



Session IV

What Discipline Perspectives Guide Us In Choosing a Research Topic?

Bioscience

Discussion Session



Lee DeHaan is a graduate student studying plant genetics at the University of Minnesota.

Audience: You said that God wants us to delight in our topic of research. How compatible is “delighting in research” and “the long, hard painful road to research” that Charles Harper referred to earlier?

Hardin: I don’t mean to imply that every waking moment of every day is a delightful experience for me. After filling out the sixth recommendation for a premedical student who wants to go to medical school in one day, I am not exactly delighting in my work, although writing recommendations is part of my job. I agree with Charles when he described “a process.” The process may be a little bit labyrinthine and varies for different people. I know people for whom everything seems easy. I look at them and really fight envy. For some of us “to delight” is more difficult than for other people. No job is perfect, and so you are going to have to make compromises.

Joy, a postdoctoral fellow, and I were talking yesterday about the decisions she is facing. In her words, “I really like research, I really like teaching, and I don’t see many jobs where you can combine those in a nice way. It’s going to make me sad to give something up.” I think part of the nature of the beast is having to make some compromises. You must weigh the bedrock things that are personally important to you.

Audience: I have a controversial issue and question. I want to focus on the issues involved with animal research, but I have been in an isolated science community. At the same time, I have been in a pretty conservative church. These two communities are basically opposite. How can people who struggle with ethical questions of animal work bring their concerns to the members of their church? What biblical information becomes part of the decision making?

Hardin: In my personal situation, I don’t work with anything that my university considers to be an animal. I work on a little nematode worm, which was the first higher animal whose genome was sequenced. It was the template for what they did with the human genome. We know a

little about these tiny worms, but they are not furry, they don’t have backbones, and so the university considers them biological material. I used to work with sea urchins, which the university considered as seafood rather than as animals! Are there people here that have extensive work with animals? A lot of us, right? So a good question is, “To what extent is that appropriate stewardship?”

Audience: We don’t want to be cruel to animals but we just need to use them to provide solutions for human life. Should we use animal life to help other animal life?

Hardin: Some would say to hold humans as higher animals is “speciesism” as Peter Singer from Princeton has said. It is not a total given in our society that humans are considered to be higher animals, therefore justifying the use of other animals in research. Are there other thoughts on research use of animals?

Audience: I basically agree with what you are saying. The thing that gives me great pause is pain research that uses animal models. That seems very difficult to do. While I think it needs to be done, I could not have joy in doing that research.

Hardin: There are no easy answers in that situation. Without arguing from the creation mandate for the ethical use of animals in research, it becomes difficult to justify that research.

Audience: Can you justify sacrificing animals for educational purposes rather than for research?

Hardin: When gaining knowledge requires the sacrifice of the animal, the issues become much more intense for biologists. This is an area where we are really different from physical science people.

Audience: I do research with animals as experiments but they are sacrificed at the end. To be honest, the idea that it’s going to help someone else is nice and certainly it leads to grants etc. but that’s not particularly why I am doing it. I



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am a mathematician and a modeler so I am very removed from the idea of helping someone else. I am having a hard time justifying what I do for that reason. In this area of research is it warranted to kill animals?

Hardin: Good question. What do you think?

Audience: I can speak to that because we sacrifice a lot of mice and rats. And we sacrifice them before the experiment even begins. At one point, I did have a problem killing these poor little mice. A lot of them are very cute, especially the brown ones. In this work, I came to realize and understand more what it meant to have dominion over the animals. I see a “care versus cosmetics” dichotomy. I don’t think I can ever do research on an animal so that someone can wear mascara. I don’t necessarily think it’s bad that we have cosmetic products but they are not necessary in the same way as understanding about medical, physiological, or immunological processes. But it is sufficient justification that something we do in our lab can result in better scientific understanding so that someone else can develop something that can help people breathe better.

