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Fluid Concepts And Creative Analogies

Describes research projects in cognitive science over the past twenty years, and discusses arithmetical play, analogy, research evaluation, and creativity

Fluid Concepts and Creative Analogies

Hosftadter and his colleagues at The Fluid Analogies Research Group have developed computer models that help describe and explain human discovery, creation and analogical thought. The key issue of perception is investigated through the exploration of playful anagrams, number puzzles, word play and fanciful alphabetical styles, and the result is a survey of cognitive processes. This text presents the results.

Fluid Concepts & Creative Analogies *Basic Books (AZ)*

Describes research projects in cognitive science over the past twenty years, and discusses arithmetical play, analogy, research evaluation, and creativity

Fluid Concepts and Creative Analogies

Fluid Concepts and Creative Analogies Lane, Allen

Om amerikanske forskeres arbejde med kognitiv videnskab og kunstig intelligens i forbindelse med udviklingen af nye computere

Surfaces and Essences *Basic Books (AZ)*

Shows how analogy-making pervades human thought at all levels, influencing the choice of words and phrases in speech, providing guidance in unfamiliar situations, and giving rise to great acts of imagination.

Fluid Concepts and Creative Analogies

I Am a Strange Loop *Basic Books (AZ)*

An original, endlessly thought-provoking, and controversial look at the nature of consciousness and identity argues that the key to understanding selves and consciousness is the "strange loop," a special kind of abstract feedback loop inhabiting our brains.

Similarity and Analogical Reasoning *Cambridge University Press*

Similarity and analogy are fundamental in human cognition. They are crucial for recognition and classification, and have been associated with scientific discovery and creativity. Any adequate understanding of similarity and analogy requires the integration of theory and data from diverse domains. This interdisciplinary volume explores current development in research and theory from psychological, computational, and educational perspectives, and considers their implications for learning and instruction. The distinguished contributors examine the psychological processes involved in reasoning by similarity and analogy, the computational problems encountered in simulating analogical processing in problem solving, and the conditions promoting the application of analogical reasoning in everyday situations.

Cognitive Design for Artificial Minds *Routledge*

Cognitive Design for Artificial Minds explains the crucial role that human cognition research plays in the design and realization of artificial intelligence systems, illustrating the steps necessary for the design of artificial models of cognition. It bridges the gap between the theoretical, experimental, and technological issues addressed in the context of AI of cognitive inspiration and computational cognitive science. Beginning with an overview of the historical, methodological, and technical issues in the field of cognitively inspired artificial intelligence, Lieto illustrates how the cognitive design approach has an important role to play in the development of intelligent AI technologies and plausible computational models of cognition. Introducing a unique perspective that draws upon Cybernetics and early AI principles, Lieto emphasizes the need for an equivalence between cognitive processes and implemented AI procedures, in order to realize biologically and cognitively inspired artificial minds. He also introduces the Minimal Cognitive Grid, a pragmatic method to rank the different degrees of biological and cognitive accuracy of artificial systems in order to project and predict their explanatory power with respect to the natural systems taken as a source of inspiration. Providing a comprehensive overview of cognitive design principles in constructing artificial minds, this text will be essential reading for students and researchers of artificial intelligence and cognitive science.

Metamagical Themas *Basic Books*

Hofstadter's collection of quirky essays is unified by its primary concern: to

examine the way people perceive and think.

Le Ton Beau de Marot *Basic Books (AZ)*

Analyzes the various translations of an obscure French poem to show the endless complexity of humans and their languages

Analogy-making as Perception *Bradford Books*

The psychologist William James observed that "a native talent for perceiving analogies is ... the leading fact in genius of every order." The centrality and the ubiquity of analogy in creative thought have been noted again and again by scientists, artists, and writers, and understanding and modeling analogical thought have emerged as two of the most important challenges for cognitive science. *Analogy-Making as Perception* is based on the premise that analogy-making is fundamentally a high-level perceptual process in which the interaction of perception and concepts gives rise to "conceptual slippages" which allow analogies to be made. It describes Copycat - a computer model of analogymaking, developed by the author with Douglas Hofstadter, that models the complex, subconscious interaction between perception and concepts that underlies the creation of analogies. In Copycat, both concepts and high-level perception are emergent phenomena, arising from large numbers of low-level, parallel, non-deterministic activities. In the spectrum of cognitive modeling approaches, Copycat occupies a unique intermediate position between symbolic systems and connectionist systems a position that is at present the most useful one for understanding the fluidity of concepts and high-level perception.

On one level the work described here is about analogy-making, but on another level it is about cognition in general. It explores such issues as the nature of concepts and perception and the emergence of highly flexible concepts from a lower-level "subcognitive" substrate. Melanie Mitchell, Assistant Professor in the Department of Electrical Engineering and Computer Science at the University of Michigan, is a Fellow of the Michigan Society of Fellows. She is also Director of the Adaptive Computation Program at the Santa Fe Institute.

