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Abstract

This essay examines the how's why's and what for's of Montessori teacher training. Treating the Montessori system as an illuminating case of alternative teacher preparation, three concepts common to the lexicon of teacher education - culture, craft, and coherence - are explored in detail. Drawing both from both mainstream teacher education research and ethnographic studies of Montessori teacher training, the essay probes several conceptual puzzles aimed toward reconsidering key ideas related to the development of cultural and technical expertise.

Keywords

technique, tradition, coherence

For most of its century-long history, Montessori education has both fascinated and perplexed Americans. Hailed by some for its emphatic, developmental emphasis on “the universal child” and reviled by others for its rigidity and cultishness, the phenomenon of Montessori education has been chronically plagued by paradox. And with good reason: To mainstream American educational eyes, the method presents a puzzle of inconsistencies. On one hand, independence, individuality, and freedom are held as supreme learning aims. On the other hand, pedagogical practice demands order, predictability, and precisely scripted lessons. Although Montessori claims a revolutionary approach to learning and teaching, very little about the method has changed since it was first developed in the early 20th century. And although the central purpose of Montessori education is to link healthy human development to social harmony and world peace, the boundary between Montessori insiders and outsiders is starkly drawn and outsiders sometimes report feeling befuddled, even unwelcome, by Montessorians (Bazelon, 2007).

The paradoxes—*independent but scripted, revolutionary but old, peace oriented but exclusive*—have confounded Americans for decades, leaving Montessori education almost entirely unstudied by scholars and policy makers.¹ I argue, however, that these paradoxes, in fact, define the vitality of the approach, making both the method and the movement worthy of closer examination. Nowhere are both the paradoxes and the vitality of Montessori more apparent than in teacher preparation. The central argument of this essay is that Montessori teacher training offers a unique perspective on professional preparation, which is grounded in the core

values—and paradoxes—of Montessori education. Insights presented here are drawn from two separate ethnographic studies of Montessori training courses (Cossentino, 2009; Cossentino & Whitcomb, 2003), in which I aimed to learn how participants experienced the courses as adult learners, specifically how they underwent a transformation that is said to be a hallmark of Montessori teacher training. Although I refer to data drawn from both of these studies, my primary aim here is to explore a set of conceptual puzzles that make these programs unique and may offer useful insights for mainstream teacher educators.

In elaborating my argument, I highlight three concepts—*culture, craft, and coherence*—that are common to the lexicon of teacher education but experienced distinctively in Montessori education. Put simply, Montessori educational practice is enacted within a highly traditional culture in which teaching is viewed as craft (rather than art or science) and in which the *hows, whys, and what fors* of pedagogy cohere in such a way as to redefine the meaning of learning to teach. Together, these concepts outline a system of education that is at once remarkably stable, unusually ambitious, and unexpectedly vital.

Culture: “A Modern Day Oral Tradition”

In 1909, Maria Montessori held her first training course at Villa Montesca, the Umbrian estate of Barone Leopoldo Franchetti and his American-born wife Alice Hallgarten

¹CREC Montessori Magnet School

Franchetti. By 1909, Montessori was 2 years into a pedagogical experiment that would continue until the end of her life in 1952. Also by 1909, news of the method and the visionary behind it had already made its way to the United States and Americans were among the students at this first course. In the close to 100 subsequent courses that she went on to give across the globe, Americans were almost always present.

The course itself was, and continues to be, made up of a series of lectures (both theoretical and practical) and demonstrations focused on how to use the didactic materials designed by Maria Montessori as key learning tools. In 1909, the course was short—about 3 months—and intense. It was also dominated largely by women, some of whom went on to become lifelong companions, collaborators, and eventually, the chief transmitters of the tradition (Maccherone, 1947). Today, the courses are longer (ranging from three summers to a full academic year), and they remain intense, lecture-based, and dominated by a cadre of (largely) women who have, by virtue of a lengthy and rigorous apprenticeship, been granted the status of trainers.