Audience: I don’t work on animals but when I have a mouse in my kitchen I don’t think twice about killing it. Most people consider a pest like a mouse not nearly as significant. However, there is a minority being more and more vocal about the sanctity of all life.

Audience: For Christians, is there a difference between a mouse and a monkey? But what is our stand on it? I’m not expecting it to be the same for everybody. I think that with a science background we’ve seen more differences between animals than the animal rights groups.

Hardin: Some people would say the level of sentience is important.

Audience: But, for us, is the issue dominion?

Hardin: Yes, but you could still argue that dominion is exercised differently over beings that have different levels of sentience. I think one could make that argument. You are not going to find anything about primatology in the Bible, so I think that you have to argue from principle.

Audience: I used to do experiments that required sacrificing a lot of rats. We used to isolate enzymes from their livers. I am not sure I could have done the same work if it was on chimpanzees. I would need a stronger reason for using chimpanzees as opposed to rats, or be more careful about minimizing the suffering.

Hardin: I think those are all extensions of this issue of dominion.

Audience: If animal use in research is an issue and a problem, then who is developing new alternatives?

Audience: For some things, you are not going to have an alternative. In other cases, there are alternatives. For example, many people have developed recombinant DNA technology—splicing the gene into bacteria and then just growing bacteria and harvesting the enzymes so that you are sacrificing bacteria rather than mammals.

Hardin: Charles Harper said that we don’t want to put out a bunch of people who are trying to slay philosophical dragons. And yet he called for us to raise up a cadre of “subtle interlocutors.” I am not sure exactly what he meant by that, but let’s think about this question without trying in a Quixotic fashion to slay windmills that don’t need to be killed. Are there explicit ways in which Christian biologists should think about their research topics that would help to fulfill this idea of what I call cultural reformation? Are there areas we should go into that will contribute in some more explicit sense to the praise and glory of God and in some sense be saltier and brighter to our society? I can think of several areas that we could kick around. One is the Intelligent Design movement. If you subscribe to the view of Michael Behe that irreducible complexity is out there, one possibility is to show that some things are irreducibly complex. You could investigate something with the express purpose of doing that.

We could discuss the area of neuronal function. We had a lively discussion around lunch today about brains and minds. What is the nature of a mind? Is there a soul out there? Should we get into mind/brain research with the express purpose of trying to explicate that interaction in a way that is consistent with Christian thinking?

Environmentalism is another important area. Should we forget about Gaia but talk about God’s world instead? Should we specifically encourage Christians to work in those areas? If you are an advanced graduate student, you have the opportunity in choosing a postdoc to get into an area that could potentially impinge on these kinds of ideas. What do you think about that? To what extent should we think about “apologetic” biology? Is that appropriate?

Audience: I certainly think it could be, but I think it is also useful to have a perspective of what’s gone on in physical sciences in the last forty years. Probably forty or fifty years ago, there was a lot more hostility to Christianity in the physical senses than there is now. What changed that? Did we find, when we examined the big bang theory of cosmology, that there’s real evidence for God? It wasn’t that. One of the changes in the physical sciences was a growing sense that this universe is really neat and it is okay for us as scientists to admit that fact! So non-Christians in the physical sciences can see how you can be a Christian. They can see how it might yet make sense to be a Christian. This decrease in hostility to Christianity has been due partly to an awareness that the physical universe is really neat and our knowledge as physicists and cosmologists has a limit. I think that same sort of thing could happen in the biological sciences.

Hardin: It sounds like a “wait and let it shake out” approach.

Audience: You can accelerate that process by constantly pointing out in private conversations and writing just how wonderful all this stuff is! It’s okay as scientists to talk about wonder!

Audience: I think the physical scientist may have embraced a little bit more humility than biological scientists. Physical sciences have had their entire world view reshaped by things like the big bang and varied views on cosmology. I think biologists



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have yet to go through that kind of humbling process where the way they explain the world has been completely turned around.