Conceptual Spaces *MIT Press*

Within cognitive science, two approaches currently dominate the problem of modeling representations. The symbolic approach views cognition as computation involving symbolic manipulation. Connectionism, a special case of associationism, models associations using artificial neuron networks. Peter Gärdenfors offers his theory of conceptual representations as a bridge between the symbolic and connectionist approaches. Symbolic representation is particularly weak at modeling concept learning, which is paramount for understanding many cognitive phenomena. Concept learning is closely tied to the notion of similarity, which is also poorly served by the symbolic approach. Gärdenfors's theory of conceptual spaces presents a framework for representing information on the conceptual level. A conceptual space is built up from geometrical structures based on a number of quality dimensions. The main applications of the theory are on the constructive side of cognitive science: as a constructive model the theory can be applied to the development of artificial systems

capable of solving cognitive tasks. Gärdenfors also shows how conceptual spaces can serve as an explanatory framework for a number of empirical theories, in particular those concerning concept formation, induction, and semantics. His aim is to present a coherent research program that can be used as a basis for more detailed investigations.

Artificial Minds *MIT Press*

Stan Franklin is the perfect tour guide through the contemporary interdisciplinary matrix of artificial intelligence, cognitive science, cognitive neuroscience, artificial neural networks, artificial life, and robotics that is producing a new paradigm of mind. Along the way, Franklin makes the case for a perspective that rejects a rigid distinction between mind and non-mind in favor of a continuum from less to more mind.

Gödel, Escher, Bach *Penguin Group(CA)*

'What is a self and how can a self come out of inanimate matter?' This is the riddle that drove Douglas Hofstadter to write this extraordinary book. In order to impart his original and personal view on the core mystery of human existence - our intangible sensation of 'I'-ness - Hofstadter defines the playful yet seemingly paradoxical notion of 'strange loop', and explicates this idea using analogies from many disciplines.

Artificial Intelligence and Literary Creativity *Psychology Press*

Is human creativity a wall that AI can never scale? Many people are happy to admit that experts in many domains can be matched by either knowledge-based or sub-symbolic systems, but even some

AI researchers harbor the hope that when it comes to feats of sheer brilliance, mind over machine is an unalterable fact. In this book, the authors push AI toward a time when machines can autonomously write not just humdrum stories of the sort seen for years in AI, but first-rate fiction thought to be the province of human genius. It reports on five years of effort devoted to building a story generator--the BRUTUS.1 system. This book was written for three general reasons. The first theoretical reason for investing time, money, and talent in the quest for a truly creative machine is to work toward an answer to the question of whether we ourselves are machines. The second theoretical reason is to silence those who believe that logic is forever closed off from the emotional world of creativity. The practical rationale for this endeavor, and the third reason, is that machines able to work alongside humans in arenas calling for creativity will have incalculable worth.

Milieus of Creativity *Springer Science & Business Media*

Milieus of Creativity is the second volume in the book series Knowledge and Space. This book deals with spatial disparities of knowledge and the impact of environments, space and contexts on the production and application of knowledge. The contributions in this volume focus on the role of places, environments, and spatial contexts for the emergence and perpetuation of creativity. Is environment a social or a spatial phenomenon? Are only social factors relevant for the development of creativity or should one also include material artefacts and resources in its definition? How can we explain spatial disparities of creativity without falling

victim to geodeterminism? This book offers insights from various disciplines such as environmental psychology, philosophy, and social geography. It presents the results of a research conference at Heidelberg University in September 2006, which was supported by the Klaus Tschira Foundation.

Masters of Deception *Sterling Publishing Company, Inc.*

Celebrates the use of optical illusion in art, presenting the importance and uniqueness of such work, discussing such artists as Salvador Dal  i, M.C. S  sher, and Istv  an Orosz.

The Cruellest Miles: The Heroic Story of Dogs and Men in a Race Against an Epidemic *W. W. Norton & Company*

"A stirring tale of survival, thanks to man's best friend." —Seattle Times
When a deadly diphtheria epidemic swept through Nome, Alaska, in 1925, the local doctor knew that without a fresh batch of antitoxin, his patients would die. The lifesaving serum was a thousand miles away, the port was icebound, and planes couldn't fly in blizzard conditions—only the dogs could make it. The heroic dash of dog teams across the Alaskan wilderness to Nome inspired the annual Iditarod Trail Sled Dog Race and immortalized Balto, the lead dog of the last team whose bronze statue still stands in New York City's Central Park. This is the greatest dog story, never fully told until now.