It is important to note that there is great variety among courses, and that variety has proliferated especially since the 1960s, when an American version of Montessori was established, which aimed to disseminate the approach, in part, by adapting the training model to better suit American tastes and expectations (Whitescarver & Cossentino, 2008).² Distinctions between what may be called traditional and progressive models of Montessori training are consequential and certainly worthy of analysis. This essay, however, concentrates on points of convergence between the two, as even the most divergent Montessori training programs have more in common with one another than either has to mainstream teacher education. Most significant, nearly all courses retain an emphasis on lecture and demonstration that points back to the oral tradition established in 1909. So prominent is the focus on oral transmission that one student in the midst of a course in 2007 named it as such: “It’s a modern day oral tradition. I feel like I’m part of a line of succession, a sorority. We even say that: ‘Montessorority.’”

It is also important to note that although the Montessori movement is identifiably feminine in both outlook and membership, men have always been a part of the culture. From patrons such as the Franchettis to business partnerships with materials manufacturers to long-standing relationships with biographers and trainers to the galvanizing force of men like S. S. McLure, an early promoter, Montessori’s global reach was made possible, in part, through the involvement of both men and women of influence. Indeed, it was Maria Montessori’s son, Mario, who served as her primary collaborator late in life and, following her death in 1952, the titular leader of the movement, who was responsible for keeping the movement alive until his own death in 1982.

The transmission of tradition, the sense of lineage and initiation that occurs among trainees, is central to the culture of Montessori generally and of training courses specifically. To understand that culture, it is necessary to revisit Montessori’s

message at that first course in 1909. In it, she explicated what was then, and continues to be, a revolutionary vision of childhood and schooling that animates the *hows* as well as the *whys* of the method and, for many, defines the experience of becoming a Montessorian.

Transformation Within Tradition

More than anything, to become a Montessorian is to undergo a transformation of outlook and orientation toward childhood and human development. The following are the core precepts of Montessori’s vision: (a) Children are inclined toward learning because of a developmental/biological imperative, (b) adults often impede healthy development because of their misunderstanding of the nature of childhood and the manner in which learning occurs, and (c) development itself is a constructive process, based in trial and error and guided, but not dictated, by adults whose signal capacity is to observe the child in order to direct the constructive energies of childhood in ways that enable the child to fulfill his or her human potential.

In 1909, these claims were not entirely new. Rather, they would have been recognizable to an audience familiar with the philosophical ideas of Rousseau and the pedagogical theories of Pestalozzi, Froebel, and Dewey. What was new, and remarkable, was Montessori’s direct appeal to practitioners and parents rather than academics. Because the message focused so emphatically on children and because Montessori delivered that message with charisma, she cultivated a following that quickly established itself as both ardent and action oriented. To attend a Montessori training course was both to discover a new and better way to educate and to learn how to do it.

Part revival, part masterclass, early training courses largely comprised Dr. Montessori’s lectures in which she explicated (in Italian) the core precepts of the method. Over time, the training lectures have been transcribed, translated, and disseminated in a collection of books that are treated by Montessorians as sacred texts. As crystallizations of a dynamic oral tradition, these texts serve as the primary sources of Montessori orthodoxy, and Montessorians of all persuasions routinely turn to quotes and passages to validate practice, to check interpretations, or to argue about implementation.

If the texts constitute the formal doctrine of Montessori ideology, it is the practitioners who enact that ideology, forming a vibrant and enduring culture, which is distinguished by a strong sense of group identity and a stark boundary between insiders and outsiders. As both a scholar and an administrator, I have spent the better part of the past decade straddling that boundary (Cossentino, 2005, 2006). Over the years, the experience of being a Montessori school administrator has drawn me deeper into the interior of Montessori culture, to the point where I no longer claim scholarly distance and consider myself a Montessorian. For insiders, however, my status remains clear. As a scholar, I have logged hundreds of hours of observation in Montessori classrooms, read all of Maria Montessori’s

