Edited by
Robert D. Zettle, Steven C. Hayes,
Dermot Barnes-Holmes, and Anthony Biglan

THE WILEY HANDBOOK OF *Contextual Behavioral Science*

WILEY Blackwell

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Examining the Partially Completed Crossword Puzzle

The Nature and Status of Contextual Behavioral Science

Steven C. Hayes, Robert D. Zettle, Dermot Barnes-Holmes, and Anthony Biglan

The purpose of this volume is to describe contextual behavioral science (CBS) – its nature, origins, status, and future. The parts of the handbook deal in succession with its foundational assumptions and strategies, basic work in language and cognition, contextual approaches to clinical interventions and assessment, and extensions of CBS across settings and populations. Although presented sequentially, the chapters are deliberately interwoven: Philosophical issues arise in the basic science chapters, basic science issues appear in the intervention chapters, and so on. They form a kind of intellectual and practical web or network (thus the term "reticulated" for the overall strategy) that taken as a whole describes CBS and its current status, as well as providing some good hints about where this tradition may be going.

It is in the nature of books that topics need to be presented in a linear fashion. CBS did not develop that way in a historical sense, however. For example, the work on functional contextualism did not precede the work on relational frame theory (RFT), which then preceded the development of acceptance and commitment therapy (ACT). CBS rather developed more the way one might attack a complex crossword puzzle – sometimes successfully pursuing clues in one part of the puzzle led to hints for how to move forward in other parts; sometimes advancements were made in a corner of the puzzle that would be disconnected from anything else for a long time. Sometimes these leaps and jumps were strategic; sometimes they were more like a random walk, driven by whim and circumstance. But always the goal was the overall puzzle: How to create a behavioral science more worthy of the challenge of the human condition.

A puzzle of that kind is one that in all likelihood will challenge behavioral science for some time, so although progress has clearly been made over the last few decades, what CBS is deliberately focused on is how to create a knowledge development strategy that is sustainable and progressive over the long haul. What CBS brings to the table is a principle-focused, communitarian strategy of reticulated scientific and practical development, grounded in functional contextualistic philosophical assumptions,

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and applied at all levels of analysis in behavioral science. This vision builds on the historical fact that CBS gradually gathered together different kinds of professionals who were pursuing clues in one part of the puzzle with an eye toward what it suggested for how to advance in other parts. What once was an implicit strategy driven merely by breadth of interests has blossomed into a more conscious strategy of constructing a coherent intellectual and practical web of knowledge by proceeding in an interrelated and communitarian way all at once. Having a web of knowledge as a scientific product is what all forms of behavioral science aspire to, but CBS has adopted that end point as an analytic approach at the operational level, challenging all of the professionals involved to be always responsible for the whole of it when approached within common functional contextualistic assumptions. That is the deeper sense in which CBS is a communitarian and contextualistic *strategy* of reticulated scientific and practical development.

The CBS approach is quite different than a bottom-up strategy, in which basic scientists alone are given all of the duties of constructing principles of high precision and scope that can be applied by practitioners to complex human behavior. It is also different than technological applied work that leaps into the evaluation of applied ideas without a concern for basic principles or the scope of theories. That is one of the major differences between CBS and purely technologically oriented approaches. In a CBS approach, clinicians sometimes need to be responsible themselves for developing psychological principles, and "bench" scientists sometimes need to be responsible for learning how to apply the principles they have derived. This occurs both in the laboratories and the clinics of those who straddle that applied/basic divide, and across the crossword puzzle of content domains. Clinicians are working on social stigma or the empowerment of indigenous peoples; educators are working on relational fluency and the development of intellect; therapists are working on prevention or extending the flexibility of organizations; basic scientists are writing about evolutionary epistemology or are extending implicit measures to clinics. Over time that approach seems to be expanding the CBS community itself, not just in terms of size, where its growth has been rapid, but also in terms of its focus and professional interconnections. Cognitive scientists and evolutionary biologists are part of the CBS community, for example, and their students and colleagues are being drawn into the same communitarian approach. The list of professions, disciplines, and groups heavily involved in CBS is already long and continues to grow: social workers, psychiatrists, occupational therapists, nurses, prevention scientists, coaches, behavior analysts, educators. Development is broad at the level of language communities and nations as well, bringing new sensitivities and a diversity of topics driven by culture, intellectual traditions, and social needs. About half of the current members of the Association for Contextual Behavioral Science are outside of North America, 20 chapters exist for countries outside of the United States, and 26 special interest groups pursue issues across the full range of behavioral science topics.

Now that a substantial body of interrelated work exists, it may seem to have emerged, in retrospect, from a coherent and predictable process. Students especially should not be deceived. Science is not only nonlinear, it is not predictable. Science is the behavior of scientists and as such it is sometimes systematic and is at other times an unsystematic social enterprise. It is ultimately self-organizing based on its purpose and knowledge criteria, but it is also constantly devolving and beginning anew. There is no reason to think that this naturally unsystematic or, at times, even chaotic quality

will, or should, change. Simply because a body of work exists does not mean that it is finished, or that it could have only have turned out that way, or that developers had this end in mind all along.