Audience: Colin Russell was describing that in terms of going into a research topic with pre-conceived notions. I think that it is okay to study what the world is studying if we are yearning and praying for God to reveal himself through that. If we're studying species or whether God uses evolution as a process, God is going to reveal that to us in his work. I am not so sure that we have to set out to disprove things as much as to continue proving what is true about God's creation.

Audience: What about that term, "subtle interlocutors"?

Audience: I took it to mean not just as showing scientists where they are wrong but also showing other Christians where scientists are right. When I went to a creationist meeting, I felt uncomfortable because there wasn't a humble appreciation that said maybe we don't understand all of this or an acknowledgment that there is truthful work in science. Certainly evolution, even if you don't agree that it is totally right, has shown us truth that you wouldn't probably have ever come to otherwise about the changing of life.

Audience: Only truth can glorify God. If our goal is something other than finding truth about God's creation then we're going to find something other than truth. Whatever that is simply cannot glorify God because it is not true. Only that which is true about God's creation can reflect him.

Audience: Sometimes we ask, "Should we slay dragons or be those subtle interlocutors?" This is asking the wrong question. The question is not either/or, it is probably both. Jesus said we should be as "wise as serpents, harmless as doves," which implies this second idea. The apostle Paul talks about the warfare that deals with principalities and powers that exalt themselves against God. The Christian is responsible to tear those down, which involves "slaying the dragon." I think God gifts us in different ways. There are some very good dragon slayers around, and I am grateful for them. And there are some others who are more subtle, and I am grateful for them.

Hardin: Is it possible to be a dragon slayer within the system? Let's use Phillip Johnson, a law professor at Berkeley, as an example. One thing that gives him an advantage in many

ways is that he stands outside the system. He's like a prophetic voice crying in the wilderness. And that makes some biologists really mad, I guess. But suppose you are in the system. You've got to apply for grant money to maintain your lab's funding. You have to go up against the machine. Do you rage against the machine? Is that a good tactical move or not?

Audience: About a year ago someone asked me, "I want to research this mind/brain question because I believe for theological reasons in mind/brain dualism. What should I do? Should I hide that fact or should I try and find a professor that will support me in that?"

I thought about that question for a while and tried to answer that person by saying, "It depends on your aim. Is your goal to learn more about God's creation and hope that along the way you'll find some good evidence for dualism?" Then you would be perfectly fine going to a professor of neuroscience who doesn't believe in dualism and find a research topic that interests you both and let the evidence come where it may. If, on the other hand, you focus your effort to prove dualism, you don't want to go work for the average professor neuroscientist. You probably want to locate a niche for yourself.

Audience: Will you define the term "interlocutor" for me?

Hardin: I think "interlocution" is essentially dialogue. If you become the top gun in your field, you have a platform from which you can gently raise issues because of your credibility.

Audience: That fits in with the idea, that if you are involved in this kind of work, it is important to the glory of God to be good in it and earn those credentials. The "subtle" part of the term suggests not to be niggling, but just to be aware of appropriate ways to do dialogue. The appropriate way is to follow the method of science, have a thesis in mind, and then proceed in ways our society and others allow us to function. But you always have to know in the back of your mind that this is the direction you are going. That's being subtle.

A number of years ago an undergraduate Christian student who I happened to know applied to our medical school for admission. When he did not get admitted he came to see me about it. I happened to be on the admissions committee, so it was a bit complicated but I couldn't reveal everything to him. In the interview process when he was asked, "Why do you want to be a physician?" his response had been, "Because God told me to do it." The committee



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interpreted that this was a person who could not think for himself, which was not an unrealistic interpretation for the admissions committee. The student hadn't really thought about it so he did this three times. Later I had the opportunity to sit down and share with him and said, "There might be some other ways for you to answer that question that wouldn't violate your faith." Is looking at other ways of answering that question being a "subtle interlocutor?"

