

Edgar Morin has been urging for a shift towards complexity thinking for many decades. He has a unique capability to move between the natural and social sciences—without doing either of them any injustice—and is ideally placed to address the epistemological, ethical and practical problems of our times. What makes Morin unique amongst complexity theorists is the way in which he turns a critical eye on complexity theory itself, resisting a return to determinism, reduction and disjunction in come approaches to complexity.

In this extremely valuable volume of translated essays he turns his attention to the technical and philosophical underpinnings of complexity theory and applies it to a wide-ranging number of issues including the nature of scientific thinking, self-organisation, action theory, the notion of the subject, education, the idea of solidarity and the idea of the “enterprise.” These essays will certainly stimulate the critical debate within complexity circles, but is also essential reading for anybody interested in our complex world and how to live in it.

**Paul Cilliers, University of Stellenbosch—Author of *Complexity and Postmodernism***

Here is a discussion that takes us into the puzzling domain of self in relation to eco-organization. We normally relate the notion of complexity to technical order, which has led, in Morin’s phrase, to “blind intelligence.” He postulates a domain of complexity in which living order has a crucial organizing role. By providing a satisfying explanation of the processes of recursion and a perspective of holism in which activities of the whole, “emergents,” loop back to constrain parts, Morin’s valuable presentation reveals how environment is in us.

**Peter J. C. Haries-Jones, PhD—Emeritus Professor, York University,  
Author of *a Recursive Vision: Ecological Understanding and Gregory Bateson***

Morin has opened the way to real thinking about human nature, not reducing it to one of its components, bio-physico-chemical, social, psychological, religious, or political. Understanding the interactions between these components without confusion is the challenge of the sciences of complexity.

**Henri Atlan—Author, *Enlightenment to Enlightenment: Intercritique of Science and Myth*,  
Hadassah University Hospital, Jerusalem, Israel, EHESS, Paris**

The biology of 21st century is moving from the reductionist approach of molecular biology to the systems approach of the new science of systems biology. More than 20 years ago Edgar Morin had already articulated the paradigm of complexity that gives us the clues needed to address the conceptual changes in modern biology.

**Magali ROUX-ROUQUIÉ—Senior scientist-CNRS (French National Research Center),  
Deputy director USAR-CNRS**

Morin is a representative thinker of humanity’s planetary age. In remedying the deficiency of Western classic analytic thinking, Morin’s complex thinking shows some affinities to the Chinese classic synthetic thinking, such as the emphasis on the union of the universal and the particular. Morin path indicates that the creation of the paradigm of complexity depends on the fusion of Western and Eastern thinking, each of which has its strength and weakness.

**Yi-zhuang Chen—Professor of Philosophy, Central-South University, People’s Republic  
of China**

The Apollo of complexity, Edgar Morin is a solar presence, helping us to live and to hope. His work constitutes a major contribution to transdisciplinarity.

**Basarab Nicolescu—Theoretical physicist, CNRS, University of Paris 6, Professor,  
University Babes-Bolyai de Cluj, Rumania, President, CIRET (International Center  
for Research on Transdisciplinary, Studies) Author of *Manifesto of Transdisciplinarity***

Morin’s reflections on complexity can be profitably mined for nuggets of insights by complexity scientists and interdisciplinarians alike.

**William H. Newell—Miami University, Executive Director, Association for Integrative  
Studies**

I have not been this excited about anything rooted in general system theory since reading von Bertalanffy and Boulding many years ago. As one invested in interpretive epistemology and related methodologies, I had all but given up any hope of inspiration from this quarter. But Edgar Morin has changed all that with this marvelous book. Not only does he reinvigorate general systems theory, and its close companion complexity theory, by giving their epistemological foundations some much needed attention, he has laid down a tantalizing challenge to think more complexly about everything from self to society and provided plenty of inspiration for doing so. I hope that all my colleagues in organization studies will read this book and respond to it. It is deserving not only of our attention, but will be of interest to those working in all the fields of science, social science and the humanities.

**Mary Jo Hatch—Author, *Organization Theory: Modern, Symbolic, and Postmodern Perspectives*, Professor Emeritus, McIntire School of Commerce, University of Virginia, USA**

It is apt that Edgar Morin's book should be published at the beginning of the new Millennium because what he is proposing is a radical shift in the scientific paradigm. In place of separate sciences, all based upon a static, closed, regulated and law-abiding universe, Morin offers a trans-scientific view of the messy reality of hazard, uncertainty, accident and confusion. In this he suggests a creative, dynamic view of the world. At home in the newer disciplines of complexity theory, cybernetics and systems theories, he goes beyond them to represent a well based view of a vital world of novelty and life. The life sciences of biology, evolution, sociology, and business organization all would benefit from this refreshing and novel approach that looks at the world as we encounter it, not as it is filtered through the lenses of specialized, and isolated scientific disciplines.

**Albert Low—Author of *Creating Consciousness*, Teacher, Montreal Zen Center**

Italy ranks among the countries that have paid closest attention to Morin's evocative reflections on complexity. Morin's work has had a profound impact on the nation's scientific, educational, and political landscape.

**Sergio Manghi—Professor of Sociology, University of Parma**

Edgar Morin's writing on film, its stars, and the human beings who engage with them, remains the richest treatment of these phenomena available. Magic, wonder, the poetic as well as the prosaic, are a feature of his work generally, which refuses reductiveness while maintaining rigor. An intellectual monument in France, his theory and commentary—passionate, ethically engaged and never leaving the life out of life—is at last beginning to have the impact it deserves in the English-speaking world.

**Lorraine Mortimer—Senior Lecturer in Sociology and Anthropology, La Trobe University, Melbourne**

Someone once said that the avoidance of complexity is the essence of tyranny. For this reason alone, Edgar Morin's book is worth reading. Even more, we need to embrace and to understand complexity.

**Ian Mitroff—Professor Emeritus, University of Southern California, University Professor, Alliant International University, Visiting Professor, UC Berkeley**

What I like best in the work of Edgar Morin is the fundamental difference he makes between what is complex and what is just complicated. The real world is complex, meaning that antagonism and complementarity go hand in hand. Once I understood this, and other aspects of Morin's paradigm of complexity, my research took a new turn.

**Peter Westbroek—Professor of Geophysiology, University of Leiden, The Netherlands**

# ON COMPLEXITY

ADVANCES IN SYSTEMS THEORY, COMPLEXITY,  
AND THE HUMAN SCIENCES  
Alfonso Montuori, Series Editor

Mind and Nature: A Necessary Unity  
*Gregory Bateson*

The Narrative Universe  
*Gianluca Bocchi & Mauro Ceruti*

Evolution Without Foundations  
*Mauro Ceruti*

Mind in Time: The Dynamics of Thought, Reality, and Consciousness  
*Allan Combs, Mark Germiné, & Ben Goertzel (eds.)*

Politics, Persuasion and Polity: A Theory of Democratic Self-Organization  
*Gus di Zerega*

Evolution: The Grand Synthesis  
*Ervin Laszlo*

The Systems View of the World  
*Ervin Laszlo*

On Complexity  
*Edgar Morin*

Homeland Earth: A Manifesto for the New Millennium  
*Edgar Morin & Anne Brigitte Kern*

A Tripartite Seed  
*Gordon Rowland*

New Paradigms, Culture and Subjectivity  
*Dora Fried Schnitman (ed.)*

# ON COMPLEXITY

Edgar Morin



HAMPTON PRESS, INC.  
CRESSKILL, NEW JERSEY

Copyright © 2008 by Hampton Press, Inc.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, microfilming, recording, or otherwise, without permission of the publisher.

Printed in the United States of America

Library of Congress Cataloging-in-Publication Data

Translated from the French by Robin Postel, except Chapters 6-7 and Appendix 1 which have been translated by Sean M. Kelly.

Hampton Press, Inc.  
23 Broadway  
Cresskill, NJ 07626

# CONTENTS

<b>Foreword: Edgar Morin's Path of Complexity</b>	<b>i</b>
<i>Alfonso Montuori</i>	
<b>1 Blind intelligence</b>	<b>1</b>
Becoming Aware	2
The Pathology of Knowing, Blind Intelligence	3
The Need for Complex Thought	5
<b>2 Complex Pattern and Design</b>	<b>7</b>
Indo-America	8
Systems Theory	9
Open Systems	10
Information/Organization	12
Organization	15
Self-organization	16
Complexity	19
Subject and Object	22
Coherence and Epistemological Opening	27
Scienza Nuova	29
For a Unity of Science	31
Integration of the Realities Banished by Classical Science	32
Beyond Classical Either/Or Alternatives	33
The Paradigmatic Turning Point	34
<b>3 The Paradigm of Complexity</b>	<b>37</b>
The Paradigm of Simplicity	39
Order and Disorder in the Universe	49

Self-organization	43
Autonomy	44
Complexity and completeness	45
Reason, rationality and rationalization	46
The Necessity of Macro-concepts	48
Three Principles	49
Toward Complexity	51
<b>4 Complexity and Action</b>	<b>53</b>
Action Is Also a Wager	55
Action Escapes our Intentions	56
The Non-trivial Machine	56
Preparing for the Unexpected	57
<b>5 Complexity and the Enterprise</b>	<b>59</b>
Three Causalities	60
From Self-organization to Self-eco-organization	61
To Live and Make a Deal with Disorder	62
Strategy, Program, and Organization	63
Complementary and Antagonistic Relations	64
The Necessity for a Lived Solidarity	65
<b>6 On the Notion of the Subject</b>	<b>67</b>
<i>translated by Sean M. Kelly</i>	
<b>7 The Epistemology of Complexity</b>	<b>83</b>
<i>translated by Sean M. Kelly</i>	
<b>Appendix 1: The Concept of System</b>	<b>99</b>
<i>translated by Sean M. Kelly</i>	
1. Beyond Holism and Reductionism: the Relational Circuit	100
2. The Whole Is Not All	102
3. Beyond Formalism and Realism: From Physis to Understanding, from Understanding to Physis— the Subject System and the Object System	104
References	109
<b>Appendix 2: A New Science of Autonomy</b>	<b>111</b>
Notes	117



# FOREWORD

## EDGAR MORIN'S PATH OF COMPLEXITY

*Alfonso Montuori*

The reform in thinking is a key anthropological and historical problem. This implies a mental revolution of considerably greater proportions than the Copernican revolution. Never before in the history of humanity have the responsibilities of thinking weighed so crushingly on us.

*Edgar Morin*

Does knowing that knowledge cannot be guaranteed by a foundation not mean that we have already acquired a first fundamental knowledge? And should this not lead us to abandon the architectural metaphor, in which the term "foundation" assumes an indispensable meaning, in favor of a musical metaphor of construction in movement that transforms in its very movement the constitutive elements that form it? And might we not also consider the knowledge of knowledge as a construction in movement?

*Edgar Morin*

We need a kind of thinking that reconnects that which is disjointed and compartmentalized, that respects diversity as it recognizes unity, and that tries to discern interdependencies. We need a radical thinking (which gets to the root of problems), a multidimensional thinking, and an organizational or systemic thinking.

*Edgar Morin*

History has not reached a stagnant end, nor is it triumphantly marching towards the radiant future. It is being catapulted into an unknown adventure.

*Edgar Morin*

## EDGAR MORIN: A BIBLIO-BIOGRAPHY

Perhaps the best way to provide a contextual introduction to Morin's work is through an outline of his intellectual trajectory, in the form of a "biblio-biography." A review of Morin's journey helps us, I believe, to better understand the man and his mission in the essays that follow.

Edgar Morin's work has been tremendously influential in Europe, Latin America, and French-speaking Africa. Numerous monographs discussing his work have been written in France, Spain, Italy, Brazil, Canada, and England (Anselmo, 2005, 2006; Bianchi, 2001; Fages, 1980; Fortin, 2002; Kofman, 1996; Rosetto Ajello, 2003). The extent of his influence in diverse and even remote fields exceeds perhaps even Gregory Bateson's. Emeritus Director of Research at the CNRS (the French National Research Center), Morin has received honorary doctorates (appropriately in subjects ranging from political science to psychology to sociology) from universities including Messina, Geneva, Milan, La Paz, Odense, Perugia, Cosenza, Palermo, Nuevo Leon (Mexico), Brussels, Valencia, the Catholic University of Porto Alegre, and the Universidade Federal do Rio Grande do Norte, among others, and holds an itinerant UNESCO chair in Complex Thought. Morin's imprint is to be found in fields ranging from media studies to visual anthropology to cinema verité to philosophy to action research to sociology to systems theory to ecology to education, and recently with increasing frequency in the hard sciences. Just to give a small indication of the range of his influence, in English, a language in which his work is relatively little known, he is cited by such diverse scholars as historian of religion Mircea Eliade (Eliade, 1978), sociologist Lewis Coser (Coser, 1997), psychoanalyst Andre Green (Green, 2005), physicist Basarab Nicolescu (Nicolescu, 1997), philosopher Julia Kristeva (Kristeva, 1997), historian Daniel J. Boorstin (Boorstin, 1992), philosophers of science Gianluca Bocchi and Mauro Ceruti (Bocchi & Ceruti, 2002), Islamic scholar and Moroccan Imam Abdessalam Yassine (Yassine, 2000), mathematician William Byers (Byers, 2007), Mexican Nobel Laureate in Literature Octavio Paz (Paz, xxxx), Iain Chambers, the English scholar of cultural and post-colonial studies (Chambers, 1994), and therapist/philosopher Paul Watzlawick (Watzlawick, 1977).