The Mind's I *Basic Books (AZ)*

Essays from some of the 20th century's greatest thinkers explore topics as diverse as artificial intelligence, evolution, science fiction, philosophy, reductionism, and consciousness, presenting a variety of conflicting visions

of the self and the soul. Illustrations.

A Program for the Solution of a Class of Geometric-analogy Intelligence-test Questions

The novel organization of the program in terms of figure descriptions, which are analyzed to find transformation rules, and rule descriptions, which are analyzed to find 'common generalizations' of pairs of transformation rules, has implications for the design of problem-solving programs and for machine learning. These implications are discussed at some length and suggestions are made for work on pattern-recognition and learning techniques based on ideas developed in the course of the present investigation.

The Emotion Machine *Simon and Schuster*

In this mind-expanding book, scientific pioneer Marvin Minsky continues his groundbreaking research, offering a fascinating new model for how our minds work. He argues persuasively that emotions, intuitions, and feelings are not distinct things, but different ways of thinking. By examining these different forms of mind activity, Minsky says, we can explain why our thought sometimes takes the form of carefully reasoned analysis and at other times turns to emotion. He shows how our minds progress from simple, instinctive kinds of thought to more complex forms, such as consciousness or self-awareness. And he argues that because we tend to see our thinking as fragmented, we fail to appreciate what powerful thinkers we really are. Indeed, says Minsky, if thinking can be understood as the step-by-step process that it is, then we can build machines -- artificial intelligences -- that not only can assist with our thinking

by thinking as we do but have the potential to be as conscious as we are. Eloquenty written, *The Emotion Machine* is an intriguing look into a future where more powerful artificial intelligences await.

The Sensory Order *University of Chicago Press*

The Nobel Prize-winning economist explores how the mind works—an early landmark in the field of cognitive science. *The Sensory Order*, first published in 1952, sets forth F. A. Hayek's classic theory of mind in which he describes the mental mechanism that classifies perceptions that cannot be accounted for by physical laws. Though Hayek is more commonly known as an icon in the field of economics, his genius was wide-ranging—and his contribution to theoretical psychology is of continuing significance to cognitive scientists as well as to economists interested in the interplay between psychology and market systems, and has been addressed in the work of Thomas Szasz, Gerald Edelman, and Joaquin Fuster. “A most encouraging example of a sustained attempt to bring together information, inference, and hypothesis in the several fields of biology, psychology, and philosophy.”—Quarterly Review of Biology

The Big Book of Concepts *MIT Press*

Concepts embody our knowledge of the kinds of things there are in the world. Tying our past experiences to our present interactions with the environment, they enable us to recognize and understand new objects and events. Concepts are also relevant to understanding domains such as social situations, personality types, and even artistic styles. Yet like other

phenomenologically simple cognitive processes such as walking or understanding speech, concept formation and use are maddeningly complex. Research since the 1970s and the decline of the “classical view” of concepts have greatly illuminated the psychology of concepts. But persistent theoretical disputes have sometimes obscured this progress. *The Big Book of Concepts* goes beyond those disputes to reveal the advances that have been made, focusing on the major empirical discoveries. By reviewing and evaluating research on diverse topics such as category learning, word meaning, conceptual development in infants and children, and the basic level of categorization, the book develops a much broader range of criteria than is usual for evaluating theories of concepts.

Software Security Engineering *Addison-Wesley Professional*

Software Security Engineering draws extensively on the systematic approach developed for the Build Security In (BSI) Web site. Sponsored by the Department of Homeland Security Software Assurance Program, the BSI site offers a host of tools, guidelines, rules, principles, and other resources to help project managers address security issues in every phase of the software development life cycle (SDLC). The book's expert authors, themselves frequent contributors to the BSI site, represent two well-known resources in the security world: the CERT Program at the Software Engineering Institute (SEI) and Cigital, Inc., a consulting firm specializing in software security. This book will help you understand why Software security is about more than just eliminating vulnerabilities and

conducting penetration tests Network security mechanisms and IT infrastructure security services do not sufficiently protect application software from security risks Software security initiatives should follow a risk-management approach to identify priorities and to define what is “good enough”-understanding that software security risks will change throughout the SDLC Project managers and software engineers need to learn to think like an attacker in order to address the range of functions that software should not do, and how software can better resist, tolerate, and recover when under attack

That Mad Ache: A Novel/Translator, Trader: An Essay *Basic Books (AZ)*

Set in Paris in the mid-1960s, Lucile, a young, rootless woman, finds herself torn between a fifty-year-old businessman and a thirty-year-old hot-blooded, impulsive editor; and, in a companion to the novel, the translator describes the process of rewriting