Advancing an existing body of work requires the same kinds of risks and leaps that were required in its creation. Students may imagine or even be told that their scientific forbears knew what they were doing, saw a future, and then pursued it systematically. This can be a very inspiring story when it is applied to scientific heroes, but it is a secretly discouraging narrative because students in general do not see into the future and they often wait in vain for the touch of the muses they have been told visited their mentors. There is no such division between academic and practitioner generations – the apparent difference is an illusion imposed by the asymmetry of the impact of the known past versus unknown future on verbal processes. The purposive tales that surround established bodies of work are mostly reconstructions and reinterpretations, integrated into a coherent account that downplays or even hides from view the social, emotional, or accidental sources of progress that characterized the development of the tradition in real time.

CBS has moved forward fed not just by scientific studies and findings, and logical extensions of theories and principles, but also by personal commitments, leaps of intuition, friendships and alliances, the yearning to be of use, and by the "egos" of individual scientists, who, like most humans, seek to be heard and proven right in some way. While a mere verbal warning is unlikely to stem the tendency for scientific and clinical traditions to devolve into the safety of social agreement, we do not want this moment to pass without pleading with young scientists especially to accept nothing on faith. We would also urge them to politely refuse the appeals of the establishment to take anything as a given or as obvious, and thus as something that needs to be agreed to without further consideration. It does not matter if the establishment making this appeal is cognitively oriented or behaviorally oriented; psychological or biological in its approach; contextualistic or mechanistic in its assumptions. It does not matter if the establishment includes the very authors of this book. Doubt everything and hold it lightly – even doubt itself. Let CBS grow and change based on its successes, but be careful of adaptive peaks that could prevent this field from continuing to push toward its ultimate goals. The young, and others willing to take risks, will push this field forward, but not if they are turned into applauders or passive recipients of knowledge.

This book has a clear organization – which we will describe while that warning is fresh in our minds. In Part I of the book, edited primarily by Steven C. Hayes, we explore the idea that CBS is a strategy of scientific development, that is based on a core set of philosophical assumptions, and that is nested within multidimensional, multilevel evolution science as a contextual view of life. Chapter 3 (Levin, Twohig, & Smith), provides an overview of CBS; chapter 4 (Biglan & Hayes) provides a similarly broad summary for functional contextualism. Chapter 5 (Wilson) deals with the variety of terms and principles in a CBS approach, cautioning against the tendency for scientists and practitioners alike to reify and ontologize them. Chapter 6 (Long & Sanford) explores the reflective implications of a functional contextualistic approach for the actions of scientists themselves – essentially applying a psychological flexibility model to the doing of science itself. In chapter 7, the final chapter of Part I, Monestès examines the contribution of CBS to the study of human evolution, focusing especially on the role of human language.

In Part II, edited primarily by Dermot Barnes-Holmes, RFT is described and linked to other aspects of CBS. Hughes and D. Barnes-Holmes begin in chapter 9 by laying out the basic account and then continuing in chapter 10 to extend its implications for the study of human language and cognition as a whole. In chapter 11, Y. Barnes-Holmes, Kavanagh, and Murphy explore the implications of RFT for education and special education, and, in chapter 12, the final chapter of Part II, Törneke, Luciano, Y. Barnes-Holmes, and Bond relate RFT to the understanding and treatment of human suffering.

Part III, edited primarily by Robert D. Zettle, explores contextual approaches to clinical interventions and assessment. Chapter 14 (Herbert, Forman, & Hitchcock), provides an overview of the defining, distinguishing, and common features of contextual approaches to psychotherapy. Villatte uses RFT and CBS principles in chapter 15 to help understand the in-session actions of both therapists and clients. Chapter 16 (Ciarrochi, Zettle, Brockman, Duguid, Parker, Sahdra, & Kashdan) explores a pragmatic approach to psychological assessment, extending the implications of functional contextualism to the nature and quality of measurement. Levin and Villatte consider the role of laboratory-based intervention studies and experimental psychopathology studies in a CBS approach in chapter 17. In chapter 18, the final chapter of Part III, Y. Barnes-Holmes, Hussey, McEnteggart, D. Barnes-Holmes, and Foody examine the relationship between RFT and middle-level terms in ACT.

Part IV, edited primarily by Anthony Biglan, examines extensions of CBS into a range of nonclinical topics and areas. In chapter 20, Backen Jones, Whittingham, Coyne, and Lightcap examine CBS and parenting; in chapter 21 Szabo & Dixon examines CBS in education. Bond, Lloyd, Flaxman, and Archer describe the extension of ACT and the concept of psychological flexibility to the workplace in chapter 22. In chapter 23, Levin, Lillis, and Biglan consider the possibility of community-wide strategies for promoting psychological flexibility. Biglan, Lee, and Cody extend CBS thinking to the evolution of capitalism in chapter 24. In chapter 25, the final chapter of this part, Alavosius, Newsome, Houmanfar, & Biglan apply CBS to the environment.

Trends in CBS

This volume presents a partially completed crossword puzzle. It is one in which vast regions of the puzzle remain unaddressed. The future of CBS remains to be written, but there are a number of basic and applied topics that are beginning to be worked on now that seem imminent. In the epilogue we will look ahead as best we can, but at this point it seems most worthwhile to characterize the broad trends that will be evident as you read this volume.