As Kofman states in his volume on Morin for the Pluto Press series on *Modern European Thinkers*,

Morin's approach is in harmony with a new culture of uncertainty as instanced in the literary and philosophic writings of Derrida, Levinas, or Deleuze. But unlike his fellow travelers Morin has been alone in daring to attempt a method which connects sciences and philosophy through complexity. In French intellectual life today Morin is a now leader but still an outsider. (Kofman, 1996)

The 21st century has seen several research centers devoted to Morin's work, including one at the University of Messina in Sicily, and most notably the inauguration of *Multiversidad Mundo Real Edgar Morin*, a university in Hermosillo (Sonora) Mexico, based on the principles of Morin's work.

Morin's books address such a variety of issues that it's necessary to first catalog some of them, at least a small selection out of the 60 or so books he has published, in order to get an idea of the scope of his work. In the process, we can begin to see the "path laid down in walking," and to recognize the threads that tie much of Morin's work together.

For a useful introduction to Morin in English, the reader is referred to Myron Kofman's (1996) *Edgar Morin: From Big Brother to Fraternity*, in the Pluto Press Modern European Thinkers series. Kofman is particularly good on the historical context and Morin's experience with Hegelian-Marxism. Given the relatively short space here, and the vast range of Morin's experience, I refer to Kofman's work for a discussion of this fascinating period and its influence on Morin's thought. Morin's *Homeland Earth* offers an accessible introduction to his socio-political and moral thought.

### **Beginnings . . .**

Morin's first book was *L'An Zero de l'Allemagne* [Germany Year Zero], written right after the end of World War II when Morin, then in his mid-20s, was in Germany with the French Army. *Germany Year Zero* was his effort to document the devastation of one of Europe's most sophisticated and cultured countries, the home of Goethe, Beethoven, Kant, and other towering figures of western civilization. It was an attempt to understand how such a country could have been overtaken by the horror of the Nazi era. Central to the book is Morin's unwillingness to reduce Germany and Germans to "sale boches" (filthy Germans), and to assess the horror of the situation in a broad context and with an unusual depth of feeling. Here we already find a cornerstone of what Morin, the Jewish resistance fighter who lived in mortal danger during the war years, would later called *complex thought*, his refusal to reduce and thereby mutilate. Briefly, complex thought does not reduce and polarize. Morin does not want to reduce Germany and its people to the actions of the Nazis, which in the immediate aftermath of the war was all too easily done. This refusal to reduce, to take a Manichean, simplistic view (a view that is often driven by fear, anger, and other emotions, but often masquerades as coldly rational), is a central element of Morin's thought.

The term *reductionism* is used with great, perhaps excessive, frequency these days. With Morin it is not some theoretical abstraction, a form of name-calling. Instead, with Morin it emerges from, and is embedded in, the existential reality of daily life. It manifests in the unwillingness to take a reductionist stance to the German people. It refuses to equate Germans and Germany only

with the Nazis and the Holocaust. It would be all too easy to say that the German reduction of Jews warrants an equal reduction of Germans, as “pure evil,” or some similar stance. But Morin insists on viewing Germans in their full complexity. He explores why and how, given the complexity of the German people, they fell victim to the Nazi scourge. And most importantly, he always reminds us that as human beings we are *all* vulnerable to episodes of madness. Morin reminds us that the dualism of good versus evil all too easily leads us to believe that “they” are “evil,” and “we” are by definition “good,” and therefore anything we do is also by definition good and legitimate. Crucial here is that the belief in “our” inherent goodness is accompanied by a lack of self-reflection and self-criticism, usually with disastrous results. The participation of the observer in every observation, the role of self-reflection and self-inquiry in inquiry, the dangers of reduction and disjunction, and the often hidden motives of the quest for certainty will be central and recurring themes in all of Morin’s work. As Selvini Palazzoli (1990) writes:

Since, in the relationship between observing and observed system, the observer is as much part of the observed system as the observed system is part of the intellect and culture of the observing system, Morin finds that the observer observes himself while he observes the system. (p. 128)

Another theme from Morin’s earliest works that later came up in a debate in 2000 with Jacques Derrida in the pages of *Le Monde* is Morin’s insistence on the vital importance of forgiveness. For Derrida, forgiveness should be an exception, at the edge of impossibility. For Morin, forgiveness is a resistance to the cruelty of the world—the title of his response to Derrida (Morin, February 2000). Once again, this involves precisely the refusal to perpetuate the very attitudes that provoke conflict and keep the cycle of violence and hatred going. Forgiveness is what takes us beyond simplistic, dualistic thinking, and leads us toward a *politics of civilization* (Morin & Nair, 1997). For Morin, forgiveness is a virtue we must cultivate, even when it seems easier and more immediate to hate.

It should be pointed out that Morin’s work is by no means saccharine or Pollyanna-ish, devoid of realism and ungrounded in an awareness of the real terror humans have inflicted upon each other. Indeed, in his popular book *Homeland Earth* (Morin & Kern, 1999), he speaks of a “Gospel of Doom” that recognizes our fate and invites us to stare it in the face and view it as an invitation for human solidarity, to come together under the recognition that we are all in the same existential boat. In Morin we find a mature compassion that comes from having experienced first-hand, as a resistance fighter and French citizen, the horror that was unleashed on his own country and the rest of Europe. Morin’s unwillingness to demonize might be viewed as a “tender-minded” unwillingness to face the harsh realities of life and take a stand, a position of “friendly weakness.” Nothing could be further from the truth. In fact, Morin’s

view is that the cycle of horror and violence will be perpetuated precisely because we demonize others and are unwilling to forgive, to recognize the extent to which we all, as humans, are capable of an extreme range of behaviors. The unquestioned belief in one's own "goodness" can lead, through a process Jung called "enantiodromia," to a coincidence of opposites, where the very actions taken to fight the enemy bring about the conditions that the enemy's victory would ensure. Where, for instance, a democratic country fighting a totalitarian regime resorts to such drastic draconian actions that it actually destroys the very democratic principles it is allegedly attempting to safeguard.

Morin has a strong affinity for certain aspects of Buddhism, having seen the extent of our human capacity for love and hate, our intelligence and our stupidity. His wisdom and compassion come from having looked within and without deeply and with great depth of feeling. As the eminent sociologist Alain Touraine wrote, quoting the African Terentius, it can be said of Morin, more than any thinker in our era, that nothing human is alien to him (Touraine, 2001). This includes, for instance, recognizing that the gruesome actions of ordinary German citizens were not performed by exceptional, evil monsters, but by ordinary human beings. Research in social psychology, from Milgram to Zimbardo, was later to show how "the power of the situation" could turn educated citizens into Nazi killers. "Nice" Stanford students could, within a matter of hours, treat "prisoners" in an experimental setting, their fellow students, much the same way that some military personnel in tremendously stressful and exceptional conditions treated prisoners whom they believed would not think twice about killing them if released. Morin's particular gift is to show us how there, but for the grace of God, go all of us.

Morin's first book was the inspiration for the classic Italian neo-Realist movie *Germany Year Zero* (Germania Anno Zero) by Roberto Rossellini. Morin has had an ongoing relationship of mutual influence with the arts and artists around the world. This is another aspect of his work that makes him so unique in the often dreary and secluded world of the social sciences. Examples include Morin's delightful reflections about *New York*, a collaboration with Dutch visual artist Karel Appel (Morin & Appel, 1984), and his influence on, among others, the great Brazilian songwriter Caetano Veloso, who explicitly discusses the importance of Morin's work for his artistic vision and for Brazil's resistance against authoritarian government (Veloso, 2003), and his relationship with such figures as novelist Marguerite Duras. Most recently we have seen the publication of *Peuples*, a book of photographs of peoples from all over the world by Pierre de Vallombreuse with Morin's commentary (de Vallombreuse & Morin, 2006).

Morin's next work was *L'Homme et la Mort* [Humanity and Death] (1951). Here we find, in typically Morinian fashion, a sustained meditation on death that is both deeply personal and planetary, both *holographic* and *multidimensional*, to use terms Morin was to employ later. It is personal, because Morin lost his mother at an early age, and the event affected him profoundly. It haunts his work

in too many ways to address in this brief sketch. A thoughtful discussion of the role Morin's mother's death played in his life can be found in Heinz Weinmann's introduction to the collection of Morin essays entitled *La Complexité Humaine* (Morin, 1994b). Morin's work is planetary in scope because he explores death cross-culturally in the great religions and spiritual traditions, throughout human history, and in the sciences, finding that the plurality of interpretive frameworks shed light, each in a different way, on the most profound event. Morin's work has always had this holographic, multidimensional quality: the part and the whole are always interconnected, and one finds the part in the whole and the whole in the part; and the subject is approached from a variety of dimensions, from the biological to the cultural to the psychological and mythological.

Morin's approach has always been both planetary and personal. We later find wonderful examples of this holographic method in *Vidal et les Siens* [Vidal and his People] (Morin, 1996), which is at once a biography of his father, Vidal, a history of Sephardic Jews, and a history of Europe, and in *Pour Sortir du Vintieme Siecle* [Entering the 20th Century] (Morin, 2004b), in which Morin addresses key political issues through a combination of theoretical and historical reflection on the state of the world grounded with examples from his own experience.

Morin's book on death brings together two themes that will recur throughout his work. The motivation for inquiry emerges from personal experience, most dramatically with the death of his mother, not abstract speculation or disciplinary agendas. Another key element in this work is transdisciplinarity. Morin's inquiry is not limited to one discipline. It draws on a whole range of *pertinent knowledge* (Morin, 2001b). In other words, he is not approaching this book from what I have elsewhere called a *discipline-driven perspective* (Montuori, 2005). He is not driven by problem solving in the context of the agenda of a specific discipline. Rather, he is motivated by his own experience, in this case his loss, by the need to make sense of lived human experience, his own and that of every other human being. This is central to what makes Morin's vision of transdisciplinarity so important and so timely: it is grounded not in attempts to create abstract theoretical frameworks, or to further the agenda of a discipline, but in the need to find knowledge that is pertinent for the human quest to understand and make sense of lived experience, and of the "big questions," which are usually left out of academic discourse precisely because they are too complex and transdisciplinary. Lived experience simply cannot satisfactorily be reduced to the perspective of one discipline.

### **Autocritique**

Morin's early work on death shows his willingness to grapple with profound existential issues so often obliterated in the all-too-often sterile discourse of

social science and philosophy. This existential aliveness, this grounding in the lived experience of the realities of existence, is present in Morin's work whether he is discussing cybernetics, self-organization, ecology, politics, or education. Morin's work does not come from an attempt to escape life for an ivory tower, or to control it through intricate theoretical frameworks and maps, but from an effort to immerse himself in it more deeply, and to provide the sciences with tools to account more adequately for the lived complexity of life, and indeed to assist the reader in that process of immersion. Morin characterizes his later work on complex thought as an attempt to develop a method that does not "mutilate," that does not fragment and abstract, that does not do violence to life, by giving it a unidimensional, anemic, antiseptic, homogenized *pars pro toto*. This transdisciplinary approach could later be seen in the journal *Arguments* that Morin led along with Roland Barthes, Kostas Axelos, and others from 1956 to 1962. The broad range of topics addressed in the journal reflected a focus on issues rather than disciplinary agendas, and a willingness to range far and wide.

After World War II, the influence of the Left and of the communist party in European thought was enormous. There were very clear boundaries with which to assess what was considered to be outside the party line. Morin's independent thought was clearly transgressive, and in *Autocritique* Morin (2004a) documents his expulsion from the party for writing an "inappropriate" article. Morin's *Autocritique* is a remarkable document from an "engaged" intellectual grappling with the complexities of politics and self-deception. It is a model of honesty and self-reflection and provides us with rare visibility into the life and thought of a man in the thick of the events that were shaping European and indeed planetary culture at that time, primarily Stalin's rise to power and the repression in the Eastern block countries. Drake (2002) provides some context. He writes that Morin was "one of the few PCF (French Communist Party) intellectuals who refused to blindly follow the Party line" (p. 70). Exploring such phenomena as self-deception, cognitive dissonance, groupthink, and authoritarian/totalitarian thinking and behavior in himself and in "the party," we find another theme that will run through all of Morin's future work. In his *7 Complex Lessons in Education for the Future* (Morin, 2001b), a document Morin wrote at the request of UNESCO, the first lesson is about self-deception and combating "error and illusion." How is it that we let ourselves literally become possessed by ideas, by the party, by our "faith," by our "cause," even by what we believe to be "science?"

