The Cornell Institute for Research on Children: A vision of integrated developmental science

Stephen J. Ceci*, Wendy M. Williams

Department of Human Development, Cornell University, Ithaca, NY 14853, USA

Abstract

The Cornell Institute for Research on Children (CIRC) is an intellectual infrastructure funded by the National Science Foundation under the aegis of the Children’s Research Initiative, which was spearheaded by Rodney R. Cocking. Cocking’s vision of integrated developmental science is an integral part of CIRC’s philosophy. CIRC aims to integrate knowledge and paradigms from a variety of fields (e.g., developmental psychology, economics, neuroscience, and pediatrics), which take different perspectives on similar issues (e.g., the effects of toxins on cognitive development), making it explicitly interdisciplinary. The object of CIRC studies is to apply research findings to social policy. To accomplish this, CIRC provides resources to enable teams of scholars from diverse fields to collaborate on policy-relevant questions. CIRC’s approach begins by asking policy-makers to define questions for researchers to address, then shepherds the process by which scholars from various relevant disciplines are commissioned to work as a team to answer such questions. To demonstrate the strengths of this approach we describe the six components that comprise CIRC and provide an actual example of a project that CIRC has commissioned as well as a hypothetical example of a project that CIRC could undertake. This article is a progress report, written in an effort to disseminate information about CIRC’s agenda.

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1. Introduction

Rod Cocking was an ardent proponent of a new type of infrastructure, one that would catalyze developmental psychology’s myriad strengths by merging them with those from other areas of science. Rod termed this initiative “integrated developmental science.” He envisioned a time when developmental scientists would work at the intersections of neurobiology, life-course sociology, economics, anthropology, and pediatric medicine—as well as across all subfields within developmental psychology—to address questions of policy relevance. It was not just a slogan for Rod; he truly believed that the most important challenges facing society were ones that could best be met with a confluence of the insights, paradigms, concepts, and tools of disparate fields.

Of course, multidisciplinarity is not new. One routinely confronts endorsements for it in the academy, on federal panels, and in the calls for proposals from funding agencies. Rod’s vision of integrated developmental science, however, differed in one important way from the typical understanding of multidisciplinarity. An analogy from the field of linguistics may help to make this distinction. Suppose in one situation native speakers from two languages are needed for a project; an expert in the first language is needed to translate text into a second language and an expert from the second language is needed to translate the text back into the first language. We can thus make an analogy to the ordinary expectations of multidisciplinarity if we liken the two language experts to experts from different fields of study in the situation in which each field has a vital role to play.

Now contrast this situation with one in which the same two languages intermingle and evolve into a creolization that differs from the two parent languages in important ways. This second example would be akin to Rod Cocking’s view of integrated developmental science: multiple disciplines coming together to produce new understandings, paradigms, tools, and concepts at their intersection that go beyond either of the languages. In essence, Rod advocated for a creolization of the sciences that participate in exploring developmental questions. The integrated developmental science he envisioned went beyond any one of the sciences as they currently function. Something like this appears to have occurred naturally in many fields, such as metallurgy and chemistry, which merged into the integrated field of “materials science” and, as a result, now differs from those parent disciplines in important ways. The same is true of biology, chemistry, and geology, which came together to form the integrated field of geosciences, and of mathematics, engineering, and physics, which merged to form the integrated, but fundamentally different and new field of computer science. Rod Cocking was deeply engaged in fostering this sort of creolization. He believed that it would pay off both for science and for society. Because development is organized on multiple levels (intrapersonal, interpersonal, contextual) and crosses many domains (biological, cognitive, social), it is an ideal test bed for Rod’s vision of integrated science.

A year before Rod’s death, we proposed the creation of a center that would provide an intellectual infrastructure to foster the integration of diverse disciplines to work on questions of societal importance. But societal importance was not the sole criterion; we also proposed that research questions should have the potential to contribute core knowledge to devel-
opmental science or to jumpstart new areas of developmental scholarship. For example, a study of the effects of neurotoxicity on cognitive development would be expected not only to document such effects (e.g., resolve controversies surrounding the link between cognition and iron levels) but also to contribute new tools and ways of thinking about this question that would result from the interplay of psychologists, neuroscientists, animal behaviorists, and pediatricians. Although not all Cornell Institute for Research on Children (CIRC) studies will be successful in accomplishing both of these goals, the overall CIRC portfolio is expected to contain many that do meet both criteria.

Thus, we had two fundamental aims that targeted the content and processes of the field of developmental science. Moreover, we wanted to enable researchers at all stages of their careers, from predoctoral fellows to accomplished senior faculty to participate in this effort to “creolize” developmental science, by merging disciplinary knowledge that was pertinent to answering questions of societal importance. In this way, the informal institution and the practice of developmental science could become transformed.