texts, interviewed key leaders and practitioners within the movement, and written extensively about Montessori practice and culture. I am called on to speak at Montessori gatherings and write for Montessori publications. Still, I am considered an outsider by most Montessorians because I am untrained. The absence of a diploma from a reputable training course constitutes a significant gap in expertise. And that gap precludes participation in many of the core activities of Montessori culture, most important instruction, but also certain meetings and courses. It is worth emphasizing that the exclusion is not the result of suspicion or disrespect; at least I do not interpret it as such. Rather, I experience my peripheral status as the delineation of a vital community of practice: Since I am not qualified to be a practitioner, I am not a full participant in the community.

Although most Montessorians resist religious comparisons, from an anthropological perspective, the hallmarks of a religious-cultural system are unmistakable. Montessori culture is bounded, ritualized, and driven by a cosmology that links practical means to moral and spiritual ends. Indeed, it is difficult to identify an educational system in which ideology plays such a prominent role. It is even more difficult to identify an educational system in which technique is more important. Indeed, Montessori education and, especially, Montessori teacher training weave together ideology and technique in the complex cultural activity (Hiebert, Gallimore, & Stigler, 2002) of learning to teach.

Where the concept of culture highlights the power of group identity and the importance of ideology in framing vital teacher preparation, equally important is the concept of craft. By craft, I mean a particular kind of practical knowledge, one bounded by culture and transmitted according to highly specified cultural and technical scripts. No matter how compelling the vision or attractive the community, one cannot become a Montessorian by reading books or claiming a belief in child-centered learning and peace. Rather, Montessori bona fides are conferred only upon those who have mastered the technical as well as cultural scripts of the pedagogy.

Craft: Mastering the Script

When first introduced, Montessori education was viewed as revolutionary; it was part of a segment of reform known as the “the new education” (Depaepe, Simon, & Van Gorp, 2001). Its focus on development, construction, and child-centered environments rendered the method new in 1909 and, although no longer new, just as revolutionary in 2009. Teacher training, however, is decidedly “old school.” The fundamental (and paradoxical) aim of these courses is not development or construction, but transmission. There are some 2,000 discrete lessons making up the elementary curriculum, and the bulk of training consists of recording the precise sequence and procedures of those lessons as they are dictated and demonstrated by trainers. Transcribed lectures and demonstrations become “albums,” which must be organized, illustrated, and submitted for approval.

As trainees create these albums, they must also practice giving those lessons, which they typically do in carefully prepared practice rooms that mimic the prepared environments they will eventually direct as teachers. Most of this practice takes place between students, who take turns “being the child.” Near the end of the course, students spend between 6 and 8 weeks “practice teaching” in established classrooms. By the end of the course, trainees must be able to reproduce those lessons on demand in oral examinations conducted by experts, who judge the delivery as well as the trainee’s grasp of the theory justifying the lessons.

In addition to album making, supervised practice, and practice teaching, students also spend between 40 and 100 hours (depending on the course) observing in Montessori classrooms. For Montessori teachers, observation anchors practice; lessons are offered based on the teachers’ assessment of the child’s readiness, which is based on observed behavior. Observation exercises are directed toward identifying psychological characteristics and tendencies in children as well as noticing the subtleties of interactions between students, teacher, and the environment.

Variably described by participants as “boot camp,” “hazing,” “drudgery,” “grueling,” and “the hardest thing I’ve ever done,” nearly all of the trainees I have encountered from a variety of training programs also identify the experience as “transformative.” They link both the drudgery and the transformation to the volume of work. “It isn’t that it’s difficult,” explained one trainee at approximately the midpoint of a 9-month course, “it’s just that there is so much—too much to take in at this pace.” At the conclusion of the course, that same student declared that the process had been “worth it.” She explained, “because I really know my stuff. I know how to give a lesson. I know my albums inside and out.”

