -- we identify the nature of something, not in and of itself, but as God's gift, and in relation to him. "To name a thing is to manifest the meaning and value God gave it, to know it as coming from God and to know its place and function within the cosmos created by God. To name a thing, in other words, is to bless God for it and in it.... [This] is not a religious or a cultic act, but the very way of life" (Schmemann 1973, 15).

To *know is* thus to stand -- indeed, to walk -- in the right relation to God a rid to what he has created. It is to treat things with integrity, according to their God-given character.

Things are always known relationally, never in isolation. There is no such thing as a "brute fact." If we respect the rich interconnectedness of all things as we learn, our understanding will not only be deeper, as we described in the previous chapter. We will also be confronted with the rootedness of all things in Christ. Such wonderful coherence has to have a source, and Scripture reveals that this is in the Creator and Sustainer of all things.

This confession that we may trust our knowledge and truly serve God in our knowing of his world is not a justification of arrogance. Creation was made as our home, but we are now pilgrims on our way to a new earth and new heavens. We do know only in part, as through a glass darkly. One root cause of this failure to understand is the fall, with its consequences for all our ways of relating to the world. We are alienated from it -- strangers by nature we are not, but a rift exists that needs to be healed. Consciously and unconsciously, we distort our knowledge of the world. Most radically, we do this as we orient our lives to all idol, seeking in this a point of coherence for our experience. Networks of explanation that allow no place for the Creator of all meaning, which explain order in life by reference to human reason, language, historical forces, or emotional drives, will lead ultimately to ignorance rather than knowledge.

As well as being limited by our fallenness, we are limited by our finiteness. We are not God, we are his creatures. We should not be dismayed: with Job, we will acknowledge that at the heart of the universe is a mystery, that what we may understand is determined by what God chooses to reveal to us. For all knowledge is also a response to God's revelation: He is an active partner in our coming to know the world.

Thus, we should give up all pretensions to complete and certain knowledge, apart from the certitude of faith, by which we acknowledge God's revelation to us. We should accept that our knowledge is always partial and tentative, emphasizing that it is a response to a world that is already pregnant with meaning by the power of God's Word. In our weakness of understanding, God's grace is perfected: here as elsewhere our lives should be characterized by trust, not in our own capacities but in the faithfulness of God. Knowing involves risking, trying out, conjecturing -- and then risking again. But our risk-taking is founded in the security we have in Christ, and in the biblical revelation that all things find their coherence in him.

God's dynamic creation does not allow us to sit back as spectators. It calls for our commitment and trust; it calls for our response. It is in this responding that we express our life as image bearers: we are response-*able,* responsive creatures. Creation in all its richness invites us to respond wherever we turn. Our ultimate response must be one of praise to God who also reveals himself to us in creation: the world challenges us to glorify God and give him thanks (Rom. 1:18-21.).

We are thus invited to take risks. God did not create us as machines, to perform the one range of operations over and over again. He made us persons in his image, designed to grow from childhood to maturity in responsive interaction with our environment. He made us to grow in understanding, in love, and in faith. Just as God was willing to take a risk with Adam in inviting him to name the animals, rather than merely telling him what they should be called, we should be willing to take risks for ourselves and. with others. If our lives are to be lives of service, we need to be as open and vulnerable as God was willing to make himself in Christ. Reaching out in love to those around us will always entail risk.

Reading fantasy literature -- or literature of any kind -- means taking risks, because there are spirits at work here, as everywhere. But in this vicarious experience, our spiritual discernment can be sharpened. And it means taking risks because our ordinary experience, our ordinary ways of viewing the world, are challenged. We are confronted with the power of evil when the valiant adventurers are vanquished; we face the possibilities of virtuous courage as our heroes battle the monster in its lair; we feel the stimulus of hope as the quest continues through the darkest and longest of nights.

But if we walk truly in faith, these are *safe risks,* for God is the sovereign Lord of every square inch of creation. He is also our Father.