Rod resonated to this idea immediately, and we had numerous late-night conversations with him about the nuts and bolts of this type of infrastructure. He alerted us, based on his own experience at the nexus of different disciplines in applied fields, to a potential trap: Do not presume that scientists know the right policy questions to address. Rather, he recommended, ask policymakers themselves about the issues that keep them up at night; ask them to frame the questions in language that will have the most relevance for practitioners. Avoid the classic consultant trap of providing answers to questions that no one in the trenches cares about. At some level, we are all aware of this risk, the so-called shepherd and consultant problem, exemplified in the anecdote below:

A shepherd was herding his flock in a remote pasture when a brand new convertible BMW 325 CI advanced out of the dust cloud towards him. A man in an Armani suit, Bally shoes, Serengeti driver sunglasses, and a Hermes silk tie leaned out of the window and asked, “If I tell you exactly how many sheep you have in your flock, will you give me one?” The shepherd calmly answered, “Sure.”

The man parked his BMW, whipped out his notebook and connected it to a cell phone, then he surfed to a NASA page on the internet where he called up a GPS satellite navigation system, scanned the area, and then opened up a database and an Excel spreadsheet with complex formulas. He sent an email on his Blackberry and, after a few minutes, received a response. Finally, he printed out a 150-page report on his high-tech, miniaturized printer, then turned to the shepherd and said, “You have exactly 1,586 sheep.” “That’s right,” said the shepherd as he watched the man bundle one of the animals into his car.

Then the shepherd said, “If I can tell you exactly what your business is, will you give me back my sheep?” “OK, why not?” answered the man. “You’re a consultant,” said the shepherd. “That’s correct,” said the man, “but how did you guess that?” “Well,” answered the shepherd, “you turned up here, although nobody called you. You want to get paid for an answer I already knew, to a question I never asked, and you know nothing about my business. Now give me back my dog.”
This story nicely captures the necessity of asking practitioners *themselves* for the questions rather than presuming to know which were the ideal questions to ask and answer. We were familiar with stories of how academics presumed to know the right policy questions to ask, with the result being that their findings seldom had the influence they had hoped. We heeded this advice, as well as benefited from his vision of integrated developmental science, in the planning of a center designed to facilitate the creolization of developmental science.

Our center was funded with the expectation that Rod would play an important role in its development. He disappeared 5 days before our inaugural advisory board meeting at which he was scheduled to be the opening speaker. Although he was not alive at the start of this meeting, none of us realized what had happened. There was much speculation as to why someone as responsible and diligent as Rod Cocking would simply fail to show up to give the opening address when he had been so excited about the impending meeting just 6 days earlier. We did not find out about his tragic murder for several more months. We see our center as one of his many legacies to the field and try every day to fulfill his vision for this endeavor. In the remainder of this article, we shall describe the components of our center and how they complement each other. Throughout this description, we provide several illustrative examples of the center’s activities, focusing primarily on the first component, which is at the center of the CIRC enterprise.

### 2. Six components of the Cornell Institute for Research on Children

Our center, funded by NSF under Rod’s guidance, is called the CIRC. It is comprised of six integrated components. Below, we briefly describe how these six components come together to realize the dual goals of addressing questions of societal importance and simultaneously contributing to core disciplinary knowledge. In doing this, we simultaneously provide a progress report on CIRC’s first 20 months of operation.

Briefly, these six components are (1) a mechanism for the development of high-quality research on children that is in the public interest; (2) a secondary/postsecondary training initiative to draw future scholars from ethnically diverse and low-SES backgrounds into developmental science in the public interest, specifically targeting youth of color, economically disadvantaged youth, and girls and women; (3) coordination with existing Cornell centers/institutes to facilitate achieving our aims by leveraging CIRC’s resources; (4) graduate and postdoctoral training in the area of integrated developmental science; (5) the organization and administration of an advisory board of senior scholars with public-policy experiences or relevant knowledge, who serve to advise the center directors on all issues as well as to mentor predoctoral and postdoctoral students, to participate in board meetings, and to help broadcast the center’s existence and aims; and (6) formal print and nonprint dissemination. What follows is a detailed description of the first component, inasmuch as it is the core around which the other five components orbit, followed by briefer descriptions of the other five components.
2.1. A mechanism for the development of high-quality developmental research that is in the public interest

First and foremost, CIRC aims to foster high-quality research on children that is in the public interest. CIRC accomplishes this goal by commissioning teams of accomplished developmental scientists, thoroughly vetted by the advisory board (see below), to investigate societally important questions and provide these teams with the resources they need to fulfill this objective. We shared Rod’s opinion that such research often must cross disciplinary boundaries and that scholars could not be expected to make such crossings in the absence of the types of incentives that spurred cross-disciplinary integration in such fields as materials science, earth sciences, and computer science. Some resources as well as an active shepherding process are needed to pair scholars whose skills were complimentary. Below we describe how CIRC addresses both of these objectives.