At one time it was possible to think of CBS merely as an overarching term for ACT, RFT, and their relationship. Those days are quickly passing away, as this volume shows. RFT is being linked to modern work in cognitive science (DeHouwer, Barnes-Holmes, & Moors, 2013), ACT methods are being linked to principles drawn from evolution science (Wilson, Hayes, Biglan, & Embry, 2014), and a variety of evidence-based contextual interventions are being linked to psychological flexibility and other core CBS concepts (Hayes, Villatte, Levin, & Hildebrandt, 2011). RFT is guiding clinical work directly (Törneke, 2010; Villatte, Villatte, & Hayes, 2015) and

psychological flexibility is being applied to larger and larger systems. We can see the beginnings of a contextual behavioral neuroscience, and a broader integration with contextual approaches to biology more generally (e.g., Barnes-Holmes et al., 2005; Fletcher, Schoendorff, & Hayes, 2010; Wilson et al., 2014). CBS is beginning to develop more contextual models of assessment and its evaluation, turning away from the elemental realist ontological assumptions that reside inside psychometric theory (Borsboom, Mellenbergh, & van Heerden, 2003) toward such methods as experience sampling (Bolger, Davis, & Rafaeli, 2003) or radically functionalist concepts such as treatment utility (Hayes, Nelson, & Jarrett, 1987). RFT is developing methods that make clearer and clearer the differences between functional and structural models of cognition, and between relational and associative models of language and cognition (Hughes, Barnes-Holmes, & DeHouwer, 2011). A good example is the maturation of the Implicit Relational Assessment Procedure (IRAP) and its underlying theory, as this volume will demonstrate. Applied methods are now springing directly from RFT concepts more broadly, not just the middle-level terms of psychological flexibility (e.g., Cassidy, Roche, & Hayes, 2011; Rehfeldt & Barnes-Holmes, 2009) – a process that seems likely to continue.

These and other trends show that CBS is broadening and deepening. Although it came from behavior analysis, it is no longer tightly tied to behavior analysis as we have known it historically, and CBS is no longer just about ACT and RFT. Instead, CBS is about putting functional contextualistic assumptions into behavioral science writ large and building the bridges to allies and fellow travelers that are needed to make progress as measured against the grand aspiration of this tradition: creating a behavioral science more adequate to the challenge of the human condition.

References

Barnes-Holmes, D., Regan, D., Barnes-Holmes, Y., Comins, S., Walsh, D., Stewart, I., … Dymon, S. (2005). Relating derived relations as a model of analogical reasoning: Reaction times and event related potentials. *Journal of the Experimental Analysis of Behavior, 84*, 435–452.

Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology, 54*, 579–616.

Borsboom, D., Mellenbergh, G. J., & van Heerden, J. (2003). The theoretical status of latent variables. *Psychological Review, 110*, 203–219.

Cassidy, S., Roche, B., & Hayes, S. C. (2011). A relational frame training intervention to raise intelligence quotients: A pilot study. *The Psychological Record, 61*, 173–198.

DeHouwer, J., Barnes-Holmes, D., & Moors, A. (2013). What is learning? On the nature and merits of a functional definition of learning. *Psychonomic Bulletin & Review, 20*, 631–642.

Fletcher, L. B., Schoendorff, B., & Hayes, S. C. (2010). Searching for mindfulness in the brain: A process-oriented approach to examining the neural correlates of mindfulness. *Mindfulness, 1*, 41–63.

Hayes, S. C., Nelson, R. O., & Jarrett, R. (1987). Treatment utility of assessment: A functional approach to evaluating the quality of assessment. *American Psychologist, 42*, 963–974.

Hayes, S. C., Villatte, M., Levin, M., & Hildebrandt, M. (2011). Open, aware, and active: Contextual approaches as an emerging trend in the behavioral and cognitive therapies. *Annual Review of Clinical Psychology, 7*, 141–168.

Hughes, S., Barnes-Holmes, D., & DeHouwer, J. (2011). The dominance of associative theorising in implicit attitude research: Propositional and behavioral alternatives. *The Psychological Record, 61*, 465–498.

Rehfeldt, R. A., & Barnes-Holmes, Y. (2009). *Derived relational responding: Applications for learners with autism and other developmental disabilities*. Oakland, CA: New Harbinger.

Törneke, N. (2010). *Learning RFT: An introduction to relational frame theory and its clinical application*. Oakland, CA: New Harbinger.

Villatte, M., Villatte, J., & Hayes, S. C. (2015). *The language of psychotherapy*. New York: Guilford.

Wilson, D. S., Hayes, S. C., Biglan, T., & Embry, D. (2014). Evolving the future: Toward a science of intentional change. *Behavioral and Brain Sciences, 34*, 1–22.

Part I

Contextual Behavioral Science
Nature, Strategy, and Current Status

Steven C. Hayes

2

Why Contextual Behavioral Science Exists

An Introduction to Part I

Steven C. Hayes

The first part of this volume focuses on the big picture: What is contextual behavioral science (CBS), how does it differ from other approaches, and what are some of the contemporary issues involved in the progress of CBS? In a way it is historically backwards to speak first of CBS as a tradition or approach because, as it was lived, the sense that an approach was building came late. The first use of the term "contextual behavioral science" was after the beginning of this millenium – whereas the work and choices that lead to this distinct approach occurred decades earlier.