The central activity of Montessori teacher training is the incorporation of a highly elaborated pedagogical script, first developed by Maria Montessori, then preserved and transmitted by expert trainers who serve, in effect, as the keepers of the knowledge base that constitutes Montessori theory and practice.³ To take training is to receive that knowledge, which is necessary for full participation in Montessori culture. From a cultural perspective, training is an initiation ritual, with albums serving as symbols of membership. From a craft perspective, training is the acquisition of a highly prescribed skill set and knowledge base and the album is a practical tool, a self-made manual and reference guide.

For a closer look at how the script is incorporated, consider the following vignette, drawn from a session about midway through a training course for elementary teachers (Grades 1–6). The lesson presented here occurred in a nontraditional course, offered over the course of 2 years on alternate weekends and evenings. The students here are receiving a presentation of a mathematics lesson known as the “Negative Snake Game,” which, like much of the Montessori math album, provides students practice with both conceptualizing and memorizing through manipulating concrete material, in this case color-coded beads.

Negative Snake Game

The presenter prepares for the lesson by laying out two white mats on the floor, on which he will place the materials and demonstrate the lesson. Students sit at desks in a semicircle. On their desks is an array of recording implements: colored pencils, graph paper, rulers, erasers. Students also have in front of them a rudimentary description of the Negative Snake Game, along with a brief explanation of the importance of memorization. As the lesson progresses, students will move back and forth between the printed description of the lesson, the graph paper, and the notebook paper, alternatively diagramming the placement of materials on the mat, transcribing the language the presenter uses to demonstrate the lesson, and making margin notes on technical “tips” offered by the presenter.

“The purpose of the snake game,” the presenter begins, “is memorization. Just another way to slyly get them to repeat those combinations so that they know them. Here we’re doing subtraction.” The presenter begins laying out the snake using the problem provided by the album:

$$8 + 9 - 4 - 2 + 8 - 6 - 1 + 7 - 7 + 7 + 8 - 7 + 6 - 4 + 3$$

He narrates as he transcribes the problem: “Eight plus 9” (he pulls out a brown bar for 8 and dark blue bar for 9), “take away 4” (he pulls a gray bar of 4 beads). “When I use a ‘take away number’ I use a gray bar. Gray signifies taking away—take away 2 plus 8,” and so on. The “snake” begins to take shape as a string of bead bars laid out in a gentle zig-zag pattern on the mat.

Near the end of the snake, he makes an error transcribing the problem. He pauses to discuss the perils of introducing too many negative numbers too early. A student interjects, “We wouldn’t mind if you started over because some of us are in shock.” He chuckles and begins again. This time, students dictate the problem as he lays out the bars to form the snake. Then, he begins the process of exchanging.

He pulls the first two bars off the snake and lays them side-by-side ($8 + 9$). He adds them: “Eight plus 9 equals 17. So what do I do? I exchange for one golden bar.” He moves a golden (10) bar to the front of the snake. “I have 7 left. So what do I do? I’m going to hold my place with the 7 remainder bar.” He pulls the black and white 7 bar from the bead stair and places it next to the golden bar. He puts the two colored bars aside. Then, he brings down the next two bars: the black and white 7 bar and the gray -4 bar. “Seven take away 4,” he says, “3.” He replaces the two bars with a 3 bar drawn from the bead stair and puts the two colored bars aside. He continues to move through the snake, exchanging sums of 10 with golden bars, and as he makes his way through, the snake grows noticeably shorter. As he moves through the sequence (as a child would), he shifts from addressing the students as children to a meta-comment about what the lesson is teaching: “See how this is getting them to repeat these combinations?” he says, “It’s just a game.”

He comes to the end, and several students exclaim, “Beautiful!” He looks up and asks, “Are we done?” In unison, the students, responding as children, answer, “Noooo.” “No,” he agrees, “We have to check our work.” There is a pause for student questions. One concerns student mistakes: What if the numbers are wrong because the child has not been paying attention? “Be a good observer,” he replies, “and notice that Suzy came over to Jeremy, which made him get distracted and mess up his calculations. That way he knows he didn’t come out right. He learns he has to concentrate.”