The fierce independence of judgment so characteristic of creative individuals (Barron, 1995) has always marked Morin's life and work. It has often made him unpopular with those who would find shelter in the warm embrace of "in-group" conformity, those who want to tow the ideological line and build strong immune defenses around the hard nucleus of doctrine—the core that cannot be challenged (Morin, 1991). Morin never "belonged" in the sense of relinquishing his own independence to gain the considerable favors offered by those who

were “connected” and “insiders,” whether in the form of publishing contracts, intellectual movements, or, ironically, notoriety in the United States. Whereas there are some parallels between Morin’s thought and some of the French authors associated in the United States with the postmodern turn (and, it should be noted, some pointed and vital differences), Morin has never associated himself with postmodernism as a movement and intellectual bandwagon and rarely if ever uses the term. French authors who are closely associated with postmodernism were extensively published in the United States, while authors who were considered major figures in French were sidelined because they could not be identified with the hot new trend. It is interesting to note that in the United States French thought over the last few decades is associated almost exclusively with postmodernism. In France, on the other hand, postmodernism is considered a largely Anglophone phenomenon (Journet, 2000).

In non-English speaking countries, ranging from Brazil to Colombia to Italy and Spain, and in France itself, of course, Morin has been recognized as one of the most significant thinkers of our time. The gap between the Anglophone world and the rest of the planet is fascinating, and speaks volumes about the inevitably partial nature of any understanding of European intellectual life determined as it is by publishers, mastery of languages other than English (since translations are themselves a whole other issues, as evidenced by the highly problematic translation of Piaget, for instance), and other issues.

*Autocritique* (Morin, 2004a) marks an important turning point for Morin. We normally assume that we have ideas; however, it became clear to Morin that ideas can also have us—literally possess us. Human beings can literally be possessed by ideologies and belief systems, whether on the left or the right, whether in science or religion. Henceforth, Morin’s effort will be to develop a form of thinking—and of being in the world—that is always self-reflective and self-critical, always open and creative, always eager to challenge the fundamental assumptions underlying a system of thought, and always alert for the ways in which, covertly or overtly, we create inviolate centers that cannot be questioned or challenged. Knowledge always requires the knowledge of knowledge, the ongoing investigation and interrogation of how we construct knowledge. Indeed, *Knowledge of Knowledge* is the title of the third volume of Morin’s *Method* (Morin, 1986).

## **Sociology and Popular Culture**

At the same time that Morin was exploring such a weighty subject as death and engaging in a very public political “self-critique” of his participation in the Communist party, and the way that this applied holographically to the larger issues of the role of ideologies and totalitarianism and participation in larger planetary culture, he was also beginning to write a series of books on what



might be initially thought of as “lighter fare.” In the mid to late 1950s and early 1960s, Morin wrote path-breaking works about cinema, the star system, and popular culture. Several of these books, originally published from the mid 1950s to the early 1960s, have been published or re-issued in the United States by the University of Minnesota Press (Morin, 2005a, 2005b). Morin’s innovative work in this area has been recognized as crucially important—both prescient and still vitally relevant in a discussion that has often drowned in vapid and sensationalist scholarship. As Lorraine Mortimer writes in the introduction to *Cinema, or the Imaginary Man* (Morin, 2005b), Morin’s book was a breath of fresh air in 1959, when much of the discourse on cinema was highly critical of bourgeois entertainment, viewing it as opium for the masses that promoted capitalist values. Mortimer pointedly reminds us of how the sociologist Pierre Bourdieu attacked Morin’s study of mass culture because it was “an instrument of alienation at the service of capitalism to divert the proletariat from its revolutionary mission” (Mortimer, 2001, p. 78). This once again gives us an idea of Morin’s constant battle against reductionism, the attempt to reduce a complex phenomenon to one potential aspect and manifestation, and in the process dismiss it.

In the case of Bourdieu, we find a view of cinema that does not take into account the infinite emotional, social, and other complexities that the experience affords us. It is deeply doctrinaire by reducing the enormous complexity of cinema to, in Bourdieu’s trite and cliché-ridden critique, “an instrument of alienation at the service of capitalism to divert the proletariat from its revolutionary mission.” In the late 1950s in *The Stars* (Morin, 2005a), he was also the only thinker associated with the at the time completely counter-cultural idea that the cult of celebrity has a strong religious component (Young, 2002). Interestingly, Young goes on to cite research conducted in the United Kingdom and the United States that suggests celebrity worship does indeed play a role similar to that of religion and is the source of new “myths” and mythical figures in today’s society.

Morin was one of the first academics to take popular culture seriously. His psychoanalytically influenced discussion of interiority, subjectivity, dreams, myth, his use of the concepts of projection and introjection, and his focus on creativity and the imagination acknowledged the importance of understanding popular cultural phenomena that clearly had, and continue to have, an enormous impact on people’s lives. Among other things, Morin studied the seemingly trivial fan letters written to movie stars in popular magazines, identifying the mechanisms of projection and identification in the adulation of “stars.” Again we see Morin moving from the macro role of popular culture to the micro, the specific examples of individual gestures of fans toward their idols. This reflects a guiding principle of Morin’s work, found in Pascal’s statement that it is impossible to understand the whole without understanding the part, and impossible to understand the part without understanding the whole. In

*Method*, Morin would later use this as an entry point to critique both reductionism and holism.

But why this sudden detour into cinema? Morin's research is motivated by his own life experiences. After the death of his mother, the young Morin became an obsessive movie-goer, and developed a fascination for the magical dimensions of cinema. It allowed him to temporarily inhabit and dream of a different world, escape his pain, and immerse himself in a world of creativity and imagination through a ritualistic process not unlike the experiences of art of our distant ancestors, glimpses of art illuminated by flickering lights in dark caves. It is a commonplace to say that one's research is really a reflection of one's life. But in Morin's case this is particularly evident, and central, as I have suggested, to his transdisciplinary approach, which does not seek to simply solve a problem, but is a quest for meaning derived from his own personal experience, and clearly from that of millions of other movie-goers.

In 1961, film-maker Jean Rouch and Edgar Morin made the documentary *Chronicle of a Summer*. Set in Paris in the aftermath of the Algerian war and before the explosion of riots that played such a role in the 1960s, culminating in the events of 1968, this documentary holds the distinction of being recognized as the first example of *cinéma vérité*. It breaks down the barrier between the camera and the subject in a precursor to a far more participative approach to inquiry and documenting events, and the more recent excesses of "reality television." Roland Barthes wrote, "What this film engages is humanity itself." In his review of documentary filmmaking, *Claiming the Real: The Documentary Film Revisited*, Brian Winston (1995) referred to *Chronicle of a Summer* as the key *cinéma vérité* film.

The documentary had a profound influence on French film-maker Jean-Luc Godard, and has become a classic of documentary making and visual anthropology. Particularly important is the self-reflective dimension, which includes interviewees being filmed observing footage of their interviews, creating a self-reflective loop (Ungar, 2003). This innovative approach shows Morin's lifelong concern for inter-subjectivity and self-reflection that was later to be articulated extensively in his works of sociology and complex thought (Morin, 1994b, 1994c, 2007a).

The publication of *Introduction à une politique de l'homme. Arguments politiques* [*Introduction to a politics of humanity. Political perspectives*] (Morin, 1999a) in 1965 was the next step in Morin's political reflections. Here Morin explored the nature of human nature in the political context, critiquing Marx, Freud, and other currents of thought, including a trenchant critique of the notion of "development," while developing his notion of a planetary politics and planetary culture, which he was to elaborate in later works. Essential here was Morin's excavation of the underlying assumptions of the various approaches to understanding and framing human nature, which he was to return to in the work that became the predecessor to his magnum opus, *Method, Le Paradigme Perdu*

[Method. The lost paradigm] (Morin, 1979). Morin's transdisciplinary approach crosses and integrates a plurality of disciplines, and a key dimension of transdisciplinarity is understanding the way that knowledge is constructed in various disciplines and approaches (Montuori, 2005a). Morin's work is radical in this sense because it traces the roots of knowledge, digging deep to find the underlying assumptions that form the foundations for the differing perspectives. Transdisciplinarity explicitly surfaces the assumptions of the many different disciplines it addresses. Although not demanding in-depth expertise and specialization to the quite same extent that a discipline-based researcher might have, transdisciplinary research does demand a more philosophical or meta-paradigmatic position that steps back to observe how different paradigms shape the construction of knowledge, exploring the roots of the disciplines. The point is to become aware of one's own assumptions about the process of inquiry, as well as to uncover the assumptions of the various perspectives that inform inquiry.

Morin's next two works, written in the mid-1960s, followed somewhat naturally from his Cinema Verité documentary. They focused on innovative, participatory approaches to social research, what he called a "sociology of the present," using a "multidimensional method." Both of these works were fortunately translated into English. *The Red and the White* (Morin, 1970), a study of modernization in the Breton village of Plozevet, utilized Morin's "phenomenographic" approach, a precursor to the recent boom in qualitative research methodologies, at a time when most if not all sociological research was quantitative. Morin and his research team actively participated in the life of the village and collected data in a variety of ways, from the quantitative to the qualitative, by living in the village and keeping diaries about their experience as researchers. These diaries and have recently been published in their entirety (Morin, 2001a). *The Red and the White* shows Morin's desire to capture the full complexity and richness of this village, and the realization that traditional sociological methods simply did not come close to this—they did not address the lived experience of human beings undergoing a major social change.

*Rumor in Orleans* (Morin, 1971) is the fascinating and disturbing account of a rumor about alleged white slave trade conducted by Jews in the city of Orleans, which led to some degree of panic and attacks on stores owned by Jews. Morin's research managed to unravel the web and actually laid the rumor to rest. Again we see Morin at the leading edge of thought with what would be called "action research" today. Morin broke down the assumptions that research should be quantitative and place the researcher as "the expert," "objectively" studying his "subject." His research was also an intervention, and an example of "clinical sociology." For Morin, this research is also a critique of universalism, the search for laws and grand theories, and a valorization of what he called "the event"—the unique, the unrepeatable, the destabilizing moment—and crisis as an opportunity for inquiry, a subject he was later to explore in his work on "crisiology" (Morin, 1993, 1994c).

Discussing his methodology, Morin wrote:

Our method seeks to envelop the phenomenon (observation), to recognize the forces within it (praxis), to provoke it at strategic points (intervention), to penetrate it by individual contact (interview), to question action, speech, and things.

Each of these methods poses the fundamental methodological problem: the relationship between the research worker and the subject.

It is not merely a subject-object relationship. The “object” of the inquiry is both object and subject, and one cannot escape the intersubjective character of relations between men.

We believe the optimal relationship requires, on the one hand, detachment and objectivity in relation to the object as object, and on the other, participation and sympathy in relation to the object as subject. As this object and subject are one, our approach must be a dual one. (Morin, 1970, p. 259)

From his work on popular culture to *cinéma vérité* to his participatory research approach, Morin challenges assumptions about high and low culture, the objectivity and distance of the researcher and the camera, and the critique of expertism that instead favors immersion and participation in the everyday, and draws on the knowledge of nonspecialized participants. This is part of Morin’s larger thrust to bring the discourse of social science in much closer relationship to the lived realities of human experience, the contingencies, the seeming trivialities, the emotions, subjectivities, and uniqueness of life in all its manifestations, while at the same time uncovering the epistemological dimension, addressing how we make sense of the world, how we construct our knowledge.

## Journals

In the early 1960s Morin began publishing selected journals. These were very personal reflections and explorations that chronicled his experiences from the very mundane to the dramatic, from the profound philosophical and psychological reflections of *Le Vif du Sujet* (Morin, 1982) to the account of his voyage to China in the 1990s (Morin, 1992b). These documents showed the author grappling with issues in the moment, and with his own responses to the crises he was facing, whether intellectual or personal. Particularly fascinating is the *California Journal*, soon to be published in English. This is an account of Morin’s year in California during the height of the 1960s, spent at the Salk Institute in San Diego, in the company of Jonas Salk, François Jacob, and Anthony Wilden, among others. Morin immersed himself in biology, cybernetics, and

systems theories, and reflected on the dramatic social changes he was witnessing. *California Journal* provides a vibrant portrait of a changing society by a complex man whose Mediterranean sensibility pervades his life and work. Tellingly, we find none of the mixture of condescension and envy found in the now-popular travelogues of European intellectuals in the United States.