There are five chapters in this part that cover key features of CBS as a philosophical and strategic system. As a way of setting a context for them, a brief historical introduction seems warranted.

Most of the core elements of CBS were not assembled in an identifiably sequential way, but one aspect was. CBS emerged out of a content-focused issue: How can behavioral psychology address the issue of human language and cognition? In a historical sense that content issue led to a cascade of issues that are now central to the identity of CBS. The cascade was chaotic and included an interrelated set of basic developments, applied developments, and (perhaps most central of all), philosophical and strategic developments. But it had a core: understanding language and cognition from a contextual behavioral point of view.

Some day, that story may be told as it was lived. That day is not today – our purposes here are more summative and intellectual – but perhaps I can be forgiven a brief bit of history that sets the stage for the issues explored in this part (and in this book). Because this is early history, many of the citations are to my own work, which I note and apologize for in advance. It is unavoidable when dealing with these earliest days.

In 1972 or 1973, the late Willard Day, founder and editor of the journal *Behaviorism*, visited the Psychology Department at West Virginia and gave a colloquium on the importance to a behavioral perspective of understanding verbal behavior "as it actually occurs; as it is actually displayed by human beings." A student in the audience, I took him to mean that we needed an analysis that was profoundly useful in predicting and controlling this kind of behavior. He was not arguing that

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such an account existed: Rather his claim was that it was essential to the very survival of behavioral thinking that such an account be brought into existence.

To explain why this thundered down upon me, you need to understand the mood of the times. Behavior analysis seemed to many of those inside of it to be incredibly fresh and exciting. It was subtle and challenging – not at all like the cartoons that nonbehavioral people often made of it. It had nothing to do with eliminating consideration of private experiences – rather it was focused on a functional understanding of these events. Day had written (1969), for example, about how close behaviorism was to phenomenology. Skinner (1948) had written a utopian novel, *Walden Two*, which had led me to become a behaviorist in the first place. He had explicitly overthrown the Watsonian prohibitions against introspection and the study of private events (Skinner, 1945). This was an exciting new form of behaviorism that could begin to speak to the deepest challenges of the human condition.

At the same time, however, behaviorism was under severe attack. Just a year or two earlier the movie *A Clockwork Orange* had conflated behavior modification with involuntary aversive conditioning. Skinner's (1971) *Beyond Freedom and Dignity* had just appeared and was immediately and falsely taken to mean that behavioral science would try to eliminate freedom and dignity in order to create progress. Somehow, the cultural elite declared, behaviorism would create a society of robots.

To behavior analysts, the ones who felt the beating heart of a new way forward that would speak to issues of love, community, compassion, and purpose, it all felt so unfair. People did not understand. Aversive conditioning? Robots?

Willard Day's colloquium thundered down in that context. Behavioral folks needed to explain how to *foster* freedom and dignity. We had to do so in a fashion that avoided the "mental way stations" that sometimes lurk inside such terms and that can block our ability to understand how to live better lives and to support the growth and prosperity of others. Doing great things in understanding human complexity required that we understand language as it actually occurs. The very survival of behavioral thinking was at stake.

Sitting there, before I stood up to leave the room, I made a mental promise. If it could be done, I would find a way.

The search for an adequate behavioral approach to the challenge of human language and cognition occurred within what we now think of as the contextualistic wing of behavior analysis. There was nothing particularly creative or risky about having functional contextual philosophical commitments guide this search – it is just what a functionally and contextually oriented behavior analyst would do.

It dawned on me only slowly that even many behavior analysts were not in agreement about these philosophical commitments, and that, in order to proceed with clarity, the philosophical approach needed to be explicated. That process of refinement had two aspects.

As I began to search for a solution as a young academic, it became obvious that an interest in language and cognition meant that behavior analysts were going to be studying how one kind of action impacted another. Later on, RFT would explain more fully how and why that happened, but from the beginning it was apparent that studying language in a pragmatic way led naturally to a thorny issue of how to think about behavior–behavior relationships. From a contextualistic point of view, that in itself raised profound questions. If language and cognition were important, they were important because of the relations they established with other actions. At the same

time, allowing actions to assume the role of independent variables in an experimental analysis would essentially create a form of mentalism that would fundamentally undermine the pragmatic commitments of behavior analysis.

These issues were addressed in detail in the mid-1980s (Hayes & Brownstein, 1986). By explicating the dangers of such mentalism to a behavioral view of the purposes of behavioral science, a kind of bracket was drawn around the pursuit of an adequate account of language and cognition. No, thoughts were not independent variables, but yes, relationships among behaviors need to be understood. The solution was that they needed to be understood *in context*. The pragmatic demands of prediction and influence as goals demanded nothing less, because only context could be changed directly.

The work on contextualism (Hayes, Hayes, & Reese, 1988) and the distinctive nature of functional contextualism (Biglan & Hayes, 1996; Hayes, 1993) embedded this issue of behavioral causes into a larger set of assumptions about the proper unit of analysis in a contextual behavioral account. The purposes of functional contextualism were distinguished from the purposes of other forms of contextualism such as social constructionism. The assumptions of a contextual world view were stated.