Next, he demonstrates how a student checks her work. A student pipes up: “I may be the only one. But, I don’t get it.” “Let’s do another problem,” the presenter offers, rearranging the mat. He repeats the entire sequence, this time going a little faster. At the end of the second sequence, an incredulous student asks, “Can kids grasp that?” “Yes,” he answers, “they really can.” “I’m having to reroute my synapses,” another student announces. Everyone laughs. More discussion about mistakes follows. Several students comment on the power of “self-correction” and the teacher’s seemingly passive role in that process. “A mistake is an opportunity to learn,” the presenter declares. “A mistake identified by a teacher is a put-down.”

After nearly an hour passes, the presenter announces, “Alright. We’re going to do one more. And then you’ll know the snake game.” At the conclusion, he asks for questions. Several students ask, “How do you illustrate this?” To which he replies, “You want me to do one more so you can illustrate?” There is widespread agreement and one student asks, “Can we have a child do it?” Without responding verbally, the presenter moves slightly to the left to make room for two students, who take their places on the floor to begin a fourth demonstration of the work, this time pretending to be children. They move through the sequence, carefully mimicking the presenter’s movements. On occasion, there is a challenge to the logic of the material—“She [Montessori] should have used an entirely different color there”—but mostly the room is silent as the two “children” rehearse the work and classmates watch, draw, and take one or two digital photographs of the mat. The presenter offers, “Negative Snake Game is one of the most fun things for kids this age to do.” Later, he adds, “Make sure you practice it because that’s how you’ll get it.” A student observes, “When I practice this, I’m doing it as a child.” The presenter affirms, “You need to learn it as a child before you can do it as an adult.”

Rigidity and Flexibility: The Primacy of Technique

In its emphatic focus on the *hows* of practice—how to lay out material, what to say, and when to say it—the above scene exemplifies the craft orientation of Montessori teacher training. The students depicted here are not discussing how they might give a lesson in subtraction, what sorts of manipulatives they might use, or how they might make the lesson relevant or interesting to second-grade students, all topics that frequently dominate a conventional methods course in math education. Rather, they are receiving a scripted repertoire of moves, which they are expected to master and

replicate. Such a systematic view of pedagogy stands in stark contrast to the view of teaching as uncertain and idiosyncratic (Huberman, 1985, 1993; Kennedy, 1999, 2002; McDonald, 1992). Where the prevailing view of pedagogical craft-knowledge locates knowledge in teachers' individual experience, Montessori offers a pedagogical canon—developed, refined, and transmitted over time and presented to practitioners as complete.

Cued by Montessori's (1995) own painstaking descriptions of "how to give a perfect lesson" (p. 112), these trainees are acquiring a technical repertoire primarily through imitation and repetition. Following the presentation, students will spend several hours practicing the lesson by taking turns being teachers and students. As they practice, they will attempt to recreate the precise moves demonstrated by the presenter. Later, they will work in real classrooms with real students, but at this stage in their formation, mastering the technique is the primary aim of training. Precision, moreover, is visible throughout the lesson as both a means of mastering the script and a core value of the pedagogy. The trainer's care reflects Montessori's own belief in the "exact way" of doing things:

If we showed them [children] exactly how to do something, this precision itself seemed to hold their interest. . . . The exact way of doing it acted like a support which rendered the child stable in his efforts and therefore brought him to make progress in his development. (p. 186)

Here, the desire for precision is visible in the presenter's movements as well as the students' reactions. Hungry for certainty, they request (and receive) four separate demonstrations of the lesson.

Whereas the act of presenting material is a signal focus of all the training courses I have studied, mastering the pedagogical script itself is a more complicated matter. Linking developmental theory to practice, Montessorians have, over time, evolved a dynamic model of practice that identifies and

elaborates a key set of interactions between student, teacher, and the environment.