The first step we took upon being informed of funding by the National Science Foundation was to generate potential topics to be investigated from a variety of sources. We used a number of public domain email listserves to canvass hundreds of state and federal bureau chiefs, legislators, agency heads, and policy-makers about the “questions that kept them up at night,” informing them that if their question fell into CIRC’s arena, it might be possible for us to commission a team of scholars to study it at no cost to them. Not surprisingly, we received hundreds of nominated topics in response to this email canvass. The range of topics was huge, spanning the cellular to the societal level: For example, we received inquiries from a director of a USDA-supported research agency about the potential effects of physical exercise on preschoolers’ synaptogenesis of certain brain regions; we received a nomination from a state-level administrator for the Division of Family and Youth Services regarding the development of racial attitudes; a president of a national family and juvenile court association asked about the validity of custody fitness evaluations; and a state education director asked about the costs–benefits of providing universal pre-kindergarten (UPK) programs by accredited teachers rather than daycare workers. Even this synopsis does not fully capture the enormous range of topics that were nominated. The enthusiastic response to our canvass strongly suggests that there is a need for this kind of policy-oriented commissioned research. Most state and federal bureaucrats have few resources to answer the sorts of questions that they asked us to investigate. We invite nominations of research questions from readers of the *Journal of Applied Developmental Psychology* (*JADP*); questions can be emailed until August 2004 to either author and we will bring them to CIRC’s advisory board for discussion.

Because our advisory board plays such an essential role in the commissioning of studies, we briefly describe how it works here, although later we delve into greater detail about its makeup and procedures. CIRC’s advisory board was formed according to a few guiding principles. First, we wanted individuals with backgrounds in the various fields we hoped to integrate (economics, psychology, sociology, pediatrics, neuroscience) as well as from the various subfields of psychology. We asked colleagues in fields outside of our own to advise us on individuals from their fields whom they felt would be good board members, and we used the academic grapevine to vet the names we received. Second, we wanted some
advisory board members to be experienced in translating research into policies and programs. Toward this end, we invited five past presidents of major professional organizations (the American Psychological Society, SRCD, and the American Psychological Association), along with several other scholars who specialize in policy implementation. All accepted our invitation to serve on CIRC’s advisory board. We initially compiled a board of 25 people, but in response to reviews at NSF—both external reviews and internal staff—we were advised to augment our list with 10 others, bringing the total membership to 35. Their names and biographical information can be found at CIRC’s web page (http://www.human.cornell.edu/units/circ/).

We foresee continually reconfiguring the advisory board to meet our ongoing needs. As different projects/get commissioned, we recruit expertise to our board in the new areas. At our inaugural advisory board meeting in March 2001, we presented board members with a set of operational guidelines and a long list of tasks to be completed before we could commission our first study (e.g., development of conflict of interest policies, publication policies, criteria for picking scholars to be on teams). A particularly important lesson we learned immediately was that our original conceptualization of the advisory board needed amending. We began with the hope that the advisory board would make most of the substantive decisions, but we soon realized that this was not an efficient use of their time (or ours). Subsequently, we have viewed the board as an invaluable resource for vetting topics and names, and to advise us on a wide range of decisions. However, we would make the ultimate decisions, guided by their wisdom.

We brought the long list of nominated topics to our advisory board for thorough discussion to determine which ones had the potential to achieve our dual aims of addressing important societal questions while simultaneously contributing knowledge to core scientific disciplines. Each question was discussed, often at great length. These were very open-ended discussions, often characterized by differences of opinion among advisory board members. For example, several members felt that a study of the effects of violent interactive video games on children’s social functioning was a wonderful topic, while others felt that this was premature until more groundwork was done to allow that question to be answered unambiguously. We shelved it for the time being. Only those questions that generated enthusiasm among the board members survived for further vetting. Although our aim is to oversample research questions that are high on both potential to make a scientific contribution as well as societal relevance, some questions that generated enthusiasm were higher on the societal relevance dimension than on the scientific dimension, and occasionally we selected such questions to commissioning. Moreover, some questions that were high on both dimensions were impractical because of financial and tactical constraints. Eventually, CIRC’s advisory board identified a list of a dozen questions that, for the most part, have the potential to inform both policy and science and, importantly, which could be answered within the constraints of our budget. We anticipate that all 12 questions will be addressed by the final year of our funding—2006.