The Integral Curriculum

We have already used the term *integral* in this book, without explaining why, in stressing the importance of making connections in learning, we did not prefer more conventional terms such as *integrated* or *integrative.* The reason is that the

latter terms suggest that coherence is something that is constructed only in and by the process of learning. Rather, whatever world picture the learner constructs can only be a response to the coherence that already exists in creation by the Word of God. An *integral curriculum* is one that seeks to respect this given integrality of creation, the wholeness of life lived before the face of God (Blomberg 1980b; 1991).

The coherence that all things have in Christ is ultimately the interconnectedness of service. All things were made to serve each other. The soil serves humans by sustaining life, yet humans serve the soil by tilling it so that it flourishes. The God who is Love made a world at the heart of which love was to beat.

Serving, loving, and knowing are thus three facets of the one gem. Each in its own way proclaims that standing and walking in right relationships is Gods purpose for his creatures. When the reign of the Prince of Peace is truly recognized on earth, then it will be characterized by that dynamic harmony that is shalom.

The Christian school can be a signpost to God's kingdom in part by providing young people with "a sense of coherence in their studies; that is a sense of purpose, meaning, and interconnectedness in what they learn. At present, a typical modern school curriculum reflects, far too much, the fragmentation one finds in. televisions weekly schedule" (Postman 1979, 131-32). The Christian school, of all places, ought to be able to point students to this coherence and purpose.

Thus, we are using the term *integral curriculum* to emphasize the wholeness of life along five dimensions, which draw together the themes of this book:

Religion: the whole of life is religion, and the curriculum should be organized in a way that makes this apparent *(responsive discipleship);*

Creation: the whole world, both "natural" and "cultural," is God's creation, rich in meaning and finding its coherence in Christ, and the curriculum should lead students to experience this structured many-sidedness and meaningful unity *(seeking shalom);*

Person: the whole person is of importance in schooling, and the curriculum should guide the development of the student's various ways of knowing *(unwrapping gifts);*

Knowing: knowledge is not fragmented but a meaningful whole, being rooted in everyday experience which is concrete (i.e., whole) in character, ranging across all the ways in which we relate to the world and growing by both broadening and deepening *(a rhythm* of *immersion, withdrawal, and return);*

Community: the whole of life is communal in character, and this ought to be reflected in the way we structure schools *(sharing joys and bearing burdens).*

Hi, Mrs. Fisher!" Jody called out as she went to her desk in the science room. "Did you have a good weekend?"

"Thanks, Jody, I did. I managed to get in a couple of hours kayaking on Saturday afternoon. I really enjoy it when spring finally comes around again. I hope it's here to stay, now."

Joan Fisher turns to address the class. "All right, Grade Eight, today we're going to start your projects on the chemical and physical properties of the products you've been researching for your investigative journalism projects. Remember, the science room is just a place where we have some special equipment and we ask certain kinds of questions, The research that you've done in the library and in your interviews with business people and shopkeepers is just as important in understanding the products you're investigating. And of course, your actual use and enjoyment of the things you are investigating should not be forgotten. What we're really hoping to do is to focus on the different aspects that go to make up your total experience of the product,

"What Mr. Holbrook and I want you to concentrate on in science is whether the claims that are made in the advertising of your product are matched by the physical properties of the product. Let's get an overview of what we're all researching.

As students began to describe their products, Mrs. Fisher listed them on the board. There was quite a range of items, from canned drinks to exercise equipment. The initial selection of products had been on the basis of advertisements that students had collected, as their English project concerned the reliability of advertising claims. This in turn was linked with their broader class study of the manufacturing and distribution process. The whole unit had been planned and was now being taught by a team of four teachers, each making a special contribution to the students' growing understanding.

"Mrs. Fisher, Becky and I are looking at licorice. We went to the store and got a whole lot of different types. We thought it would be interesting to compare them, so that we get an idea why they taste different from each other. What sort of tests should we do?"