Many of his closest colleagues and collaborators have considered Morin's journals to be some of his deepest and most significant contributions. The author's voice, already so vivid in his scholarly works, becomes even more alive in these pages, as we go behind the scenes during the writing of a book, during a television appearance, apartment-hunting in Paris, or at a conference. Ironically, some of Morin's journals have been attacked by critics who have found them lacking the "seriousness" one should find in an academic. Apparently intellectuals can write weighty tomes about popular culture (now that Morin has contributed to making it an acceptable subject of study) but cannot admit to enjoying it. It seems the serious academic is not entitled to discuss that s/he eats and drinks, watches late night television, or enjoys soccer, but only superciliously reflect on the extent to which "the masses" are bamboozled by the media and pop culture—a clear hangover from the attitude that Bourdieu represented so clearly. It's acceptable to look at the impact of popular culture on others, but not on the academic him or herself. Academia is still very suspicious of "subjectivity," which essentially amounts to the everyday experience of life, and particularly of the subjectivity of the academic! One's subjectivity, one's domestic life needs to be neatly compartmentalized and strictly separated from one's life as a scholar. Although it is acceptable to engage in phenomenological research of lived experience—somebody else's, of course—it is largely only feminist scholars who have stressed the importance of fully integrating the knower in all her vulnerabilities. Morin insists on reminding us that life is not confined to one or two disciplines, and his life involves, among other pursuits, movies, house-hunting, his wife's asthma attacks, pets, conferences, friendships, publishers, and the occasional overindulgence at dinner. A philosophy of life cannot exclude these moments from its purview.

The pretense of objectivity unsullied by the contingency of life has never been something Morin aspired to. In fact, he has been actively working on dismantling it. He has also been aware that this academic front has all too often acted as a cover for the immature emotionality and self-deception of academics. Morin breaks away forcefully from the reductive image of the intellectual as a disembodied brain with a huge ego (which goes unacknowledged, of course, given the stress on objectivity), and opens himself up to us in his work and his actions, for scrutiny, exploration, and appreciation, showing himself to us in the full range of his life experiences. As Maturana and Varela remind us, everything that is said is said by *somebody* (Maturana & Varela, 1987). In traditional academic discourse and inquiry, the focus was on the elimination of that "somebody" in search of the "God's eye view from Nowhere." As we read Morin, he

shows us who the “somebody” is and provides us with an example of “embodied” inquiry and personal reflection. With Morin, the “somebody is not hidden.” The inquirer is not artificially excised from the inquiry.

The personal exploration of his journals has, at times, led us deeply into Morin’s psyche in ways that would be inconceivable for most traditional social scientists, for whom vulnerability is not generally considered a virtue. Indeed, what is perhaps overlooked is that most social scientists, particularly those who express themselves only in the confines of the professional journal, are simply unable to give voice to the whole of their life and experience. It is generally not part of the education of the social scientist, of the researcher, to understand him or herself, to be able to explore his or her own personal involvement in the research, to document that process and reflect on it, to explore the extent to which the “subjective” and the “objective” co-create each other, let alone deeply question the underlying assumption of his or her work. Autobiography and self-reflection are an awkward endeavor in social science. They are often looked upon with suspicion mixed with grudging admiration. In his journals, Morin is modeling a process of self-inquiry that is also always holographic because it always occurs within a planetary context—and one might paraphrase Morin by saying that he lives in a planetary culture, and the planetary culture lives inside him.

Social science is comfortable with the context of *justification*, not the context of *discovery* (Montuori, 2006). Social scientists present themselves by proposing a position, backed up with empirical data and/or a theoretical framework. We are never privy to the actual process of inquiry itself, to the ups and downs of the research, the blind alleys, the mistakes, the insights, dialogues, and the creative process, unless we read popular (auto-) biographies. In *Journal d’un Livre* (Morin, 1994a), the journal Morin kept while writing *Pour Sortir du XX siècle*, and earlier in *Le Vif du Sujet*, we find remarkable insights into the creative process and the life of a thinker, struggling to fight off the tendency for dispersion, to do, read, experience too much, and lose direction in the process. And yet the very dispersion, although painful for the author, is one of the things that makes Morin such a unique thinker, through his ability to later integrate a broad range of experiences, theoretical perspectives, and insights and the way he shows us how to think about them.

Along with the deeply personal, Morin also dived into the profoundly public, through his closely followed public pronouncements on a variety of issues, whether his impassioned rejection of the Algerian war (Le Sueur), the events of 1968 in Paris (Morin, Lefort, & Castoriadis, 1968), his advocacy for Turkey’s entry into the EU, or, more recently, his writings on the Israel-Palestine question and his role in French environmentalism. A few weeks after the election of Nicolas Sarkozy in 2007, Morin was invited to discuss France’s environmental policy with him. Morin is without question part of that dying breed, the public intellectual. His recent critique of Israeli policies toward the Palestinians

have led to several court cases triggered by lurid accusations of anti-semitism, and an eventual exoneration. In 2006, this led to the publication of *Le monde moderne et la question juive* [The modern world and the Jewish question], in which, among other things, he stresses the importance of differentiating between anti-semitism and critiques of the Israeli government's policies toward Palestinians (Morin, 2006b). At 86, Morin is still very much a public intellectual, involved in television debates, publishing regular op-ed articles in France's leading newspapers, dialoguing with one of France's leading ecologists (Morin & Hulot, 2007), and also being a member of the French president's prestigious committee on ecology.

### Complexity

Morin's vital involvement in intellectual life has also occurred through a series of major conferences and dialogues with scientists, artists, and philosophers. Most notable perhaps is the conference documented in the three volume *L'Unité de l'homme* [Human Unity] (Morin & Piattelli Palmarini, 1978), a multidisciplinary dialogue among primatologists, biologists, neuroscientists, anthropologists, cyberneticists, sociologists, and a variety of other natural and social scientists. This extremely rich series of dialogues, orchestrated by Morin and the Italian cognitive scientist Massimo Piattelli-Palmarini, represents an important step toward Morin's transdisciplinary approach. It goes beyond interdisciplinarity, which involves using the methods of one discipline to inform another, to draw on multiple disciplines while actually challenging the disciplinary organization of knowledge, and the reductive/disjunctive way of thinking that makes up what Morin was to call the "paradigm of simplicity." Transdisciplinarity aims for a different way of thinking, and a different way of organizing knowledge. Several of Morin's books find him in dialogues with social and natural scientists, from astrophysicists to biologists to sociologists and philosophers. To give an idea of the breadth involved, Morin is featured prominently in books on the implications of the work of Ilya Prigogine (Spire, 1999); in a volume on complexity theory with Francisco Varela, Brian Goodwin, Stuart Kauffman and Prigogine, among others (Benkirane, 2006); debates with René Thom and Michel Serres (Morin, 1983); in a dialogue on memory and responsibility with Emmanuel Levinas (de Saint Cheron, 2000); in dialogue with astrophysicists Michel Cassé (Cassé & Morin, 2003) and Hubert Reeves (Morin & Le Moigne, 1999); and most recently ecologist Michel Hulot (Morin & Hulot, 2007). I mention this in particular because of the recent perception in the United States that French intellectual "impostors" have misappropriated and misrepresented science. In Morin's case, this is certainly not true. In fact, we find that he actually contributes to the articulation of the implications of the new sciences for scientists themselves (Roux-Rouquié, 2002; Westbroek, 2004). The proceedings of the prestigious Colloque de Cerisy, which includes Henri Atlan, Cornelius

Castoriadis, Gianluca Bocchi, Sergio Manghi, Mauro Ceruti, and Isabelle Stengers, among others, give further indication of Morin's breadth and influence (Bougnoux, Le Moigne, & Proulx, 1990). His edited book on education, *Relier les connaissances* [Reconnecting Knowledges] (Morin, 1999b), includes essays by Paul Ricoeur and others.

*Le Paradigme Perdu* [Paradigm Lost], published in 1973, represents the first step toward the integration that was later to culminate in the multivolume *Method*. For Morin, healing the split between the natural and social sciences was essential. His multidimensional approach to human nature—and to inquiry in general—could not abide with the human/nature split. In the social sciences there was either the quantitative approach found in sociology (what Sorokin called “quantophrenia”), generally anemic attempts to copy the method of physics, or the more philosophically inclined tendency to reject anything remotely associated with the natural sciences as reductive, as “scientism” or “biologism.” In natural science the almost complete absence of reflection on the role of the inquirer created massive blind spots science itself was unable to address in its most rigid configuration. As Dortier points out, *Le Paradigme Perdu* was written before sociobiology and evolutionary psychology became trendy, but it deserves to be read not just out of respect and historical interest for a book that was ahead of its time, but because Morin outlined an important agenda and way of thinking about the issues that is still extremely fruitful (Dortier, 2006). And this is in many ways Morin's central contribution—to point out that there are human problems, such as the human/nature or two-culture split, that must be approached with a radically different way of thinking, a way of thinking that, as Morin states, is not disjunctive (either/or), but connects, without the Hegelian assumption that the dialectic will always lead to a new synthesis.

First in *Le Paradigme Perdu*, then in the massive *Method* (Morin, 1985, 1986, 1991, 1992a, 2003, 2006a), Morin tackles this “en-cyclo-pedic” task by literally circulating knowledge between the disciplines and opening up a new way of approaching inquiry and knowledge. Around the time *Le Paradigme Perdu* was being written, and until quite recently, postmodern thinkers like Lyotard, Habermas, and others were highly critical of the integration of natural and social sciences and against systems theoretical approaches in particular (Lyotard, 1984). Lechte's (1994): summary of Lyotard's position is typical of the way systems theoretical approaches are summarily dealt with in much post-modern discourse:

For the systems theorist, human beings are part of a homogeneous, stable, theoretically knowable, and therefore, predictable system. Knowledge is the means of controlling the system. Even if perfect knowledge does not yet exist, the equation: the greater the knowledge the greater the power over the system is, for the systems theorist, irrefutable. (p. 248)



Morin saw the enormous potential of these new approaches while recognizing their limitations, and he refused to be limited by ideological boundaries. In the process he developed his own complex interpretation of systems theory, information theory, and cybernetics, designed to connect the various dimensions of human inquiry, separated as they were in their own worlds and disciplines, refusing to communicate with each other. Ironically, *Method* begins with an extensive discussion of the relationship between order and disorder, the key role of emergence, unpredictability, and uncertainty in his approach to complexity, and the importance of the prefix “re-” as in re-organization, re-thinking, and so on, suggesting ongoing process and change (Morin, 2005). Morin could not be as easily dismissed as traditional sociological systems thinkers such as Talcott Parsons. In the United States, the very fact that he did not fit neatly into one camp and could not be reduced to some simple category (systems theorist, structuralist, post-modernist, post-structuralist) has led to any number of misinformed assessments of his work, particularly because until recently only a very small number of his books have been translated into English, giving a very partial view of a multidimensional body of work.

The 6-volume *Method* is Morin’s magnum opus, a remarkable and seemingly inexhaustible treasure trove of insights, reflection, and a real manual for those who are interested in broadening the nature of human inquiry. *Method* integrates the rich and diverse elements of Morin’s journey and provides the reader with an alternative to the traditional assumptions and methods of inquiry of our time. Morin’s method outlines a way of approaching inquiry that does not reduce or separate, and does justice to the complexity of life and experience. In his sociopolitical works, such as his prescient studies on the USSR and totalitarianism, on the nature and concept of Europe, and his “manifesto for the 21st century,” *Homeland Earth* (Morin & Kern, 1999), Morin applied this method to the planetary crisis in what he calls this “planetary iron age.”

Most recently, Morin has produced, in some cases at the request of UNESCO and the French government, a series of books and conferences addressing the application of complex thought in educational contexts (Morin, 2001b). This is part of his ongoing quest to address the crucial issue of preparing human beings to tackle the challenge of complexity. It is a particularly tough challenge because the level Morin is addressing is largely invisible precisely because it does address only the *content* of our thoughts as much as the *organization* of our thinking through, for instance, a disjunctive logic that creates binary oppositions, and therefore organizes our thinking in such a way that we approach the world with an organizing framework of either/or. Rather than focus exclusively on challenging binary oppositions, Morin digs deep to excavate the underlying paradigm that generates those oppositions, and articulates a generative paradigm of complexity that offers a different point of departure. Interestingly, Morin’s work on education has found particular resonance in Latin America (particularly Brazil and Colombia), Italy, and Spain.