Next, in conjunction with our advisory board, CIRC’s directors proceeded to generate the names of the ideal scholars to be appointed to each of these dozen research teams. Teams
were made up of individuals who are seen by scholars in the relevant research communities as possessing excellent competencies to investigate a chosen topic. Our budgetary constraints are such that we could not commission all 12 teams at once. We have to commission teams gradually, as yearly funding increments from NSF came on-line. We plan to commission two to three new projects per fiscal year. Thus far, we have commissioned 6 of these 12 CIRC teams and hope to commission the 6 additional ones in the next 2 years. Names of team members already commissioned and their disciplines also can be found on the CIRC web page. The six currently commissioned teams are investigating the following topics, all of which are being studied nonexperimentally (e.g., through secondary data analyses and other forms of synthesis), although an experimental fund is also available if a team deems it necessary to conduct experiments:

- the validity of parental fitness evaluations for child custody determinations,
- the impact of self-awareness on educational outcomes,
- the effects of neurotoxicity on children’s cognitive functioning,
- risky decision-making by adolescents,
- the pros and cons of UPK education,
- what developmental science can tell the courts.

CIRC’s process for selecting team members was modeled after that used by the American Psychological Society’s journal *Psychological Science in the Public Interest* (*PSPI*), which was founded and is now coedited by CIRC codirector Stephen Ceci. This selection method is also used by the National Research Council in its commissioning of studies. That is, once a public interest question has been nominated and subsequently endorsed for investigation by the advisory board, there is an intensive effort to solicit names of the ideal scholars to investigate this particular question. An intensive vetting of all nominees is conducted by CIRC’s directors and advisory board members, using the scientific grapevine, which is considerable in light of the advisory board’s breadth and connections. Our experience with this selection and vetting process at the National Academy of Sciences Board on Cognitive, Behavioral, and Sensory Processes and in coediting *PSPI* has demonstrated that when one assembles a large group of eminent scholars on an advisory board, they possess the knowledge of who the best scholars are to invite to study a particular topic.

Once we have compiled the list of accomplished scholars in a topic area, further vetting takes place to ensure that these nominees are seen as fair, not invested in a preordained outcome, and lacking a fiduciary relationships that might pose a conflict of interest, and that all major views are representation by team members, when warranted (i.e., not all views deserve representation on a team, but only those that are held to be scientifically credible). Research teams are typically comprised of three to five members. They come from those fields that our advisory board feels are capable of making an important contribution. For example, for the study of the *effects of neurotoxicity on children’s cognitive functioning*, we were advised that developmental psychology, animal learning, pediatrics, and neuroscience
were all relevant fields, and we persuaded team members from each of these fields to join the team.

Following advisory board approval of a research team, the members of the team have a conference call and a face-to-face meeting, if desired, to discuss all aspects of the project. This meeting is intended to address all aspects of the project, including the designation of one team member as team leader, formulation of reasonable timelines in which to finish each aspect of the research, discussions of how to account for expenses incurred, and disclosures of any potential conflict of interest. Experience has taught us that the specific wording of the research question often changes during the discussion among team members at the first meeting. For example, it has been common, after lengthy discussion, for a team to conclude that the original wording of a question is not feasible for a variety of reasons and must be amended. This is often an outcome of discussion that cannot be foreseen by the advisory board or the individual who nominated the question, but rather is a decision that requires a lengthy meeting in which team members take into consideration the availability of extant high-quality data and their knowledge of related studies in the scientific pipeline. Team members themselves are the most knowledgeable about what extant data are available as well as who is doing what in the scientific pipeline.

The person designated as the team leader maintains a timeline for completion of tasks and is given minor administrative responsibilities to insure the smooth working of the team (scheduling team meetings, conference calls, assigning each team member’s responsibilities, keeping track of expenses, etc.). Typically, the team leader will be the first author on the completed report. Timelines to completion of CIRC studies vary as a function of team members’ needs and the number and complexity of hypotheses they are testing; the average length of time from commissioning to completion is 1 year. Teams can divide their labors as they see fit, and CIRC has never intruded on their decisions. Some teams have divided their work evenly among team members, whereas some teams have assigned disproportionately more to some—either because they possess the expertise needed for the bulk of the project or because other team members agreed to serve with explicit understanding that they will be a minor contributor, responsible for a specific task. Authorship is decided by the team members, based on contributions (with exception that the team leader is presumed to be the first author).