The concept of practice as a triangle of interactions is familiar to teacher educators (Lampert, 2001; Sizer, 1984, p. 151). Here, however, the triangle is elaborated to identify a set of moves for teachers to observe, rehearse, and incorporate into a repertoire. The key teacher moves of preparation, invitation, and protection are further broken down into micro-moves, which themselves are linked to key Montessori principles. The prepared environment, for instance, must allow for freedom within limits. All interactions with students must be informed by careful observation of students at work. Student interactions are similarly detailed, providing a guide for teachers as they determine student instructional needs.

The notion of teaching as a repertoire of moves, which practitioners master largely through mimetic (Jackson, 1986) means, is consistent with other craft traditions. Design ateliers, musical conservatories, acting and dance studios, and culinary schools all share a deep, and at times rigid, focus on technique. Foundational skills are practiced until mastered, and only when those skills are evident is innovation or improvisation encouraged. Despite the vitality of these craft traditions, there remains a persistent distaste among mainstream teacher educators with the idea of teaching as a craft, in particular one grounded in a tradition that reveres technical mastery (Britzman, 1991; Floden & Clark, 1988; Lampert, 2001; McDonald, 1992). So persistent is that distaste that even within the Montessori community there exists wide disagreement about the extent to which the integrity of the traditional script should be preserved and the manner in which it ought to be transmitted (Rambusch, 1962; Whitescarver & Cossentino, 2008).

Moreover, the picture of craft knowledge that emerges from Montessori teacher training differs quite markedly from conceptions of craft knowledge as atheoretical, idiosyncratic, and derived primarily from experience (Kennedy, 2002). By contrast, Montessori craft knowledge is derived from tradition, grounded in developmental theory, and so systematic as to be considered a script. Although transmitted orally, the script is, nonetheless, codified through the materials and recorded in the lectures of Maria Montessori and the albums of generations of practitioners. Just as important, the developmental theory that anchors practice has been validated by a growing body of research on cognition (Lillard, 2005).

As a craft, Montessori teacher training has much more in common with craft traditions outside of education than conventional university-based programs. In both its elevation of technique and its reverence for tradition, Montessori teacher training aims to create a stable pathway for the acquisition of a pedagogical repertoire that is both large and flexible. Like the musician mastering scales or the sous chef practicing knife skills, once mastered, that repertoire

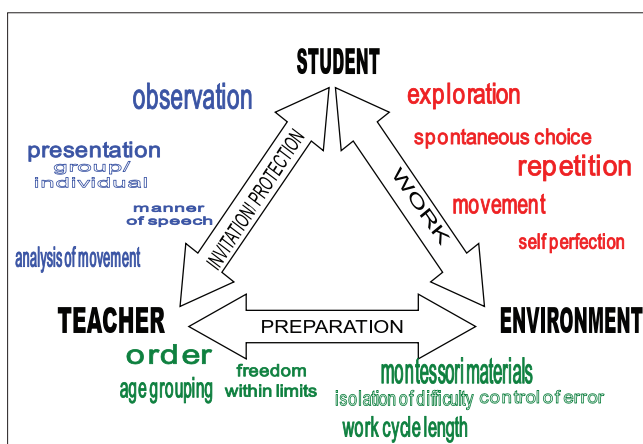


Figure 1. The Montessori Pedagogical Script

is meant to be deployed improvisationally. For the chef, improvisation becomes the creation of new combinations of flavors, textures, and preparations. For the Montessori teacher, improvisation becomes the ability to direct large, mixed-age classrooms in which children pursue individualized study using a large array of didactic materials. Moreover, as grueling and overwhelming as the experience of mastering the repertoire seems to be, most practitioners express satisfaction in their achievement.