"Well, Helen, don't you think it's interesting that some people like the salted licorice and some people don't? Why do you think that is? When I think of salted licorice, I think of Dutch people. Do you think that taste might be more than a matter of a chemical reaction?"

"Do you think we should test people's taste buds too, Mrs. Fisher?" Helen asked.

"Well," Mrs. Fisher replied, "I think it would be very interesting to look at the way in which people's cultural background might affect their response to chemicals. Mrs. Fisher, Jack and I are interested in seeing some of the waste products that come from making processed cheese. You know how we joke about its being like plastic -- we'd like to know what they do with all the flavor they take out. But we thought we should also look at what goes into the packaging of it, the stuff they wrap each slice in. We were also wondering about its nutritional value."

The way this unit is structured guides students to see that information is important for the ways in which it helps them to make responsible decisions, decisions that will serve God, other people, and the rest of creation. Conducting scientific research, or any kind of research, is not seen as being for its own sake, but for the sake of responsive discipleship. In the science room, Joan Fisher helps students pose certain kinds of problems, complementing the other kinds of problems that they are exploring with other teachers. Because the products they are investigating are ones they already use or may decide to use in the future, their focused study will inform their present and future action.

Questions for Discussion

I. What evidence do you see in your school of the classical and romantic traditions? Does either one predominate?

2. How might viewing learning as a rhythm of immersion, withdrawal, and return help to break through the classical/ romantic polarity? Outline three approaches to the same area of study that exemplify the differences between the classical, romantic, and biblical views of knowledge.

3, "Immersion, withdrawal, and return" can obviously characterize learning in schools of all kinds, whether Christian or not. How might this rhythm be employed to implement a biblical view of knowledge, not only in terms of structure but also in terms of religious direction? In what ways might it be used to promote a more spiritually critical stance toward understandings that are normally taken for granted?

4. The following is a tentative list of ways of knowing: analytical, techno-cultural, lingual, social, economic, aesthetic, jural, ethical, and confessional. The chapter briefly describes the aesthetic way of knowing, in distinction from the aesthetic dimension of concrete experience and theoretical reflection on the aesthetic dimension. Develop similar descriptions for the other ways of knowing listed.

5. Stress has been placed on "knowing as relating rightly," not merely conceptually but primarily in terms of acting. In attempting to reform our thinking and acting so that it is more righteous, how should Scripture guide our interpretation of the relationships between different aspects of creation?

6. In the last section, we describe the implications for curriculum under five headings and give a snapshot from a unit based on this model. Select a specific area of the curriculum and develop your own example.

7. What are the implications of what is said about coherence and the integral curriculum for the curriculum framework of your school? How would an approach that relied on the divisions between the disciplines achieve the same goals (assuming that you accept that they are biblical)?

Recommended Reading

1. Blomberg, D. G. 1980a. "Toward a Christian theory of knowledge."
   Eisner, E. W., ed. 1985. *Learning and teaching the ways of knowing.*
   Two discussions of the "ways of knowing" that suggest differing frameworks but support the value of a curriculum catering for a diversity of gifts or "intelligences."
   Lewis, C. S. 1943. *The abolition of man,* chapter 1.
   Explores closely related ideas about the normativity of aesthetic and other value judgments.
2. Wolters, A. 1985. *Creation regained.*
   Walsh, B. J., and Middleton, J. R. 1984. *The transforming vision.*
   Lucid explanations of a Christian world view. Both books are helpful starting points for thinking about biblical reformation of the disciplines and of knowledge generally.
   Wolterstorff, N. 1976. *Reason within the bounds of religion.*
   Runner, H. E. 1970. *The relation o the Bible to learning.*
   Seerveld, C. 1980. *Rainbows for a fallen world.*
   All contribute much to this discussion.
3. Oppewal, D. 1985. *Biblical knowing and teaching.*
   Groome, T. 1980. *Christian religious education.*
   Palmer, P. 1983. To *know as we are known.*
   Valuable for their broader consideration of the nature of knowledge.