In over 50 years of writing and passionate participation in French, European, and planetary culture, Morin has shown us the way toward a richer, deeper appreciation of and participation in life. Our present way of thinking, feeling, and being, Morin proposes, is deeply problematic: It reduces, separates, and opposes. Morin points us beyond this way of thinking and toward a paradigm of complexity: toward a way of thinking and being that does not mutilate life, but allows us to live it more fully by being more present to the complexities, paradoxes, tragedies, joys, failures, and successes. He points us toward a way of thinking that is not disembodied and abstract, but rich in feeling, intuition, and connection to the larger social and historical context. A thought that is holographic and contextual, showing us how we are embedded in time and space. But a thought that is also transformative, self-eco-re-organizing, by including all of who we are and indeed stretching our understanding of who we are and pointing us toward new possibilities.

Morin's work has gradually led to the development of a transdisciplinary approach to inquiry. Going beyond the fragmentation and hyper-specialization too often promoted in academia, Morin has approached a variety of subjects normally confined in isolated disciplines and brought to them his own complex sensibility, while at the same time, in the process of immersing himself in his inquiry, he has been able to draw from the subjects a further stimulus and impetus for his own conception of transdisciplinary inquiry. It is this kind of generative loop that is one of the trademarks of Morin's complex thought and his complex practice of inquiry. It is to be hoped that in the coming years, Morin's work will receive the long overdue attention it deserves in the English-speaking world, and assist us in the challenge of living in an ever-increasingly complex, uncertain, and ambiguous world.

## INTRODUCTION: ON COMPLEXITY

This short volume contains some key essays by French thinker Edgar Morin on the subject of complexity, and specifically on what Morin calls *complex thought*. The earliest essay, "Complex Pattern and Design," was written in 1976, and the other essays date back to the 1980s and 1990s. One might seriously wonder what such a collection of essays has to offer beyond an interesting historical document of a thinker who was considerably ahead of his time. The last 15 years or so have seen a tremendous outpouring of books and articles on complexity. When Morin wrote these pages, the term *complexity* was not popular. It wasn't an intellectual trend, there was no Santa Fe Institute, there were no popularizing works explaining the relevance of complexity theory to business, health care, or group process. So why, when complexity is all the rage and we

are overwhelmed with information, new books, new perspectives, new ideas on complexity, go back to these essays, some of which were written more than 20 years ago?

One of the patterns that connects Morin's considerable contributions in such varied fields as biology and cinema, sociology and ecology, is a *particularly generative way of approaching* the subject matter. It's not a methodology, in the sense of a new research methodology like action research. The issue is pre-methodological. It is an issue of what Morin calls *method*, understood in the broadest sense of the word, as a "way" or "path laid down in walking." As the noted Italian family systems therapist Mara Selvini Palazzoli wrote (Selvini Palazzoli, 1990),

As Edgar Morin has put it so shrewdly, "the method emerges from the research." Originally, he points out, the word method meant path; it is only in traveling that the right method appears. (p. xiv)

How do we engage in inquiry? How do we think about the world, and more specifically, how do we approach research? Above all, how do we organize knowledge? How can we live and think in a pluralistic universe, with complexity, uncertainty, and ambiguity? Iain Chambers, who has written extensively on the subject of cultural complexity, writes:

The idea of both lived and intellectual complexity, of Edgar Morin's "*la pensée complexe*," introduces us to a social ecology of being and knowledge. Here both thought and everyday activities move in the realm of uncertainty. Linear argument and certainty break down as we find ourselves orbiting in a perpetual paradox around the wheel of being: we bestow sense, yet we can never be certain in our proclamations. The idea of cultural complexity, most sharply on display in the arabesque patterns of the modern metropolis—and that includes Lagos as well as London, Beijing, and Buenos Aires—weakens earlier schemata and paradigms; it destabilizes and decenters previous theories and sociologies. Here the narrow arrow of linear progress is replaced by the open spiral of hybrid cultures, contaminations, and what Edward Said recently referred to as "atonal ensembles." The city suggests creative disorder, an instructive confusion, an interpolating space in which the imagination carries you in every direction, even toward the previously unthought. (1993, p. 189)

In the tradition of such writers as Bachelard, Bateson, and others, Morin's work is a sustained epistemological reflection on the implications of the scientific and cultural revolution of the 20th century for our organization of, and relationship with, knowledge (Bachelard, 2002; Bateson, 2002; Capra, 1996; Taylor, 2003).

The term *organization of knowledge* may suggest a particularly abstruse and arcane endeavor of relevance only to specialists, and of absolutely no relevance for the way human beings lead their lives. But the organization of knowledge has enormously far-reaching consequences. The implications are obvious in the way we lead our daily lives (Kegan, 1998), the history and development of social science (Fay, 1996) and in the most pressing political and religious issues we face today (Bernstein, 2005). Despite the apparent resistance to this process of “thinking about thinking,” and the contribution of the above-mentioned authors, Morin’s contribution in this area is of great importance. The question is not just *what* we know, but *how* we know, and *how* we organize our knowledge.

The key elements of the organization of knowledge in the West go far back in history. The work of Aristotle and Descartes is central. Aristotle developed a “logic,” providing us with concepts such as the law of identity and the excluded middle. In his *Discourse on Method*, Descartes (Descartes, 1954) explored the basic *laws of thinking* and fashioned them into the foundations for inquiry. Descartes spoke of a *method* and of *Rules for the direction of the mind*. In other words, Descartes was providing us with an orientation for the way we think, a focus on reduction, simplification, and clarity. What Descartes proposed as rules for the direction of mind has, coupled with Aristotle’s logic, become the foundation for “good thinking,” and institutionalized in the organization of universities. There we find the same increasing specialization in departments, literally the splitting up into smallest possible parts, and the creation of strong boundaries based on three axioms of classical logic (Nicolescu, 2002).

The limitations of this kind of thinking are becoming increasingly apparent. None of the sciences offer us a way to integrate all the tremendous quantities of information and knowledge generated in the various disciplines and subdisciplines. This is extremely problematic for at least two reasons. First, with increasing specialization, the “big questions” are simply not asked and addressed anymore. Second, action in the world cannot be confined to knowledge drawn from one discipline. For example, the future of “developing countries” cannot be viewed exclusively from the neatly quantifiable perspective of economics. As Morin states, such a concept of development is underdeveloped. Another example is that innovation in industry cannot be reduced to one individual having a bright idea. There are any number of extremely bright and creative individuals in organizations with good ideas—and organizational bureaucracies are notorious for squashing new ideas. So the process of organizational innovation is multidimensional—it has individual psychological (personality, cognitive) dimensions, but also group and organizational dimensions, not to mention an economic dimension. The implication is that fostering creativity and innovation in organizations cannot simply be confined to giving individuals “creativity tools.” The process needs to be systemic, and more than cross-disciplinary, it should be transdisciplinary, in order to, among other things,

include the inquirer in the inquiry, the innovator in the innovation (Purser & Montuori, 1999). Real understanding and effective action therefore require an approach that is not dictated by disciplinary boundaries but emerges from the needs of the inquiry.

As I have argued elsewhere (Montuori, 2005a), drawing on Morin's work, transdisciplinarity can be summarized as requiring:

1. A focus that is *inquiry-driven* rather than discipline driven. This in no way involves a rejection of disciplinary knowledge, but the development of knowledge that is pertinent to the inquiry for the purposes of action in the world.
2. A stress on *the construction of knowledge* through an appreciation of *the meta-paradigmatic dimension*—in other words, the underlying assumptions that form the paradigm through which disciplines and perspectives construct knowledge. Disciplinary knowledge generally does not question its paradigmatic assumptions.
3. An understanding of *the organization of knowledge*, isomorphic at the cognitive and the institutional level, the history of reduction and disjunction (what Morin calls “simple thought”), and the importance of contextualization and connection (or “complex thought”).
4. *The integration of the knower in the process of inquiry*, which means that rather than attempting to eliminate the knower, the effort becomes one of acknowledging and making transparent the knower's assumptions and the process through which s/he constructs knowledge.

As Morin wrote:

The observer should not just practice a method that permits her to shift from one perspective to another. . . . She also needs a method to access a meta-point of view on the diverse points of view, including her own point of view.  
(p. 179)

Morin, and many other thinkers including Fay, Code, and Collins, have shown how at the sociological level, dichotomies have marked the history of Western thought in the form of opposing movements such as atomism and holism (Code, 1991; Collins, 1998; Fay, 1996). The history of ideas reflects ways of thinking that are in turn also reflected in the disciplinary nature of academia and research. *The organization of knowledge of knowledge is isomorphic at the level of thought, the history of ideas, and disciplines*. There is an isomorphism between what Morin calls the reductive/disjunctive “simple thought” that has characterized much of Western history, and the organization of knowledge in universi-

ties, where knowledge is broken down in ever smaller disciplines and subdisciplines and specializations, with increasingly impermeable borders. One finds a disjunctive logic that places a scholar either in one discipline or another—but never in both. With some exceptions, one can usually not be both *A and B*, both a psychologist *and* a sociologist, for instance. Wilshire's disturbing research has illustrated the dynamics of "purity" and "pollution" associated with university disciplines (Montuori & Purser, 1999; Wilshire, 1990). Morin is pointing in a new direction, proposing his en-cyclo-pedic method that circulates knowledge between disciplines, and proposes the paradigm of complexity not as a panacea, not as a solution to the problem, but as a way of approaching the organization of our thinking and thinking about organization.

One recurring theme in the more sophisticated recent discussions of complexity, whether in the sciences, management and organizational theory, or the social sciences in general, is that reductive/analytic approaches to issues are unable to account for, and give an adequate understanding of, complex, interconnected phenomena. Reductive approaches isolate phenomena from their environment and operate with a disjunctive logic of either/or. I have suggested this kind of thinking can be found writ large in the organization of knowledge in universities, with departments focusing studies in ever greater hyper-specialization. Sadly there is little or no effort to *connect* the knowledge gathered in the different departments, or to elaborate how the knowledge gained in different disciplines might be integrated in practical applications in the world. Many popular (pseudo-)holistic approaches that define themselves in opposition to reductionism and reject "parts" in favor of "wholes," "analysis" in favor of "synthesis," and "control" in favor of "emergence," almost inevitably end up being vague and ineffectual feel-good New Age nostrums rather than serious efforts to address complexity, wholeness, and interconnectedness (Montuori, 2006). Morin's trenchant critique of this form of holism—which is the direct opposite of reductionism and itself a product of disjunctive thinking—is one of the ways his work makes such an important contribution to the development of a new way of thinking and a new approach to inquiry (Morin, 2007a).

Another key dimension of Morin's work is that it recognizes the ambiguity and uncertainty that is the hallmark of 20th century science and human experience. Complex thought leads us to a way of thinking—and being in the world—that recognizes the inescapable dimension of uncertainty, and views it as an opportunity for creativity and the development of new perspectives, rather than primarily a source of anxiety.

### **Order and Disorder: Chaosmos**

In his masterpiece *Method*, Morin introduces a key element to his thinking: the dethroning of King Order. In the first volume (Morin, 1992a), he addresses this

through an extensive discussion of scientific developments in the last centuries. Scientists today are in agreement that we are in the middle of a scientific revolution. In the words of theoretical physicist Paul Davies (1989):

For three centuries, science has been dominated by the Newtonian and thermodynamic paradigms, which present the universe as either a sterile machine, or in a state of degeneration and decay. Now there is the paradigm of the creative universe, which recognizes the progressive, innovative character of physical processes. The new paradigm emphasizes the collective, cooperative, and organizational aspects of nature; its perspective is synthetic and holistic rather than analytic and reductionistic. (p. 2)

The paradigm of the creative universe. It is not just a different understanding of the universe, but the need for a different way of thinking about, and inquiring into, the universe that emerges. As Davies makes very clear, we are looking at a new perspective on the world, one that is “is synthetic and holistic rather than analytic and reductionist,” and recognizes “the collective, cooperative, and organizational aspects of nature.” Davies is describing a move away from the classical scientific worldview toward a view that points to Morin’s articulation of complexity. The phenomena science is exploring require a different way of thinking. Indeed, in his works spanning such traditional disciplines as sociology, biology, political science, ecology, and psychology, Morin has shown how we can fruitfully apply a new way of thinking to human life as a whole.

True scientific revolutions amount to more than new discoveries: They alter the concepts on which science and our whole view of the world is based. Historians will distinguish three levels of enquiry in the study of matter. The first is Newtonian mechanics—the triumph of necessity. The second is equilibrium thermodynamics—the triumph of chance. Now there is a third level, emerging from the study of far-from-equilibrium systems (Davies, 1989, p. 83).