Coherence: The Prepared Adult

How do Montessorians reconcile the paradox of a rigid script, acquired through imitation and repetition, aimed toward flexibility and improvisation? How can such an emphatic emphasis on technique avoid a mechanical manner of interacting with students and curriculum? At first glance, Montessori ideology appears at odds with the approach's craft orientation. A closer look, however, reveals an approach to professional formation that forges a dynamic link between the *hows* and the *whys* as well as the means and end of education. For Montessori, the prepared adult was a central means of revolutionizing education. The teacher is meant to serve as the embodiment of a new vision of education as an aid to life. To achieve this goal, Montessori teacher preparation aims directly toward transforming the adult's attitudes toward learning and human relationships. As the Negative Snake Game vignette shows, that transformation occurs through the mastery of a new script.

A Montessori elementary trainer comments on the power of this new script:

There are many people who create albums here, now, where the whole script is on one side of the page, and all their illustrations are on the other side. And they either write in phrases that the presenter used that they liked, or phrases that occurred to them at the time, and many people never look at the left. They really teach from the right hand side, and if they get confused about something, they go back to the text.

In commenting on the form of the album, the trainer is elaborating on how novice Montessorians learn to use their scripts in ways that guide, rather than constrain, practice. He continues,

So one of the things that I've been trying to get people to do is know the materials and know the manipulations, but focus on two things. One is, why would a child who had a choice, stay here? And two, what do you really want them to walk away with? Because if you know what you want them to walk away with and you know what will turn them on, you can make it out. But if you don't know those two things, you're stuck to

a script. I mean it's just like being an actor, you have to *be* the actor; you can't just memorize the line.

The revised mental (and cultural) script, in this case, is both enabled and signified by the album. Technique, in other words, serves as a gateway toward deeper mastery of pedagogical intention, which here is characterized as necessary for competent pedagogical action.

Congruence and Consistency

Transformation is further supported by a persistent focus on "having the experience of a Montessori learner." I found the phenomenon of "being a child" to be a feature of every program I have studied. Moreover, I have found it present in all phases of instruction—presentation, practice, and assessment. Students are urged to "learn the material as a child." Instructional rituals require students to move between the roles of child, student-teacher, and adult-learner. This integrated conception of role, task, and context resembles what Kessells and Korthagen (1999) refer to as "gestalt formation." That is, the holistic focus on the experience of being a child or teacher precedes the epistemic treatment of pedagogical strategies and the theories that support those strategies. Prospective Montessorians learn to be Montessorians through participation in the whole of Montessori culture, and that participation leads to deeper levels of schematic and practical transformation. The knowledge base, in other words, is embedded in the cultural activities that make up the action of teaching.

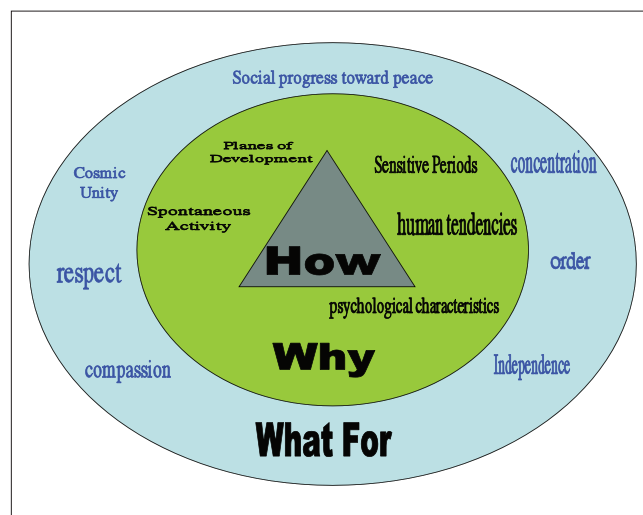


Figure 2. Montessori Cosmology

The congruence visible in learning the material as a child combined with the integration of the *hows* and *whys* of pedagogy highlights the holistic coherence of Montessori's educational vision. Like the whole of the Montessori

method, the preparation of the adult entails a fully integrated conception of the adult as guide. The practice of Montessori education entails mastery of a large and complex technical repertoire, which is directed toward the moral and spiritual goal of fulfilling human potential. It is precisely the link between technique and ideology, between means and ends, between how and why, that renders vitality to Montessori pedagogy and, by extension, Montessori teacher training.