Why CBS Gradually Distinguished Itself from Traditional Behavior Analysis

What this philosophical work did was to specify how contextualism linked to radical behaviorism, but it also began to distinguish the two. This process was not merely an act of translation, as if functional contextualism was nothing more than a matter of avoiding the unfortunate terms Skinner sometimes chose that made it almost impossible for him to be heard without distortion. It was an exercise in extension and explication. Prediction and control was replaced by prediction and influence – a small, but needed, step. Precision, scope, and depth were added as key outcome dimensions. The social nature of science was made more foundational. The psychological level of analysis was defined. The truth criterion was carefully specified. The a-ontological nature of evolutionary epistemology was laid out. (These points are not referenced here because there is no need – the story is well told in this part of the book.)

The work on contextualism laid the foundation for CBS is a particular form of behavior analysis, with a particular set of assumptions and purposes. Gradually, this philosophical work allowed intuitive extensions of Skinnerian thinking construed as a form of radical pragmatism to be replaced by deliberate extensions founded on a clear and stated set of assumptions.

One reason this philosophical work was so necessary is that Skinner himself was not clear. Behavior analysis contained (and does to this day) two very different ideas about psychology. Unfortunately, both of those ideas were in Skinner's work, and their contradictions were neither noticed nor resolved.

Consider, for example, the only place Skinner ever clearly defined "behavior." In his treatment of the topic in the *The Behavior of Organisms*, Skinner (1938) defined behavior as "the movement of an organism or of its parts in a frame of reference provided by the organism itself or by various external objects or fields of force" (p. 6). This is an entirely topographical definition. It is deeply mechanistic. It carried no

sense of function. Its only link to context was the frame of reference needed to define movement. It is impossible to use such a definition to directly address thoughts, or feelings, or urges. None of these are "movements."

But wait. A few lines later Skinner (1938) defined behavior as "the functioning of an organism which is engaged in acting upon or having commerce with the outside world" (p. 6). This is an entirely different approach. It is functional and explicitly contextual. It treats behavior and the context in which it occurs as an integrated phenomenon. It contains nothing that we cannot apply with equal relevance to thoughts, or feelings, or urges. Two fundamentally different definitions; same paragraph.

Over and over again the same problem occurs in the canonical works of behavior analysis. On the one hand, Skinner (1953) criticized the idea that understanding stimuli required "metaphysical speculations on what is 'really there' in the outside world" (p. 138) and said:

> Responses to some forms of stimulation are more likely to be "right" than responses to others, in the sense that they are more likely to lead to effective behavior … but any suggestion that they bring us closer to the "real'" world is out of place. (p. 139)

On the other hand, Skinner (1953) defined stimuli formally rather than functionally when he spoke of "those energy changes at the periphery which we designate as stimuli" (p. 449). Two fundamentally different views of stimuli; same book.

The end result was predictable. Yes, behavior analysis contained a vigorous community of functional and contextually oriented behavioral scientists and practitioners. But it also contained a large (perhaps even larger) community of reductionistic elemental realists who disliked contextualistic thinking. These inconsistencies (see Hayes et al., 1988 for a more detailed list) initially drove the need for clarity about functional contextualism, but over the long run they were part of what drove CBS into its own association, with its own journal and conference.

Behavior analysis as an organized field ultimately could not adequately house CBS. That is a painful sentence to write after decades of trying to reach another conclusion. Nevertheless, it needs to be said and be explained.

First and foremost it could not do so because behavior analysis as a field is philosophically divided. I have just suggested that this division occurred because its founder was philosophically unclear, but, regardless of why it is the case, it is the case. No objective observer could fail to agree.

Beyond issues of philosophical clarity, CBS eventually needed its own identity because the substantive work that needed to be done and cooperative alliances that needed to be built could not happen without fundamentally altering Skinnerian ideas, approaches, and cultural traditions. That proved to be impossible to do within traditional behavior analysis. Thus, as CBS as a research strategy developed, the need to define CBS as a distinct area grew.

An example is contained in the creation of relational frame theory (RFT) as a behavioral approach to language and cognition and its subsequent empirical progress. About the same time that acceptance and commitment therapy (ACT) was emerging (Hayes, 1984; 1987), and contextualism was being explicated (Hayes & Brownstein, 1986), RFT as a behavioral account of stimulus equivalence and derived relational responding finally took shape (Hayes, 1986, first published as Hayes, 1991).

It was immediately apparent that relational framing led to new forms of behavioral regulation (Hayes, Devany, Kohlenberg, Brownstein, & Shelby, 1987; Wulfert & Hayes, 1988). Relational framing could create reinforcers, augment or diminish their impact, alter classically conditioned stimuli, or establish forms of stimulus control that did not fit any other previously identified forms. This was both exciting and horrible news. It was exciting because a vast set of new research questions opened up, many of which led directly to questions of central importance to mainstream psychology. It was horrible because the hard-won knowledge about direct contingencies that behavioral psychology had spent a good part of a century creating now had to be reworked with verbal humans. Decades of difficult experimental and conceptual work lay ahead. It was not possible to do that work inside the animal learning tradition, insofar as nonhuman animals have not yet been clearly shown to do the core elements of relational framing with sufficient robustness for it to be used as a preparation.