The Newtonian revolution represented the first real coherent triumph of what we now call science. With his *Principia*, published in 1687, Newton presented in the form of mathematical equations the three laws that govern the motion of material bodies. Newton’s work was particularly important because it presented Universal Laws of Nature. These laws seemed to give a window into the functioning and nature of Nature itself. Particularly powerful in Newton’s work was its focus on prediction, order, and determinism. In the words of Davies (1989, p. 11), with Newton “the entire cosmos is reduced to a gigantic clockwork mechanism, with each component slavishly and unfailingly executing its preprogrammed instructions to mathematical precision.”

The laws and principles created the foundation for general theories and predictions that could be tested through experiments. These experiments, conducted following the scientific method, consisted of breaking systems down to

their simplest components, a method now referred to as *reductionism*. This reflected an assumption that the world was made of basic building blocks called atoms. The underlying assumption was that these atoms exist in isolation from their environment, and that knowledge of the behavior of the atoms could be used to predict the future of the system as a whole.

Two fundamental things make up the Newtonian world: matter and energy. Matter and energy exist in the emptiness of absolute space and time—the “sterile machine” Davies mentions. Matter is composed of atoms and even subatomic particles such as electrons and protons. Knowing the location, mass, and velocity of all the particles in the universe, it would be possible to predict the future. With progressive improvement in scientific knowledge, in other words, it was believed that eventually it would be possible to predict every event. The Newtonian world was therefore deterministic. Every event *had* to happen *by necessity*. Once set in motion, the universe unfolds following precise laws. The assumption was that fundamentally, the universe is governed by simplicity and simple rules. There is an unquestionable order to the universe, and anything we consider disorder or complexity was simply a function of our limited knowledge. Simplicity, predictability, and determinism were central to the Newtonian worldview.

The Newtonian world was also “reversible.” This means that “time exists merely as a parameter for gauging the interval between events. Past and future have no real significance. Nothing actually *happens*” (Davies, 1989, p. 14). This is a particularly interesting feature that defies common sense, but made perfect sense in the Newtonian world. The Newtonian world is therefore a “clean machine,” like a clockwork. Interestingly, it reflects the same static view of the world before Newton, which was considered a perfect, pre-ordained, God-given hierarchical order: Nothing actually happens, because the Laws of Nature are the Laws of God, and these Laws are perfect, therefore no change occurs, is necessary, or even possible.

The Newtonian worldview had very clear implications for our thinking. The power of prediction and control that the scientific method provided was staggering. The technology driving the Industrial Revolution was the result of the application of the new scientific method. Who, in the middle of this explosion of human power, could argue with it? The social sciences and the management sciences wanted to import the scientific method, in order to enjoy the same legitimacy as real sciences. Being a real science was defined largely by the capacity for prediction and control. The scientific method led to technology and industry, which in turn led to progress.

The notion of progress became central to modernity. The belief was that the scientific method offered a way to get at truth in a manner that was empirical, testable, and gave the user power. It’s important to understand that before the scientific method was applied, people simply did not think this way. Before the scientific method, what was considered the “highest” or most evolved form of



thinking on a social level was a mixture of Aristotle, the encyclopedic Greek philosopher who had written about everything from logic to biology, and the writings of St. Thomas which informed theology, drawn from the Bible. In this pre-modern view, Aristotle and the Bible were seen as unquestionable sources of wisdom. The concept of experiment that would give empirical proof as to whether a particular hypothesis was, or was not the case, was unheard of.

The scientific method led to a shift from a more passive reception of already given knowledge to the active acquisition of new knowledge. This led to a focus on several key areas, which can be represented in the following oppositions, the latter term indicating what the new method rejected:

- Objective knowledge of objects in the exterior world, rather than subjective knowledge of interior moods, opinions, experiences, and so on;
- Quantification, and therefore “objective” data that could be measured as opposed to qualitative data that is “subjective” and cannot be measured;
- Reductionism, or a focus on parts rather than wholes (holism);
- Determinism—or finding laws of cause and effect that determine events as opposed to chance events that cannot be predicted by laws (contingency);
- Certainty, rather than uncertainty;
- Absolute, rather than “relative” knowledge;
- Universal knowledge (applicable anywhere and everywhere) rather than particular, local knowledge (applicable only to certain specific settings);
- One right way of looking at a situation, rather than a multiplicity of perspectives, and the search for that one right way;
- Either/or thinking, borrowed from Aristotle, which rejects any form of ambiguity or paradox.

## The Decaying Machine

The second revolution in science was ushered in by the second law of thermodynamics. It addressed the issue of irreversibility. Irreversibility is a very basic feature of the world from our everyday point of view. You can't become young again, unbreak an egg, “take back” an unkind comment, or “unlose” your lost keys (you can find them in the *future*, of course). Literally we can't go back in time to undo or reverse an action. And yet the Newtonian world was “reversible.” Time as such played no role in it. Everything essentially stayed the same, and the movie could be played forward or backward with no visible difference.

With the second law, Rudolf Clausius in the middle of the 19th century developed the familiar concept of *entropy*. In a nutshell, the second law of thermodynamics states that “in a closed system, entropy never decreases,” where entropy is defined as energy that is unavailable for work. Entropy is the disorder or randomness in a system. So as a machine worked, some energy became unavailable for work. What this brought us is a view of the universe as a decaying machine, a closed, mechanical system struggling against the forces of corrosion and decay. A machine, yes, but a machine that is running down and inexorably moving toward the end. Time was introduced into the picture, and its role was essentially to tear away at the primal perfection.

As a machine worked over time, it would gradually lose energy. But along with this loss of energy, there also seemed to be another process. Decay was not the only direction time seemed to lead to. There was a parallel time that seemed to defy the universe’s winding down. It was a time not of machines, but of life.

## DARWIN’S REVOLUTION

It was Charles Darwin who added a completely new wrinkle to our understanding of the world (Ceruti, 2007). Before the emergence of science, it was generally thought that the world had been created in 4004 B.C.E., and everything on the planet was the result of God’s plan. This meant that every creature on the planet had been placed there by God, in the “Great Chain of Being,” and nothing had really “changed,” because that would mean a deviation from God’s plan. Darwin, on the other hand, suggested that life on the Earth had started quite simply and evolved into more complex forms.

Darwin’s world was not Newton’s world, or Clausius’s world (Bocchi & Ceruti, 2002). Newton’s world was static. Clausius’s was running down. Darwin’s seemed to be getting more and more complex, indeed, “evolving.” Darwin’s original image of the evolutionary process was very much a product of his times. The concept of *progress*, which was very much in the air as Darwin was doing his research, suggested that science, technology, and human reason would lead us to a better world, free of disease, poverty, and so on. Darwin’s concept of evolution was immediately translated by many as being synonymous with progress. If life is an evolutionary process, meaning that life on this planet evolved from simple micro-organisms to complex creatures like human beings, then evolution signified a progression from simple to complex, from primitive to superior, and consequently, there is a form of progress built into the natural world.

This view of evolution as linear progress, with all its tantalizing implications for social systems, has been challenged as simplistic by some and fundamentally misguided by others. It has been argued that just because life on this

planet has evolved, reproduced, and changed, this is not a clear indication at all that it's getting somehow "better." But regardless of these arguments, Darwin presented a third scientific perspective—neither perfect machine, nor decaying machine, but rather an explosion of life, reproducing itself and changing as it does so. And in this process, time played an active, creative role, because things changed as they reproduced, and as they came into contact with each other. The principle of natural selection suggested that interaction played a central role in evolution.

From the Clockwork World, where Order was King, to a Decaying World, to a Creative World. The crucial difference in the development of these different understandings of the world lies in the relationship between Order and Disorder. And the new articulation of this relationship between Order and Disorder, traditionally framed in terms either/or, is central to Morin's work and takes up a good part of the first volume of *Method*.

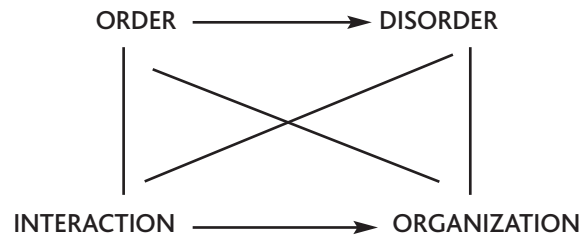
In Newton's world, Order reigned, and what we perceived as Disorder was simply the result of our human ignorance. We simply were not yet aware of the Laws governing the phenomena we called disordered, confused, ambiguous. This is also the Laplacean universe, where virtual omniscience is the ideal.

With Clausius and the second law of thermodynamics, we find that Order and Organization move toward Disorder.

ORDER  
DISORDER  
ORDER → DISORDER

With Darwin, and the new developments in physics, Morin proposes a key tetragram that shows how the interactions of order and disorder lie at the heart of organization. Order, disorder, and organization have a complex relationship through interaction (Morin, 1981).

Organization without disorder leads to a sterile, homogenous system where no change and innovation is possible. Complete disorder without order precludes organization. Only with the interaction of order and disorder, is an organization possible that remains open to change, growth, and possibilities (Morin, 2007b).



One of the key differences is that entropy applies to closed systems, but life on earth is not a closed system. In an open system, there are processes that actually create order. The concept of “open system” is vital to understanding the shift to the creative universe. The first volume of Morin’s *Method* introduces in some considerable depth the implications of this shift. Rather than assuming that there is a pre-established order—whether God-given or somehow intrinsic to nature, Morin explores in great depth the importance of the generative, emergent relationship between order and disorder.

### **Order, Disorder, and Self-Organization**

In the traditional Newtonian scientific paradigm, order was King, privileged above disorder, chaos, and “noise” (Morin, 1992a). Our understanding of the relationship between order and disorder was in terms of a binary opposition, and indeed a hierarchical binary opposition. Disorder was viewed as a function of human ignorance, something that would, eventually, with better knowledge, be integrated in the larger master-plan.

One of the most interesting shifts in recent scientific thinking, in particular because of the sciences of chaos and complexity, has been a deeper understanding of the mutually constitutive relationship between order and disorder, information and noise. This shift also reflects a transition from a fundamentally static view of the world to one that is process oriented. Rather than seeing order as fundamental and unchanging, we are now seeing an ongoing process of order-disorder-interaction-organization that is the hallmark of self-organization (Morin, 2007b). As Taylor (2001, p. 121) writes, “disorder does not simply destroy order, structure, and organization, but is also a condition of their formation and reformation.” The interaction of order and disorder can be generative of new forms of organization, and any order is the result of an ongoing process, not of pre-established forms.

Self-organization has been defined variously as making meaning out of randomness (Atlan, 1986), or the spontaneous emergence of a coordinated and collective behavior in a population of elements (Gandolfi, 1999). One of the key aspects of self-organization is the creation of order out of chaos, the integration of elements perceived as disorder into a larger, more encompassing organization. We might think of paradigms in science as an analogy. What is inside the paradigm is considered order, what is outside is disorder. Anomalies on the edge of the paradigm, what the paradigm cannot account for, may initially seem like noise, disorderly phenomena that cannot be accounted for. Indeed, the history of chaos theory itself (Gleick, 1987) shows how turbulent phenomena such as water flowing from a faucet were rejected out of hand as subjects of study for the longest time because they seemed simply inexplicable. Yet it is the study of these anomalies that led to the development of the new sci-

ence of dynamical systems, also known as *chaos theory*. In this sense, chaos theory as a field of study was itself a self-organizing process, the spontaneous emergence of a coordinated and collective behavior in a population of elements (researchers), making meaning out of (apparent) randomness.

The term *self-organization* refers to a spontaneous emergence of collaborative behavior among elements in a system. The whole idea of what we might call Newtonian organization, or the Machine Metaphor of organization was that the existing order that had been created was perfect, and workers were there to implement it. In Tayloristic (Newtonian) organizations, it was spontaneity at all costs, as it involved a breakdown in the established order. Self-organization, on the other hand, involves the emergence of order out of spontaneous interactions in response to disorder. It is interesting to note that Taylor insisted on making sure individual workers did not communicate, or form into groups. Their whole purpose was to perform their pre-established isolated assembly-line function. Spontaneous interactions were precisely what Taylor wanted to avoid, and the workers were organized from the outside, never self-organized.

Morin has argued that a more accurate and inclusive way to describe the process of self-organization in open, dynamical systems is as “self-eco-re-organizing systems” (Morin, 1990, 2005c, 2007a). A system does not merely organize itself, independently of its environment. The environment is in the system, which is in the environment. A family is in society, and society is in the family (culturally, economically, through the media, and so on). But a system does not merely self-eco-organize. It self-eco-re-organizes, as we shall see below (Morin, 2005c).

The order out of disorder that emerges in an open system’s interaction with its environment is subject to fluctuation. When certain levels of fluctuation are created by increasing complexity, a critical or bifurcation point is reached. At that point the system can move in any one of several directions until a new and more complex order may be established after a period of turbulence. If a higher order of organization does not emerge, the system returns to a previous, lower level of organization. Many developmental psychologists report a similar pattern for evolutionary transformation (Guidano, 1987; Kegan, 1982). We might therefore think of evolutionary transformation as an ongoing process of self-eco-re-organization.