CIRC provides teams with a range of services (seed grants, travel funds, professional assistance with developmental designs, analysis, and access to high-quality data archives and scholars from related fields to address developmental questions in the public interest). In principle, CIRC also can provide small experimental budgets when teams feel that experimental research is needed for a piece of their report. So far, no team has expressed this need, but we hope this will change soon. But the main function that CIRC provides is neither money or research expertise, but the shepherding of the process, persuading scholars who may not have known each other at the outset that science and society’s interests can be well-served by their teaming up to undertake an investigation. This requires lots of the directors’ time, telephoning, emailing, and making the case, introducing team members to each other, etc. Absent this form of shepherding, there is little motivation
or means for scholars from diverse fields to spontaneously approach each other and form research teams.¹

CIRC provides a funding for team members to meet at the start of a project. The purposes are to brainstorm about the wording of the research hypothesis to be investigated, to discuss with each other as well as with relevant board members and the professional staffs of the extant Cornell centers whether the hypotheses can be addressed with existing resources (e.g., archival data, meta-analysis of published findings, or experimental treatment), and to request materials and efforts from graduate students who have been appointed as CIRC fellows at Cornell when needed (e.g., library research, data coding).

At the conclusion of a team’s final report, CIRC submits the report to rigorous peer review, employing four or more reviewers. Once a report has been revised in accordance with reviewers’ comments, CIRC shops for the best publication outlet. At the time of this writing, the first CIRC report has been completed (titled “The Validity of Parental Fitness Evaluations for Custody Determinations”), and it will be published in the PSPI. A number of other CIRC reports will also probably appear in PSPI (e.g., the one on neurotoxicity as well as the one on self-awareness have both been deemed by the editors of PSPI as good candidates for publication in that journal, provided they pass peer scrutiny at the same high level). Other CIRC reports, however, are likely to be published in outlets more targeted to the specific developmental research questions they address (e.g., Developmental Review, Journal of Applied Developmental Psychology, Child Development).

The above description fails to capture the great diversity of arrangements and approaches taken by CIRC teams. Some, like the custody fitness team, met at the start of their project to brainstorm and refine the question, divide the workload, etc. Other teams have chosen alternative arrangements. To give readers of the JADP a concrete example of alternative arrangements, we describe the ongoing study of the cost–benefit analysis of so-called UPK.

Many states, following New York’s lead, have mandated that all 4-year-olds are entitled to receive state-financed pre-kindergarten (pre-K) instruction by certified teachers (not daycare workers). CIRC commissioned a team of developmental psychologists and economists to tackle the question of whether scientific data supported the benefits of UPK for children. This team, led by developmental psychologist Matthew Scullin of West Virginia University, decided that a good starting point was for Scullin to attend a national workshop on UPK research and policy, held in Portland, OR, June 2003. CIRC financed Scullin’s attendance at this workshop. Upon his return, he briefed the rest of his team on what he learned. Following a conference call among team members, the research question was refined to focus on whether research exists to justify providing UPK for children from advantaged families. That is, the team believes there are good data showing that high-quality pre-K experiences benefit

¹ Many examples can be cited of topics that could benefit from the diverse talents of scholars coming from different subfields or even from different disciplines. The journal PSPI capitalizes on this insight, commissioning teams to study topics that are not primarily developmental in nature. For example, PSPI commissioned a team of economists, psychologists, and sociologists to study the impact of class size on learning outcomes. Arguably, this report superceded all previous reports that were written by scholars within a single discipline in breadth if not depth (Ehrenberg, Brewer, Wilms, & Gamoran, 2001).
children from poor families, but there may not be comparable data for nonpoor children. Do data exist, the team asks? And if so, do they justify the UPK model being implemented across the nation, or are there more effective ways to use the same resources? This is a typical example of how teams refine the wording of the research questions after brainstorming. This team developed a work plan that is scheduled to be completed by June 2004. At that time, CIRC will subject the report to review by advisory board members and CIRC directors, before working with Scullin’s team to place it in the most appropriate journal. Because of its content, it will probably be more suitably placed in an economics journal, given that half the team are economists and the main question revolves around cost–benefits analysis.

Upon completion of all reports, CIRC staff members help to prepare a press release and contact relevant print and electronic media. We have established an extensive network of media contacts for this purpose. For example, the first CIRC report on custody-fitness evaluations scheduled to appear in *PSPI* in early 2004 will be described in several major print media (e.g., *The Wall Street Journal* has assigned a senior writer to cover this story, and her coverage may appear before this article is published in *PSPI*). We want all of our reports to be widely disseminated, given their policy relevance, so the print and electronic media are an integral aspect of CIRC.