The criticisms of RFT within behavior analysis were immediate and vigorous (e.g., see the criticisms published in the *Analysis of Verbal Behavior*, volume 19, 2003), but they were not intellectually telling (Hayes, Barnes-Holmes, & Roche, 2003). What followed, unfortunately, was a response that avoided conflict at the cost of progress. To explain what I mean, here was the conclusion of our response to several of these early criticisms (Hayes et al., 2003, p. 53):

> If behavior analysis, as a field, is to face the challenge that RFT presents, the following questions will need to be answered: 1. Are we satisfied that an operant is a basic behavioral process? 2. If so, can we define and empirically identify operant behavior? 3. If we can, can we define and empirically identify traditional relational responding (based on formal properties of relata) as operant behavior? 4. If so, can we define and empirically identify arbitrarily applicable relational responding (as defined in our book) as operant behavior? 5. If so, is it the case empirically that this relational operant modifies stimulus functions established by other learning processes?
>
> If the answer is "Yes" to each of these questions, then the field as a whole will have to deal with the wide-ranging and revolutionary implications that arise from this relational operant. Behavior analysis will have unquestionably entered the "post-Skinnerian" era because, in effect, behavioral psychology will have to re-examine the impact of a wide variety of behavioral processes in verbal organisms that have hitherto provided the bedrock upon which our science is built. Stepping up to this challenge is exactly what RFT attempts to do, but stepping up to the challenge of these five questions is something that the entire field of behavior analysis can no longer comfortably avoid.

In the more than 10 years since, not a single article has appeared in a behavior analytic journal providing data that suggest that relational operants do not exist. Well-crafted arguments about the logical impossibility of relational frames are also absent. Instead, the challenge of RFT to the hegemony of Skinnerian thinking about verbal behavior has largely been met in traditional behavior analysis by a refusal to engage with the issues.

ACT further created the need for CBS as a distinct tradition. Clinical domains are excellent areas in which to explore ideas about language and cognition. Part of the need for a contextualistic account of language and cognition came because clinical psychologists needed basic accounts that worked. If they did not exist, they needed to be created.

This very idea changed the research strategy of behavior analysis. Instead of a bottom-up approach, in which basic principles would suggest applications (a word

that etymologically means "to bring into contact with" as if the primary issue is bringing foundational principles into contact with complexity), CBS adopted a strategy in which all parties were responsible for progress. So-called "applied" workers might need to bring clinical realities "into contact with" the search for high precision/high scope ways of speaking about phenomena – not just the other way around. In other words, practitioners might have the responsibility to drive basic developments that serve their needs, not merely learn how to make use of whatever basic developments have occurred. The mutual interest of basic and applied professionals in progress in a pragmatic approach to language and cognition fundamentally altered the dynamic inside behavior analysis. Animal laboratories were immediately much less important, for example. That was a bitter pill for basic behavior analysis to swallow.

The centrality of a psychotherapy approach in CBS also challenged behavior analysis in another way. As board-certified behavior analysts were established throughout the United States to do professional work with those struggling with developmental disabilities, there was less room for traditional psychotherapy work within the institutional confines of applied behavior analysis, which became more and more dominated by developmental disabilities and autism.

The radical pragmatism of functional contextualism created another kind of disconnect with traditional behavior analysis in the willingness to use terms that are useful in some areas and not others. This is evident in the embrace of the use of "middle-level" terms: high scope, but lower precision terms that orient the field toward domains. This issue first appeared in an article that attempted a detailed analysis of the term "spirituality" (Hayes, 1984). The core of the argument was that we needed to take seriously terms that carved out domains in which distinctive functional accounts applied, even if the terms literally contradict behavioral assumptions. Said in another way, if "meaning is use," then we cannot look in the dictionary for approved behavioral terms, because such an approach violates a behavioral perspective on language. Yes, taken literally, the term "spirituality" contradicts the monistic assumptions of behavioral psychology, but when it is examined functionally there appear to be good reasons for the term, based on relational learning and sense of self.

That article (Hayes, 1984) proved to be prescient in areas such as perspective-taking and deictic framing, as well as acceptance-based psychotherapy. Much of what later becomes CBS was foreshadowed there, 30 years ago. Ironically, the core step was to take seriously a phenomenon that literally contradicts behavioral assumptions. That is a step that even today most behavior analysts are unwilling to make.

As ideas about functional contextual approaches to language and cognition began to take shape, and functional contextual thinking itself became clearer, a more radically pragmatic perspective on theory and conceptualization emerged. If truth was getting things done, we needed to be more catholic about concepts because sometimes highly technical accounts were needed, and sometimes accounts were needed that merely oriented analysts to a domain.

It was only when all of these elements (and more) came together, that it was possible to stop and look back and notice what was happening. The abandonment of bottom-up behavior analysis and the embrace of a reticulated research program happened because intuitively useful steps were taken. The rationale for these steps came later. Creating a new approach to language and cognition changed how behavioral principles were thought about, researched, and applied. The pragmatic embrace of multiple ways of speaking opened up new ways to think about theories and models.