Whether coherence is possible or desirable is itself a contentious issue among scholars of teaching and reform. Much of the debate revolves around issues of program and policy design (Fuhrman, 1993). Exponents of coherent program design (Elmore, 2002; Newmann, Smith, Allensworth, & Bryk, 2001) argue that tight alignment of goals, performances, and assessments provides necessary clarification of the relationship between the means and ends of instruction. The call for coherence is seen as a remedy for the "fragmented" (Lanier, 1986) nature of teacher preparation, in which students "wander about rather than progressing systematically" (Sedlak, 1987, p. 11) through program content. By contrast, critics (Britzman, 1991; Buchmann & Floden, 1991; Floden & Clark, 1988; McDonald, 1992) allege that teaching, by definition, is an eclectic and uncertain enterprise. Overreliance on alignment, they argue, can produce a reductive, lock-stop, competency-based conception of practice, which is incompatible with the conditions of real teaching in real classrooms.

Buchmann and Floden (1991) pose what is, perhaps, the central question of coherence: "What is to cohere with what?" (p. 70). More than anything, the seamless interlacing of action and intention distinguishes Montessori's cosmological version of coherence from more common notions of coherence as alignment. Rather than seeking to impose coherence on the structure of teacher education, Montessori teacher training relies on internal consistency that is made possible by the fact that Montessori theory drives Montessori practice. Rather than aligning curriculum with assessment, teaching is aligned with learning. Action coheres with intention. How coheres with why.

The enactment of craft knowledge in which the *hows* of practice are embedded in the *whys* of practice constitutes a new, more complicated version of coherence. Here, coherence is less a matter of program structure or policy mandate than of the actions and intentions of participants. When actions cohere with intentions, teachers are rendered stable in their practice. When practice is supported by congruence and consistency, mastery is more likely to be achieved, and improvisation more likely to follow.

The example of Montessori teacher training also suggests that context matters when coherence is at issue. I argue that all teaching practice constitutes a form of culture-bound know-how, which is what makes being a teacher more akin to being a chef than being a medical doctor. Moreover,

Montessori practice offers an unusually instructive example of how such know-how develops within culture. Because of its distinctive cultural norms and customs, including distinctive language, beliefs, and rituals, the particularities of cultural, ideological, and technical cohesion are visible.

The example of Montessori teacher training offers a fully integrated system in which moral and spiritual goods are constituted in practice and technique, in turn, is the pathway to practice. In its exquisite focus on the *hows* as well as *whys* of human development, Montessori practice demands vigorous attention to the details of learning and teaching. Such a focus remains lacking in mainstream teacher preparation, and until it is located, concepts like culture, craft, or coherence will do little to bring vitality to teacher education.

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Notes

1. To note the absence of a robust body of research on Montessori is not to say that the movement has entirely escaped the attention of scholars. See Whitescarver and Cossentino (2008) for a thorough review of the literature on Montessori.
2. Two major professional organizations dominate the Montessori movement worldwide. Association Montessori Internationale (AMI) is the organization founded by Maria Montessori in 1929 to formalize, preserve, and carry on the integrity of her work. The American Montessori Society (AMS) was founded in 1960 by a group of American Montessorians whose chief goal was to bring Montessori education to large numbers of students and educators. Both organizations sponsor training programs. Distinctions between AMI and AMS training are significant and are the subject of work in progress. However, this essay concentrates on concepts and practices that are shared by both orientations, and data presented here are drawn from studies of both AMI and AMS teacher training.
3. The path to becoming a trainer varies greatly among courses. By far the most rigorous approach is AMI's "Training of Trainers" program, which, in addition to a minimum of 5 years of classroom experience at the appropriate level, requires approximately 4 years of seminars, album reading, practice supervision, and apprentice lecturing in a minimum of three courses.

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Bio

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