### **Re–: The Importance of Time, History, and Process**

Although the Newtonian view was “reversible,” where time did not play a role, in the new scientific view, time, history, and process play a key role. As the Italian philosophers of science Bocchi and Ceruti write, during this century science has come to recognize that organisms are, to a large extent, their history (Bocchi & Ceruti, 2002). An organization today is the result of its history—of

the choices, decisions, and events that have occurred in its lifespan. To say that one is one's history does not mean, on the other hand, that one is *determined* by that history on some inexorable future. On the contrary. Whereas the traditional scientific view was deterministic, the new one is much more focused on creativity, as Morin's Re- suggests. And history is where creativity happened, in the form of contingencies, of surprises, of the unforeseen. Unforeseen events can shape our lives in ways we never expected. This was Morin's focus in his early sociological work, of course: not the universal laws, but the inclusion of contingency, chance, of *events*. Inquiry therefore has to be able to address uncertainty and ambiguity, but not simply as demonstrations of our lack of knowledge. In this view, contingency, the out of the ordinary, and ambiguity are sources of change, of *a creative process*.

Every system, whether individual or a corporation, is also an organization. But an organization is not static. And organization is always re-organization. Organization therefore is always a process, not something that is fixed and once and for all. In fact, Morin has even coined the neologism "organiz-action" to stress this (Morin, 1992a). Any organization that is completely unchangeable is unable to adapt to changes in the environment, and unable to create anything new. The prefix "re-" is therefore a key indicator that organization is not static, but a process of constant, ongoing, self-eco-re-organization.

At the same time, just as the world is increasingly confronting us with the unexpected, we can also generate the unexpected ourselves. Creativity involves those acts that are unexpected and therefore produce something defined as new, original, and unusual that is also considered valuable and, to a greater or lesser extent, of lasting value. For Morin the unexpected is indeed a source of hope. History is replete with the unexpected. Who could have predicted the fall of the Soviet Union, for instance? Morin is urging us to befriend the unexpected and inviting us to learn how to live in a world that is not ruled by one overarching order, but where freedom, spontaneity, surprise, and the unexpected are the order of the day. Classical science assumed all systems were fundamentally stable and in equilibrium, and chaotic systems, far from equilibrium were the exception. The new sciences of chaos and complexity theories show us that equilibrium systems are in fact the exception. The world is full of ambiguity and uncertainty, and Morin is pointing us to ways of thinking through and living with that ambiguity.

### **The Need for a New Way of Thinking**

How can we best approach a world that is full of uncertainty, complexity, and ambiguity? Are we prepared for this tremendous challenge? How can we address the uncertainty, complexity, and ambiguity of the "planetary era," in which our remarkable interconnectedness has led us to face a world we can

barely recognize? Alvin Toffler spoke of *Future Shock* 30 years ago, and it seems we are now in the middle of it (Toffler, 1984). My colleague Dan Crowe recently told me that the students in his graduate course on leadership at a university in Georgia balked at the suggestion that they should read *The Economist* and familiarize themselves with global economics. Noticing their reluctance to take on this assignment, my colleague pointed out to them that global events, no matter how remote they may seem, do have profound repercussions in the daily lives of his students. In fact, the closure of a factory in the Atlanta area had recently cost thousands of jobs that all went to Mexico. We are now, as Morin would say, *planetary citizens*. But it's clear that our educational systems have not prepared us for this condition. And what's more, it's far from clear that there is a sense of urgency about understanding our planetary context. We are simply not prepared for the full implications of a global, interconnected, uncertain world. In fact, it's increasingly obvious that it's painfully difficult to even figure out how to begin to *think* about this world we're living in.

Unraveling the complexities of global economics and its social impact is an enormous challenge. The world is full of uncertainty. We don't know what will happen to our job, our neighborhood and our city, our country. Change is so rapid, and technology in particular is playing such a dramatic role in this acceleration, that we can't in good faith expect things to stay the same for very long. Whereas in previous ages life was arguably relatively simple, predictable, and unambiguous, we are now faced with a different world. But are we equipped to deal with it? Increasingly, the answer is no.

Disturbingly, in times of transition, complexity, uncertainty, or faced with potential or even actual chaos, there is a tendency to seek out absolute foundations, certainty, simplicity, and a framework that will make sense of the world and reduce our anxiety. These frameworks are informed by reductionistic and dualistic thinking that drastically reduce the complexity of the world. What this means in practice is that in times of great anxiety, human beings often need to reduce the complexity by finding one source to blame for their anxiety and attribute to it all that is wrong (scapegoating). This is accompanied by thinking in dualistic terms: *They* are bad, we are good. If you're not for us, you're against us. "They" are the capitalist running dogs, the evil empire, the witches, the Jews, the polluting industries, and so on (Bernstein, 2005; Montuori, 2005b).

Gerald Holton spoke of the "themata," the major recurring themes in the work of creative scientists (Holton, 1988). One of the central themata running through Morin's work is a critique of this kind of simplistic thinking, or "simple thought," in the direct translation from the French. The problems with simple thought are legion. Dualistic thinking creates a classic problem. If I assume that you are evil and I am good, then in the heat of the mission to "defeat evil," anything I do is by definition legitimate and good, and anything you do is bad. But if I am so unwaveringly convinced that I am good—in an "essentialist" way, in the same way that I see you as "essentially" evil—then all my actions become,

to some extent, beyond reproach in my battle against the forces of evil. This leads to the phenomenon that Jung called *enantiodromia* whereby we literally become what we hate (Jung, 1976). Examples abound. In order for my democratic country to fight my totalitarian enemy, I must take all precautions, including surveillance of citizens, and the gradual erosion of civil rights, including the right to protest or even disagree with my policies. Anybody who disagrees with me is viewed as aiding and abetting the enemy. In the process of fighting my enemy, I have taken such a drastic stance that the very democracy I am trying to defend is lost in the process, through my own policies, not the actions of the enemy.

Particularly in his more autobiographical accounts, Morin expresses his personal dismay at the way that a certain way of thinking can lead us to demonize “the other,” whether communist, capitalist, German, and so on. The other is *reduced* to the crimes committed, and a clean, dualistic separation is made between “us and them.” Here we are already in the thick of complexity. It is tempting to say that not reducing Germans after World War II to the Nazi horror is fundamentally excusing them, letting them off the hook. The complex perspective recognizes both the horror and the grandeur and humanity of a people who have, after all, made enormous contributions to Western civilization. It’s much easier to say they are somehow evil and leave it at that. It’s much harder to see that during a specific period of time, preceded by desperate economic hardship and national humiliation, under the influence of masters of propaganda, and much, much more, Germany fell into an abyss of horror. And that the punitive measures of Versailles themselves contributed to the chaos that led to WW II, a lesson that was learned and led to the Marshall Plan, the remarkable recovery of Germany, Italy, and Japan after the war, and the close bonds with those countries that have lasted to this day.

The example of Germany after WW II is interesting because now very few people if any would take this demonizing, dualistic view of Germany. But at the same time, we see that discussions of Islam in the West often take on a very similar character. The image of the West and particularly the United States and Israel proposed in some Islamic fundamentalist circles is even more appallingly demonizing.

Reductionism is, in such situations, coupled with disjunction, the “us and them” approach. This adds to the simplicity. We do not have to deal with the complexity of the German people, of Islam, of the West. We can simply say they are fundamentally evil and forget about their humanity and their contributions to humanity. And we can also avoid looking into the complexity of our own humanness. We can then avoid addressing our shared humanity, and the very real possibility that we ourselves may be capable of equally horrific behaviors. Indeed, Morin’s work on simple thought has clear connections to the classic research on the authoritarian personality (Adorno, Frenkel-Brunswik, Levinson, & Sanford, 1982; Montuori, 2005b). Characteristics such as black



and white, dualistic thinking, anti-introspection (unwillingness to look within and explore the full extent of one's humanness, particularly one's weaknesses), and pseudo-conservatism, which involves the tendency to be so extreme and unreflective about preserving what one has that one is willing to actually destroy it in the process. In other words, the first principles are lost, and one is caught up in the frenzy of attack and defense.

What becomes clear very soon is that Morin's quest for complex thought is not merely some dry logical exercise. It is all about the way we organize our experience, how we make meaning of the world, how we live our lives, and how we can choose between lives that aspire to wisdom and compassion and the dangers of disjunctive, demonizing terror. And in the process, imagination and emotions play an absolutely crucial role, as Morin explores in detail in works like *L'identité humaine* (Morin, 2003). Much of the impetus behind simple thought is the emotions evoked by the perception of threat, the need for clarity, the assumption that anything other than a "strong stance," a powerful "position," is wishy-washy and reflects weakness and a willingness to "give in" to the aggressor. There is a whole sociology and psychology of knowledge at play here, which Morin has masterfully discussed in *Method*, particularly Volumes 3 and 4 (Morin, 1986, 1991).

Particularly relevant here is the introduction of the knower into the process of inquiry. The tradition of reductive, dualistic thought eliminates the knower from the process of knowing. With Morin we find the knower taking center stage and becoming a subject of inquiry, self-reflection and self-analysis (Morin, 1971). This opens up an entirely different understanding of the nature of inquiry, deepening the complexity and forcing the inquirer to take responsibility for his or her own process. Not unlike the process of training required for psychoanalysts, Morinian inquiry involves a recognition that all inquiry is engaged by a human being, not an objective lens with no emotions, stressors, political and social constraints, and so on. Inquiry therefore requires a process of self-inquiry.

Morin's introduction of the knower is not a fall into "absolute" subjectivism—far from it. It is rather a call for a discipline of thinking, inquiry, and being. If knowing is always performed by somebody, then that somebody can be viewed as an instrument, an instrument that has to be tuned, studied, practiced. Limitations and blind spots have to be assessed and brought into consciousness.

In an age of fundamentalisms and black and white, dualistic thinking, Morin's work is more timely than ever. In his political works he has applied complex thought to the nature of the USSR, the future of Europe, and the conflict in the Middle East. In these works, Morin outlines a complex perspective on these issues that provides us with an alternative to the simple thought of both fundamentalist and liberal thinkers. Morin's oeuvre opens up a world of possibilities and presents us with the tools to address the enormous complexi-

ty of today's world. Morin challenges us to explore the meaning of inquire—and show us how this seemingly esoteric question lies at the heart of the challenge for the 21st century. One can only hope that his Method will be widely studied and applied to address our global challenges and prepare us to do this with creativity, wisdom, and compassion.

Alfonso Montuori  
San Francisco, California, United States

## REFERENCES

- Adorno, T. W., Frenkel-Brunswik, E., Levinson, D. J., & Sanford, R. N. (1982). *The authoritarian personality* (Abridged ed.). New York: Norton.
- Anselmo, A. (2005). *Edgar Morin e gli scienziati contemporanei* [Edgar Morin and contemporary scientists]. Soveria Mannelli: Rubbettino.
- Anselmo, A. (2006). *Edgar Morin: Dalla sociologia all'epistemologia* [Edgar Morin: From sociology to epistemology]. Napoli: Guida.
- Bachelard, G. (2002). *The formation of the scientific spirit*. Manchester: Clinamen Press.
- Barron, F. (1995). *No rootless flower: Towards an ecology of creativity*. Cresskill, NJ: Hampton Press.
- Bateson, G. (2002). *Mind and nature: A necessary unity*. Cresskill, NJ: Hampton Press.
- Benkirane, R. (2006). *La complexité, vertiges et promesses. 18 histoires de sciences. Entretiens avec Edgar Morin, Ilya Prigogine, Francisco Varela . . .* [Complexity, giddiness and promises. 18 stories of science. Dialogues with Edgar Morin, Ilya Prigogine, Francisco Varela . . .]. Paris: Le Pommier.
- Bernstein, R. (2005). *The abuse of evil: Politics and religion after 9/11*. Malden, MA: Polity Press.
- Bianchi, F. (2001). *Le fil des idées. Une éco-biographie intellectuelle d'Edgar Morin* [The thread of ideas. An intellectual eco-biography of Edgar Morin]. Paris: Seuil.
- Bocchi, G., & Ceruti, M. (2002). *The narrative universe*. Cresskill, NJ: Hampton Press.
- Boorstein, D. J. (1992). *The image: A guide to pseudo-events in America*. New York: Vintage.
- Bougnoux, D., Le Moigne, J.-L., & Proulx, S. (Eds.). (1990). *Arguments pour une méthode* [Arguments for a method]. Paris: Editions du Seuil.
- Byers, W. (2007). *How mathematicians think: Using ambiguity, contradiction, and paradox to create mathematics*. Princeton, NJ: Princeton University Press.
- Capra, F. (1996). *The web of life*. New York: Anchor.
- Cassé, M., & Morin, E. (2003). *Enfants du ciel. Entre vide, lumière, matière* [Children of the sky. Between the void, light, and matter]. Paris: Odile Jacob.
- Ceruti, M. (2007). *Evolution without foundation*. Cresskill, NJ: Hampton Press.
- Chambers, I. (1993). Cities without maps. In J. Bird (Ed.), (pp. 188-197). New York: Routledge.
- Chambers, I. (1994). *Migrancy, culture, identity*. New York: Routledge.
- Code, L. (1991). *What can she know? Feminist theory and the construction of knowledge*. Ithaca, NY: Cornell University Press.