As CBS has consciously formed as a scientific tradition, that clarity has gradually broadened the vision of the field. CBS is moving into applied forms of RFT, education, attitude change, and other areas. CBS has in the last half dozen years consciously placed itself under the umbrella of multidimensional and multilevel evolution science (Hayes, Barnes-Holmes, & Wilson, 2012; Wilson, Hayes, Biglan, & Embry, 2014a; 2014b), beginning to fulfill a long hoped for vision (Skinner, 1981). This has in turn linked CBS to other evolutionary ideas such as those of Elinor Ostrom (Wilson, 2014). It has begun to build a bridge to cognitive science as well (DeHouwer, 2011).

The Chapters in Part I

The chapters in Part I lay out the nature of CBS and situate it in its larger intellectual context. Chapter 3, by Levin, Twohig, and Smith, provides a point-by-point overview of CBS and its features. Chapter 4, by Biglan and Hayes, does a deep dive into functional contextualism – its nature, linkage to pragmatism, and its scientific implications. Wilson thinks through the implications of middle-level terms in chapter 5. In chapter 6 Long and Sanford explore the strategic impact of applying CBS thinking to the behavior of scientists. Monestès, in chapter 7, shows both that the theoretical and metatheoretical features of CBS fit spectacularly well with evolution science and that CBS's historical and contextual approach to language and cognition alters how we think about human evolution itself.

These chapters are dominantly strategic and philosophical. They are meant to ground the more substantive chapters in the parts that follow into a set of philosophical assumptions and strategic choices that are named and clarified. Metaphorically, this part allows the reader's feet to be firmly placed in core analytic choices, so that, as the book explores how CBS researchers and practitioners deal with human language and cognition, or how CBS approaches issues of human suffering and human prosperity, there can be a greater appreciation of the overall attempt.

The purpose of CBS is to make progress toward a psychology more worthy of the challenge of the human condition. This book will allow the reader to assess whether any progress is being produced within the tradition defined by this first part of the book.

References

Biglan, A., & Hayes, S. C. (1996). Should the behavioral sciences become more pragmatic? The case for functional contextualism in research on human behavior. *Applied and Preventive Psychology: Current Scientific Perspectives, 5*, 47–57.

Day, W. F. (1969). Radical behaviorism in reconciliation with phenomenology. *Journal of the Experimental Analysis of Behavior, 12*, 315–328.

DeHouwer, J. (2011). Why the cognitive approach in psychology would benefit from a functional approach and vice versa. *Perspectives on Psychological Science, 6*, 202–209.

Hayes, S. C. (1984). Making sense of spirituality. *Behaviorism, 12*, 99–110.

Hayes, S. C. (1986, June). *What is a verbal stimulus?* Invited address presented to the Summer Institute on Verbal Relations, Behaviorists European Summer Academy, Bad Kreuznach, West Germany.

Hayes, S. C. (1987). A contextual approach to therapeutic change. In N. Jacobson (Ed.), *Psychotherapists in clinical practice: Cognitive and behavioral perspectives* (pp. 327–387). New York, NY: Guilford.

Hayes, S. C. (1991). A relational control theory of stimulus equivalence. In L. J. Hayes & P. N. Chase (Eds.), *Dialogues on verbal behavior* (pp. 19–40). Reno, NV: Context Press.

Hayes, S. C. (1993). Analytic goals and the varieties of scientific contextualism. In S. C. Hayes, L. J. Hayes, H. W. Reese, & T. R. Sarbin (Eds.), *Varieties of scientific contextualism* (pp. 11–27). Reno, NV: Context Press.

Hayes, S. C., Barnes-Holmes, D., & Roche, B. (2003). Behavior analysis, relational frame theory, and the challenge of human language and cognition: A reply to the commentaries on *Relational Frame Theory: A Post-Skinnerian Account of Human Language and Cognition*. *Analysis of Verbal Behavior, 19*, 39–54.

Hayes, S. C., Barnes-Holmes, D., & Wilson, K. G. (2012). Contextual behavioral science: Creating a science more adequate to the challenge of the human condition. *Journal of Contextual Behavioral Science, 1*, 1–16.

Hayes, S. C., & Brownstein, A. J. (1986). Mentalism, behavior–behavior relations and a behavior analytic view of the purposes of science. *The Behavior Analyst, 9*, 175–190.

Hayes, S. C., Devany, J. M., Kohlenberg, B. S., Brownstein, A. J., & Shelby, J. (1987). Stimulus equivalence and the symbolic control of behavior. *Mexican Journal of Behavior Analysis, 13*, 361–374.

Hayes, S. C., Hayes, L. J., & Reese, H. W. (1988). Finding the philosophical core: A review of Stephen C. Pepper's *World Hypotheses*. *Journal of the Experimental Analysis of Behavior, 50*, 97–111.

Skinner, B. F. (1938). *The behavior of organisms*, New York, NY: Appleton-Century-Crofts.

Skinner, B. F. (1945). The operational analysis of psychological terms. *Psychological Review, 52*, 270–276.

Skinner, B. F. (1948). *Walden two*. Oxford, England: Macmillan.

Skinner, B. F. (1953). *Science and human behavior*. New York, NY: The Free Press.

Skinner, B. F. (1971). *Beyond freedom and dignity*. New York, NY: Bantam Books.

Skinner, B. F. (1981). Selection by consequences. *Science, 213*, 501–504.