Hardin: Yes, that's getting closer. Sociologically speaking, I don't see a lot of evangelical Christians explicitly moving into origins type research. One of the reasons that you might not want to do that is because these issues come up again and again if you are in that area. Is that a cop out? That's what I am asking. Should someone explicitly go into that area only to show that the "primordial ooze to Albert Einstein" scenarios have real insurmountable holes in them?

DeWitt: Restoration ecology is an area, at least in my own experience, that opens up communications. In our work at Au Sable on Puget Sound, we're engaged in a very major prairie restoration project that includes providing college level courses and doing research in restoration. The project opened up channels for communication as reflected in various questions: "Why would you want to restore a prairie?" or "What's bad about agricultural land that we want to have this come back?" One student who took one of our courses last summer said, "I'll have to get out of here pretty soon because I am soon going to become a Christian otherwise." While the project was not explicitly done as something out of a Christian calling, everyone was working from a sense of calling. It was contagious. A lot of people had never thought about what it means to restore creation.

Hardin: Trying to find cultural resonance is a good thing no matter what field we are in. Are there fields where there's more resonance? That's a tough question to answer because the culture keeps changing. I teach a course in embryonic development at the University of Wisconsin. I begin my opening lecture with the history of embryology and I quote from a Hebrew poet named David. In Psalm 139, David muses about God's omnipresence that includes the womb. With this example, I am trying to draw out resonance with people because anybody who has had a child has a sense of wonder about the process.

Here is a related question. Are there any areas that are ethically off limits for Christian biologists? I would personally argue that there are certain areas of biology that could be considered as "Pandora's box" areas of biology. Once the lid is off, bad things are going to happen. I think that cloning is one of those Pandora's box issues.

Audience: I think there's a responsibility on both sides. I feel like saying we don't go into cloning humans because it's a sanctity of life issue, but I feel that we have been here before with in vitro fertilization. Perhaps, we conceived something that God didn't intend to conceive. What do we do with the result? Shouldn't we be careful to see embryo creations as things that God has allowed to come into being?

Hardin: I think most people say that if you clone a human being, the result is also a human being.

Audience: What if you created a human being without a brain? It has been proposed here.

Hardin: Researchers have put human nuclei into enucleated pig oocytes. Someone at the University of Wisconsin is doing experiments involving nuclear transplantation across species lines, however human material is not being used in that situation.

Since the human genome project is moving forward, there is no reason to think that one could not do germ line transformation of human beings or genetically engineer humans. Usually genetic engineering is justified as a therapeutic intervention to correct a genetic deficit that is transmissible. Are you going to repair that genetic defect so the repair is transmitted in the germ line? What about that? Are there areas like these where we should say "no"?

Audience: Will it make a difference if we say "no"? And how do we as a community discuss this? Some Christians may believe that it is not a problem? Do we make a decision as a group that some things are off limits for Christians? Maybe we could spend some time just proving something else is right.

Hardin: An area where Christians disagree is using human embryos that are left over from in vitro fertilization to produce human embryonic stem cells. The University of Wisconsin is a main center for distributing human embryonic stem cells. What do I do with that as a faculty member? Do I go to those doing it and say, "I think it's a bad idea." How do I engage them?

Audience: We have difficulty in weighing intangibles and tangibles together. We have real benefits and we have potential benefits. We have real harm and potential harm. We don't have a good way of weighing real benefit against potential harm.

Hardin: With stem cells the discussion is almost always potential benefit. However, that seems to be a weak argument, since there has been no demonstrated actual benefit.

Audience: You don't realize the benefits unless you research it.

Audience: The Christian Medical and Dental Society has a well established mechanism ready for dealing with ethical questions. If you go to their web site it will show something already worked out. Perhaps we as Christian biologists should participate fully in a group that has already dealt with some of these issues so we can work on others in the future.

Hardin: Should this kind of forum be replicated? Our gathering is unique in my experience. We have people at different levels in their careers that include the full spectrum from professors to postdoctoral researchers to graduate students.

Audience: It's encouraging that other people are searching and asking how to live your faith and what direction to take. I have things to share when I go back to my research laboratory. ☆