Although the first completed report is a research synthesis, CIRC hopes to commission one or two studies that go beyond meta-analysis or other forms of research synthesis. Toward this end, one or two teams will be given the opportunity to prepare an experimental budget that may run in the vicinity of an NIH small grant, not to exceed $50,000 for the duration of the project. The other teams would work from archival data or complete meta-analyses or compile integrative arguments in the manner of *PSPI* articles (see description at APS URL: http://www.psychologicalscience.org—and click on “journals” to *PSPI*). For these latter teams, a small amount of funding is available for research expenses (e.g., to photocopy, format data, pay for hormonal assays, etc.) in addition to travel for team members.

2.2. Secondary school and community college educational programs and outreach

CIRC’s mandate includes an educational outreach plan aimed at enthusing low-SES and ethnic-minority students in high schools and community colleges about developmental science’s potential contribution to solving societal problems. This educational outreach plan entails both formal print and nonprint dissemination of each team’s research, not only through published articles and newsletters/articles written specifically for high school students, but also through rewrites of reports by CIRC codirector Wendy Williams to create classroom materials and lessons. CIRC disseminates these educational materials to institutions with high proportions of low SES and ethnic-minority students (of which community colleges are the single largest repository). By such means, we hope to inculcate in these students an awareness of the power and value of developmental science. One goal is that this will eventually result in some of these students pursuing careers in developmental science, or at minimum pursuing additional training in science in the future. We will succeed if these students show an increasing awareness of the value of developmental science to contribute to societal solutions.
Until such time when enough CIRC reports are completed and ready for translation, we have jumpstarted this educational and outreach process by drawing on already-published developmental studies to create lesson plans for high school and community college students. Williams has directed this effort and has integrated the training of several CIRC fellows in this endeavor. These lessons have been developed based on non-CIRC published studies that seem particularly useful in spurring students to think about fundamental scientific issues, always in the context of important societal problems. Issues such as “what constitutes good evidence?” and “what distinguishes facts from opinions?” are incorporated into the CIRC 45-minute lessons. In a separate article describing Rod Cocking’s contributions to the field through CIRC, Williams, Papierno, Makel and Ceci (in press), a current CIRC Graduate Student fellow, describe these lessons in greater detail, so we will refrain from duplicating that discussion here. Thus far, CIRC has developed over 30 such lessons, enough for a semester-long course in a high school or community college. We have pilot tested these in several high schools with large ethnic-minority student populations, and in response to this feedback, we are currently making revisions. Students appear to enjoy these lessons very much, as do their teachers. In the coming year, a CIRC fellow has been approved to teach these lessons in a stand-alone course at a community college with a large minority student population. A major evaluation will be conducted to determine whether students exposed to CIRC’s lessons benefit from this exposure (e.g., do their attitudes toward science change, do they take more science courses, change majors more than matched peers who are exposed to traditional science fare, and so on).

2.3. Graduate and postgraduate training

CIRC undertakes direct training of graduate students in public interest research. Each CIRC graduate research fellow is assigned to work with a team of accomplished developmental scientists, as well as being assigned internal CIRC duties (e.g., developing lessons, conducting evaluations, coding and transcribing data sets). So far, three graduate fellows have been involved in actual project work; David Biek, a third-year graduate student at Cornell has been working with the UPK team, a role that may result in his being listed as an author of that report.

Some CIRC graduate fellows are exposed to the multiple-center staffs at Cornell that have expertise in various methodologies, sampling strategies, and theoretical knowledge. We hope that the experience of working closely with a team of outstanding scholars will in itself be a terrific form of mentoring for these fellows. Some of the graduate fellows have begun to know these individuals as colleagues, and we hope will have access to them throughout their professional careers. All CIRC graduate fellows are invited to attend and work at advisory board meetings (e.g., driving board members from airports to meeting locations, taking notes) and mingle and dine with board members, a practice that has drawn rave reviews from board members and CIRC fellows alike.

Beginning this year, a dozen CIRC postdoctoral research awards will be made to new postdoctoral associates in the field who offer outstanding research proposals that are consistent with CIRC’s twin aims of serving science and society. Any postdoctoral fellow
from any institution can apply for these awards. CIRC’s advisory board hopes that these awards help launch careers of fledgling scholars who are interested in translating basic research into policies. Announcements of these awards appear in various newsletters and listservs, and details are available for prospective applicants on also available through CIRC’s website. The awardees receive a $3500 stipend, an opportunity to publish a policy brief based on her or his ideas on the CIRC website, and a research presentation at an annual advisory board meeting where one or more members will be asked to mentor the postdoc at this critical time in her or his development.