Wilson, D. S. (2014). Introducing PROSOCIAL: Using the science of cooperation to improve the efficacy of your group. *Evolution: This View of Life*. Retrieved from http://www.thisviewoflife.com/index.php/magazine/articles/introducing-prosocial-using-the-science-of-cooperation-to-improve-the-effic

Wilson, D. S., Hayes, S. C., Biglan, T., & Embry, D. (2014a). Collaborating on evolving the future. *Behavioral and Brain Sciences, 34*, 44–61.

Wilson, D. S., Hayes, S. C., Biglan, T., & Embry, D. (2014b). Evolving the future: Toward a science of intentional change. *Behavioral and Brain Sciences, 34*, 1–22.

Wulfert, E., & Hayes, S. C. (1988). Transfer of a conditional ordering response through conditional equivalence classes. *Journal of the Experimental Analysis of Behavior, 50*, 125–144.

3

Contextual Behavioral Science

An Overview

Michael E. Levin, Michael P. Twohig,
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To begin a discussion of scientific strategy inside a pragmatic approach to the behavioral sciences, it is worth stepping back and appreciating the scope of challenges faced as a society. The prevalence of human suffering is staggering, with almost half of the population meeting criteria for a psychological disorder in their lifetimes (Kessler et al., 2005) and many more struggling with difficulties in functioning and major life stressors (e.g., divorce, bereavement, trauma, unemployment). Prejudice and discrimination continue to occur toward a broad range of marginalized groups (Pager & Shepherd, 2008). Armed conflicts and other large-scale forms of violence continue (Themnér & Wallensteen, 2013), rates of obesity are growing (Ogden et al., 2006), and challenges related to pollution and depletion of environmental resources exist, such as diseases due to climate change (Friel et al., 2011). Although these issues are multifaceted, for each human behavior is both a core contributor and an agent for change.

The scope, significance, and difficulty of addressing these challenges highlight how crucial it is to be strategic about behavioral science and its applications. Creating a progressive and pragmatic science requires careful consideration of each of the key facets adopted in a scientific approach (i.e., philosophical assumptions, theory, and methods), and equally, if not more importantly, *how all of these facets can be integrated to best meet one's scientific and applied goals.* This chapter provides an overview of the approach to behavior science described in this volume: contextual behavioral science (CBS). In the sections to follow, each of the core facets of CBS will be presented as well as considering how they interact in the service of building a progressive approach to science that helps address the breadth and depth of human struggles and potential.

Contextual Behavioral Science in Context: A Brief History

CBS initially developed out of the effort to apply behavior analysis to the types of complex human behavior and contexts addressed in clinical psychology (i.e., clinical behavior analysis; Dougher & Hayes, 2000) while simultaneously developing the

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needed basic knowledge to do so in a coherent fashion. Although CBS shares many similarities with and is historically rooted in the contextual wing of behavior analysis, it has also diverged from traditional behavior analysis over the years. This divergence includes a greater emphasis on modern behavioral accounts of language and cognition (Dougher, Twohig, & Madden, 2014), a willingness to use less technical "middle-level" terms when useful (e.g., referring to "values" in therapist protocols instead of "motivative augmentals"), a reticulated versus purely bottom-up program of knowledge development, and an expanded set of research methods, particularly in the area of group level statistics (Vilardaga, Hayes, Levin, & Muto, 2009).

As is evident throughout this book, CBS is historically very closely connected to both acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 2011) and relational frame theory (RFT; Hayes, Barnes-Holmes, & Roche, 2001), having been the scientific foundation for these programs of research (Hayes, Levin, Plumb, Boulanger, & Pistorello, 2013). However, as this book also illustrates, CBS represents a larger movement seeking to help improve scientific strategy within the behavioral sciences writ large; supporting an open, collaborative, diverse and nonhierarchical scientific/professional culture; and building bridges to some forms of evolutionary science (Wilson, Hayes, Biglan, & Embry, 2014a; 2014b) and cognitive science (DeHouwer, 2011), as well other areas. CBS is defined by its unique integration of a specific philosophy of science, an approach to theory building, and a set of research methods.

In the inaugural issue of the Journal of Contextual Behavioral Science, Hayes, Barnes-Holmes, and Wilson (2012) define CBS this way:

> Contextual Behavioral Science (CBS) is a principle-focused, communitarian strategy of reticulated scientific and practical development. Grounded in contextualistic philosophical assumptions, and nested within multi-dimensional, multi-level evolution science as a contextual view of life, it seeks the development of basic and applied scientific concepts and methods that are useful in predicting-and-influencing the contextually embedded actions of whole organisms, individually and in groups, with precision, scope, and depth; and extends that approach into knowledge development itself so as to create a behavioral science more adequate to the challenges of the human condition. (p. 2)

This definition encompasses issues with many subtopics, several of which need to be discussed in order to understand this broad definition. It is to these issues and subtopics that we now turn.

Philosophy of Science

Every theoretical approach to psychology, and behavioral science more broadly, contains within it certain philosophical assumptions about the nature of reality, what the proper units of analysis are, what it means to know something, and how science ought to be conducted. Assumptions are pre-analytic, meaning they create a foundation on which analysis can be built, but they cannot be proven or disproven using that same analysis (Hayes, 1998). Oftentimes, assumptions go unstated and unrecognized; yet, they are the lens through which the world, and the role of science within it, is viewed. They form the basis of our theories, inform the methods we use,