- Collins, R. (1998). *The sociology of philosophies: A global history of intellectual change*. Cambridge: MA: Belknap Harvard.
- Coser, L. (1997). *Men of ideas*. New York: Pocket.
- Davies, P. (1989). *The cosmic blueprint. new discoveries in the nature's creative ability to order the universe*. New York: Simon and Schuster.
- de Saint Cheron, M. (2000). *De la memorie a la responsabilité. Dialogues avec Geneviève de Gaulle Anthonioz, Edgar Morin, Emmanuel Levinas* [From memory to responsibility. Dialogues with Geneviève de Gaulle Anthonioz, Edgar Morin, Emmanuel Levinas]. Paris: Éditions DERVY.
- Dortier, J.-F. (2006). Edgar Morin. Le paradigme perdu: La nature humaine [Edgar Morin. The lost paradigm: Human nature]. In M. Fournier (Ed.), *La bibliothèque idéale des sciences humaines* [The ideal library of the human sciences]. Auxerre cedex: Éditions Sciences Humaines.
- Drake, D. (2002). *Intellectuals and politics in post-war France*. New York: Palgrave Macmillan.
- Eliade, M. (1978). *Occultism, witchcraft, and cultural fashions: Essays in comparative religions*. Chicago: University of Chicago Press.
- Fages, J. B. (1980). *Comprendre Edgar Morin* [Understanding Edgar Morin]. Toulouse: Privat.
- Fay, B. (1996). *Contemporary philosophy of social science*. New York: Blackwell Publishers.
- Fortin, R. (2002). *Comprendre la complexité. introduction a la methode d'Edgar Morin* [Understanding complexity. Introduction to Edgar Morin's Method]. Paris: L'Harmattan.
- Green, A. (2005). *Key ideas for a contemporary psychoanalysis: Misrecognition and recognition of the unconscious*. New York: Routledge.
- Guidano, V. F. (1987). *Complexity of the self. A developmental approach to psychopathology and therapy*. New York: Guilford.
- Holton, G. (1988). *Thematic origins of scientific thought. Kepler to Einstein*. Cambridge, MA: Harvard University Press.
- Journet, N. (2000). Qu'est-ce que la postmodernité? In J.-F. Dortier (Ed.), *Philosophies de notre temps* [Philosophies of our times] (pp. 113-120). Auxerre: Editions Sciences Humaines.
- Jung, C. G. (1976). *The portable Jung*. New York: Penguin.
- Kegan, R. (1982). *The evolving self*. Cambridge, MA: Harvard University Press.
- Kegan, R. (1998). *In over our heads: The mental demands of modern life*. Boston: Harvard University Press.
- Kofman, M. (1996). *Edgar Morin. From Big Brother to fraternity*. London: Pluto Press.
- Kristeva, J. (1997). *The portable Kristeva*. New York: Columbia University Press.
- Le Sueur, J. D. Decolonizing "French Universalism": Reconsidering the impact of the Algerian war on French intellectuals. In J. D. Le Sueur (Ed.), *The decolonization reader* (pp. 103-118). New York: Routledge.
- Lechte, J. (1994). *50 key thinkers*. New York: Routledge.
- Lyotard, J.-F. (1984). *The postmodern condition: A report on knowledge*. Manchester: Manchester University Press.
- Maturana, H., & Varela, F. (1987). *The tree of knowledge*. Boston: New Science Library.
- Montuori, A. (2005a). Gregory Bateson and the challenge of transdisciplinarity. *Cybernetics and Human Knowing*, 12(1-2), 147-158.

- Montuori, A. (2005b). How to make enemies and influence people. Anatomy of totalitarian thinking. *Futures*, 37, 18-38.
- Montuori, A. (2006). The quest for a new education: From oppositional identities to creative inquiry. *ReVision*, 28(3), 4-20.
- Montuori, A., & Purser, R. (1999). *Social creativity* (Vol. 1). Cresskill, NJ: Hampton Press.
- Morin, E. (1970). *The red and the white*. New York: Pantheon Books.
- Morin, E. (1971). *Rumor in Orleans*. New York: Blond.
- Morin, E. (1979). *Le paradigme perdu* [The lost paradigm]. Paris: Seuil (Originally published 1973)
- Morin, E. (1981). *La méthode. 1. La nature de la nature* [Method. 1. The nature of nature]. Paris: Seuil.
- Morin, E. (1982). *Le vif du sujet*. Paris: Seuil (Originally published 1969)
- Morin, E. (1983). Beyond determinism: The dialogue of order and disorder. *SubStance*, 40, 22-35.
- Morin, E. (1985). *La Méthode, tome 2. La vie de la vie* [Method, volume 2. The life of life]. Paris: Seuil.
- Morin, E. (1986). *La conoscenza della conoscenza* [Knowledge of knowledge]. Milano: Feltrinelli.
- Morin, E. (1990). *Science avec conscience* [Science with conscience]. Paris: Seuil.
- Morin, E. (1991). *Le idee: Habitat, vita, organizzazione, usi e costumi* [Ideas: Habitat, life, organization, use, and customs]. Milano: Feltrinelli.
- Morin, E. (1992a). *Method: Towards a study of humankind. The nature of nature*. New York: Peter Lang.
- Morin, E. (1992b). *Viaggio in Cina* [Voyage to China]. Bergamo: Moretti & Vitali.
- Morin, E. (1993). For a crisiology. *Industrial & Environmental Crisis Quarterly*, 7, 5-22.
- Morin, E. (1994a). *Journal d'un livre/juillet 1980-aout 1981* [Diary of a book/July 1980-August 1981]. Paris: Interéditions.
- Morin, E. (1994b). *La complexité humaine* [Human complexity]. Paris: Flammarion.
- Morin, E. (1994c). *Sociologie* [Sociology]. Paris: Seuil.
- Morin, E. (1996). *Vidal et le siens* [Vidal and his people]. Paris: Seuil.
- Morin, E. (1999a). *Introduction à une politique de l'homme* [Introduction to a human politics]. Paris: Seuil (Originally published 1965)
- Morin, E. (Ed.). (1999b). *Relier les connaissances: Le défi du XXIe siècle* [Reconnecting knowledge: The challenge of the 21st century]. Paris: Seuil.
- Morin, E. (2000, February). Pardonner, c'est résister à la cruauté du monde [Forgiving is resisting the world's cruelty]. *Le Monde des Débats*.
- Morin, E. (2001a). *Journal de Plozevet*. Paris: Editions de l'Aube.
- Morin, E. (2001b). *Seven complex lessons in education for the future*. Paris: UNESCO.
- Morin, E. (2003). *La Méthode, l'humanité de l'humanité, tome 5: L'identité humaine* [Method, humanity of humanity, volume 5. Human identity]. Paris: Seuil.
- Morin, E. (2004a). *Autocritique* [Self-criticism]. Paris: Seuil (Originally published 1959)
- Morin, E. (2004b). *Pour entrer dans le XXIe siècle* [Entering the 21st century]. Paris: Seuil.
- Morin, E. (2005a). *The stars*. Minneapolis: University of Minnesota Press.
- Morin, E. (2005b). *The cinema, or the imaginary man*. Minneapolis: University of Minnesota Press.
- Morin, E. (2005c). Re: From prefix to paradigm. *World Futures: The Journal of General Evolution*, 61, 254-267.
- Morin, E. (2006a). *La Méthode, tome 6. Ethique* [Method, volume 6. Ethics]. Paris: Seuil.

- Morin, E. (2006b). *Le monde moderne et la question juive* [The modern world and the Jewish question]. Paris: Seuil.
- Morin, E. (2007a). *On complexity*. Cresskill, NJ: Hampton Press.
- Morin, E. (2007b). Restricted complexity, general complexity. In C. Gershenson, D. Aerts, & B. Edmonds (Eds.), *Worldviews, science, and us: Philosophy and complexity*. New York: World Scientific Publishing Company.
- Morin, E., & Hulot, E. (2007). *L'an I de l'ère écologique, et dialogue avec Nicolas Hulot* [Year 1 of the ecological era and dialogue with Nicolas Hulot]. Paris: Tallandier.
- Morin, E., & Kern, B. (1999). *Homeland earth: A manifesto for the new millennium*. Cresskill, NJ: Hampton Press.
- Morin, E., & Le Moigne, J.-L. (1999). *L'intelligence de la complexité*. Paris: L'Harmattan.
- Morin, E., Lefort, C., & Castoriadis, C. (1968). *Mai 1968: la brèche: premières réflexions sur les événements* [May 1968: The breach: First reflections on the events]. Paris: Fayard.
- Morin, E., & Nair, S. (1997). *Une politique de civilisation* [A politics of civilization]. Paris: Arléa.
- Morin, E., & Piattelli Palmarini, M. (Eds.). (1978). *L'unité de l'homme* [Human unity] (Vol. 1-3). Paris: Seuil.
- Nicolescu, B. (1997). Levels of complexity and levels of reality: Nature as trans-nature. In B. Pullman (Ed.), *The emergence of complexity in mathematics, physics, chemistry, and biology* (pp. 393-410). Princeton: Princeton University Press.
- Nicolescu, B. (2002). *Manifesto of transdisciplinarity*. Albany: SUNY Press.
- Paz, O. (xxxx). *One earth, four or five worlds: Reflections on contemporary history*. New York: Harvest/HBJ.
- Purser, R. E., & Montuori, A. (Eds.). (1999). *Social creativity* (Vol. 2). Cresskill, NJ: Hampton Press.
- Rosetto Ajello, A. (2003). *Il rigore e la scommessa. Riflessioni sociopedagogiche sul pensiero di Edgar Morin* [Rigor and wager. Sociopedagogical reflections on Edgar Morin's thought]. Caltanissetta: Sciascia.
- Roux-Rouquié, M. (2002). *Le concept de vie chez Edgar Morin. Une biologie pur le XXIe siècle* [Morin's concept of life. A biology for the 21st century]. Paper presented at the 3<sup>o</sup> Conférence d'Epistémologie et de Philosophie. <http://www.mcxapc.org/docs/ateliers/rouquie.htm>.
- Selvini Palazzoli, M. (1990). *The hidden games of organizations*. New York: Routledge.
- Spire, A. (1999). *La pensée Prigogine suivi de trois entretiens avec Gilles Cohen-Tannoudji, Daniel Bensaid, Edgar Morin* [Prigogine thought, followed by three dialogues with Gilles Cohen-Tannoudji, Daniel Bensaid, Edgar Morin]. Paris: Desclée de Brouwer.
- Sztompka, P. (1994). *The sociology of social change*. New York: Blackwell.
- Taylor, M. (2003). *The moment of complexity. Emerging network culture*. Chicago: University of Chicago Press.
- Toffler, A. (1984). *Future shock*. New York: Bantam.
- Touraine, A. (2001). Le complexe l'homme et l'oeuvre. [The complex man and work]. In G. Lopez Ospina & N. Vallejo-Gomez (Eds.), *L'humaniste planétaire. L'humaniste planétaire. Edgar Morin en ses 80 ans—Hommage international* [The planetary humanist. Edgar Morin at 80—An international homage] (pp. 278-283). Quito: UNESCO.
- Ungar, S. (2003). The thick of things: Rouch and Morin's Chronique d'une été reconsidéré. *French Cultural Studies*, 14(5), 5-22.
- Veloso, C. (2003). *Tropical truth: A story of music and revolution in Brazil*. New York: Da Capo Press.

- Watzlawick, P. (1977). *How real is real?* New York: Vintage.
- Westbroek, P. (2004). Gaia, Ockham's razor and the science of complexity. *World Futures: The Journal of General Evolution*, 60(5-6), 407-420.
- Wilshire, B. (1990). *The moral collapse of the university: Professionalism, purity, and alienation*. Albany: SUNY Press.
- Winston, B. (1995). *Claiming the real. The documentary film revisited*. London: British Film Institute.
- Yassine, A. (2000). *Winning the modern world for Islam*. New Britain, PA: Justice and Spirituality Publishing.
- Young, T. (2002, November 30). Twilight of the idols. *The Spectator*.