2.4. The CIRC advisory board

An advisory committee of eminent, senior scientists has been established to make recommendations regarding research questions, compositions of teams, competitive postdoctoral grants, publication/dissemination decisions, and to review all aspects of CIRC’s activities. These individuals represent a great variety of fields and specialty areas, covering the social, cognitive, and biological basis of development, to economics, pediatrics, neuroscience, and life-course sociology. Several past presidents of the American Psychological Association, two past presidents of the American Psychological Society, one past president of the Society for Research in Child Development, and eight current members of the National Academy of Sciences are included. As a group, advisory board members have experience editing developmental journals (Child Development, Developmental Psychology, Developmental Review) as well as an impressive track record in translating their work for the public interest. For example, as presidents of APA, Frank Farley established the Congressional Seminar Series, which continues to this day, and Robert Perloff initiated a number of national policies. CIRC’s advisory board members are not only outstanding scholars, but they come from many countries, although the United States is deliberately overrepresented. Although 35 members would seem too large, in actual practice, we rely on subsets of this board for specific advice. For example, a topic having to do with pediatrics would rely more on those board members with a background in health-related fields than, say, a topic having to do with the role of grandparents as primary caregivers. We have asked a group of six board members to serve in the role of “executive board members.” Among their many responsibilities is to conduct an evaluation of all aspects of CIRC’s activities (commissioned studies, team members’ experiences, CIRC graduate student experiences, board members’ feedback).

2.5. Coordination with existing Cornell centers

Four centers exist at Cornell University that are directed by colleagues from the Department of Human Development. Each of these centers focuses on a particular aspect or context of development: life-course transitions, abuse/neglect, successful aging, and family processes. Highly professional staff members are available to help with data access issues, analysis, and development of theoretical knowledge. Additionally, there are two centers external to this department, the Cornell for Higher Education Research Institute, which is set up to foster collaboration on studies of higher education and that approaches this topic from an economic
perspective, and the Center on Economic Research on Employment Policy, which also is
econometric in orientation. CIRC draws on these six centers to leverage its resources (e.g.,
through small grants, travel/conference support, and cotraining of CIRC fellows).

The members of the CIRC teams of scholars have access to consultants from these centers
for tutelage in how to make the transition to doing developmental research with public-sector
relevance. Our colleagues who direct these centers are committed to helping CIRC team
members and fellows in any way they can, including with statistical and data troubleshooting
workshops as well as through serving as an intellectual resource to team members and
students.

Together, the staffs of these six centers provide expertise in design and analysis across the
entire life span. Their respective directors have been enthusiastic and committed to
participating with us in this venture by offering statistical and design workshops for our
teams, cost-sharing for the support of speakers of mutual interest, pooling of seed grant funds
to foster work of joint interest, participating in seminars, etc. The two economic centers are
particularly valuable as sources of expertise in time-series and longitudinal analysis. One of
our current studies has had several of its team members nominated by one of the sociological
centers, and another has among its team members one nominated by one of the economics
centers. Without the guidance of these colleagues and their centers, we doubt we would have
made such excellent choices.

2.6. The development of formal print and nonprint outreach

The final component of CIRC entails the translation of promising developmental research
into public-policy proposals, the preparation of press releases, web postings, and publication
in scientific journals. CIRC endeavors to find the best journal for the content of each
completed team report. Different journals are appropriate for different reports, given their
content and approach. Additionally, CIRC has an extensive media outreach, with connections
in major print and electronic markets. CIRC works with representatives of these media to
facilitate the broadest dissemination of team reports. Finally, the CIRC web page contains
multiple two- to three-page policy briefs written by CIRC graduate student fellows as well as
invited guests, and eventually post postdoctoral awards will be posted on this website as well.
All CIRC lessons will eventually be downloadable for teachers, too.

One aspect of Rod Cocking’s vision for the future of developmental science was to take
steps to ensure that training and support be made available and truly accessible to encourage
members of underrepresented groups (e.g., individuals from ethnic-minority backgrounds,
various sexual preferences, low-SES youth, girls and women, etc.) to join in this enterprise.
To this end, we have integrated CIRC’s research/development activities with its training
efforts, including a focus on training of the next generation of scholars from underrepresented
groups. At each step, we have tried to honor his vision. Now, not quite 2 years into the CIRC
experiment, CIRC fellows are benefiting from exposure to all facets of research and
translation, working within high schools and community colleges teaching CIRC lessons,
and attending advisory board meetings where the details of research are discussed by some of
the finest scholars in the myriad fields mentioned above. The ultimate test of Rod’s vision
will not be visible for many years. We await with anticipation the effect that the CIRC experience has on the next generation of doctoral students in developmental psychology and on the poor and ethnic-minority students being exposed to its brand of scientific education couched in public-interest materials.

3. A worked example of one potential CIRC commissioned team report

Reading about the six CIRC components does not truly give a flavor of the way CIRC operates. Therefore, in this section, we aim to give readers a concrete idea of the type of questions CIRC commissions. Here we provide an example of a project that was discussed at a recent advisory board meeting. We have not yet commissioned this study, and we may end up not doing so for various reasons (e.g., it may require more resources than we have available or a greater timeline), but it provides a good example of the way CIRC attempts to merge public interest issues with core scientific ones. And it is a nice example of integrating research across complex systems that cut across traditional disciplinary domains.

During our initial canvass of policy-makers, a senior officer of the National Association of Juvenile and Family Court Judges asked about the reliability of preschoolers’ statements in legal depositions, courtroom testimony, and to interviewers. The reliability of young children’s statements is a pressing issue for juvenile and family court judges in both the United States and Canada (for data, see results of a survey of judges by Bala, Lindsay, Lee, & Talwar, 2001) because preschoolers increasingly are asked to give depositions and testify (both sworn and unsworn testimony) in all matters of cases (disputed custody, sexual abuse, product liability cases, witnesses to crimes, etc.). The latest 10-year aggregation of child maltreatment data in the United States shows that children aged 7 years old and younger are the single largest group of identified victims. Thus, the questions in need of answers by legal policy-makers are: “Are preschoolers reliable purveyors of information?” “What are the risks and strengths of eliciting preschoolers’ statements?” “What should the courts know before passing judgment on preschoolers’ competency to testify?” “Are preschoolers to be believed when they make disclosures?”

Although it is a topic that is avowedly applied (factors related to preschoolers’ participation in the legal system), the topic simultaneously involves basic science dealing with the neural basis of preschoolers’ memory, theory of mind, and the use of deception and concealment. As can be seen, in this case, the research integration runs across different levels of the nervous system, experience-dependent neural “blooming and pruning,” and its linkage with cognitive and social outcomes relevant to children’s reliability in legal proceedings.

The CIRC advisory board discussion revealed that addressing these questions would best be accomplished by assembling a team with expertise in several of the following areas: children’s emergent theory of mind, neurogenesis in the hippocampus, experience-dependent formation of synapses, memory development, deception, and legal theory. Thus,
for this research question, team members who are developmental neuroscientists would be important because of their knowledge about the course of synaptogenesis in the prefrontal cortex (possibly important for tracking memories of what preschoolers actually experienced versus what they imagined, dreamed, or had suggested to them, as well as source amnesia, the tendency to remember events but misattribute the basis of their familiarity). In addition, an expert in theory of mind could enrich the mix by linking mind-reading to deception and brain development, while an expert in preschool deception could provide knowledge about the conditions and motives governing preschooler’s use of deceit and concealment. A memory development expert could add to this mix data and paradigms for examining encoding, storage, and retrieval processes and their links to the nature of preschoolers’ representations. Finally, a child legal scholar could provide information about the legal reasoning governing admission of children’s statements, hearsay exceptions, and competency requirements. A team comprised of three to five scholars from these fields might be able to integrate the existing scientific literatures in such a manner as to break new conceptual ground, by linking brain developments both to children’s ability to track memories, take the stance of their listeners, and attempt to mislead others, and to legal policies governing the admissibility of preschoolers’ statements, competency requirements, and hearsay exceptions. The outcome of this study could inform courts that are in need of policies governing the reliability of preschoolers’ statements and the requirements for demonstrating competency and simultaneously serve as a catalyst for basic researchers in the fields of memory development, theory of mind, and social development, to integrate their findings with recent neuroscience findings.

4. Epilogue

Our last conversation with Rod Cocking occurred the evening before his disappearance and murder. He reiterated his vision of CIRC as an organizing force to encourage teams of scholars to undertake studies that might inform public policy pertaining to any developmental epoch in any substantive area of developmental science (social, cognitive, or biological). Rod spent most of his professional life at premier research agencies—Educational Testing Service, the National Institute of Education, the National Institute of Health, the National Academy of Science, and the National Science Foundation. This vast experience rendered him one of the most savvy science policy experts in our field (Ceci & Williams, 2002). He knew from his experiences at these agencies that individuals accustomed to working alone as a “cottage industry” on their specialized problems would not suddenly resonate to the calls for multidisciplinarity and rush to pursue collaborations with scholars from different fields. Few incentives exist to encourage such behavior, and Rod knew that such collaborations would not spring to fruition without someone actively managing the process, providing incentives, and arranging cross-field marriages, so to speak. CIRC is an experiment in the feasibility of this idea. Only time will tell if it succeeds. Regardless of the results of this experiment, Rod Cocking’s vision will endure because it is future-oriented. The great pity is that he has been robbed of the chance to witness it unfold.
References