Principles of Synthetic Intelligence *Oxford University Press*

From the Foreword: "In this book Joscha Bach introduces Dietrich Dörner's PSI architecture and Joscha's implementation of the MicroPSI architecture. These architectures and their implementation have several lessons for other architectures and models. Most notably, the PSI architecture includes drives and thus directly addresses questions of emotional behavior. An architecture including drives helps clarify how emotions could arise. It also changes the way that the architecture works on a fundamental level, providing an architecture more suited for behaving autonomously in a simulated world. PSI

includes three types of drives, physiological (e.g., hunger), social (i.e., affiliation needs), and cognitive (i.e., reduction of uncertainty and expression of competency). These drives routinely influence goal formation and knowledge selection and application. The resulting architecture generates new kinds of behaviors, including context dependent memories, socially motivated behavior, and internally motivated task switching. This architecture illustrates how emotions and physical drives can be included in an embodied cognitive architecture. The PSI architecture, while including perceptual, motor, learning, and cognitive processing components, also includes several novel knowledge representations: temporal structures, spatial memories, and several new information processing mechanisms and behaviors, including progress through types of knowledge sources when problem solving (the Rasmussen ladder), and knowledge-based hierarchical active vision. These mechanisms and representations suggest ways for making other architectures more realistic, more accurate, and easier to use. The architecture is demonstrated in the Island simulated environment. While it may look like a simple game, it was carefully designed to allow multiple tasks to be pursued and provides ways to satisfy the multiple drives. It would be useful in its own right for developing other architectures interested in multi-tasking, long-term learning, social interaction, embodied architectures, and related aspects of behavior that arise in a complex but tractable real-time environment. The resulting models are not presented as validated cognitive models, but as theoretical explorations in the space of architectures for generating behavior. The sweep of the

architecture can thus be larger-it presents a new cognitive architecture attempting to provide a unified theory of cognition. It attempts to cover perhaps the largest number of phenomena to date. This is not a typical cognitive modeling work, but one that I believe that we can learn much from." --Frank E. Ritter, Series Editor Although computational models of cognition have become very popular, these models are relatively limited in their coverage of cognition-- they usually only emphasize problem solving and reasoning, or treat perception and motivation as isolated modules. The first architecture to cover cognition more broadly is PSI theory, developed by Dietrich Dörner. By integrating motivation and emotion with perception and reasoning, and including grounded neuro-symbolic representations, PSI contributes significantly to an integrated understanding of the mind. It provides a conceptual framework that highlights the relationships between perception and memory, language and mental representation, reasoning and motivation, emotion and cognition, autonomy and social behavior. It is, however, unfortunate that PSI's origin in psychology, its methodology, and its lack of documentation have limited its impact. The proposed book adapts Psi theory to cognitive science and artificial intelligence, by elucidating both its theoretical and technical frameworks, and clarifying its contribution to how we have come to understand cognition.

The Everything Store *Little, Brown*

The authoritative account of the rise of Amazon and its intensely driven founder, Jeff Bezos, praised by the *Seattle Times* as "the definitive account of how a tech icon came to life." Amazon.com started

off delivering books through the mail. But its visionary founder, Jeff Bezos, wasn't content with being a bookseller. He wanted Amazon to become the everything store, offering limitless selection and seductive convenience at disruptively low prices. To do so, he developed a corporate culture of relentless ambition and secrecy that's never been cracked. Until now. Brad Stone enjoyed unprecedented access to current and former Amazon employees and Bezos family members, giving readers the first in-depth, fly-on-the-wall account of life at Amazon. Compared to tech's other elite innovators -- Jobs, Gates, Zuckerberg -- Bezos is a private man. But he stands out for his restless pursuit of new markets, leading Amazon into risky new ventures like the Kindle and cloud computing, and transforming retail in the same way Henry Ford revolutionized manufacturing. The Everything Store is the revealing, definitive biography of the company that placed one of the first and largest bets on the Internet and forever changed the way we shop and read.

Heart: A History *Farrar, Straus and Giroux*

The bestselling author of *Intern and Doctored* tells the story of the thing that makes us tick For centuries, the human heart seemed beyond our understanding: an inscrutable shuddering mass that was somehow the driver of emotion and the seat of the soul. As the cardiologist and bestselling author Sandeep Jauhar shows in *Heart: A History*, it was only recently that we demolished age-old taboos and devised the transformative procedures that have changed the way we live. Deftly alternating between key historical episodes and his own work, Jauhar tells

the colorful and little-known story of the doctors who risked their careers and the patients who risked their lives to know and heal our most vital organ. He introduces us to Daniel Hale Williams, the African American doctor who performed the world's first open heart surgery in Gilded Age Chicago. We meet C. Walton Lillehei, who connected a patient's circulatory system to a healthy donor's, paving the way for the heart-lung machine. And we encounter Wilson Greatbatch, who saved millions by inventing the pacemaker—by accident. Jauhar deftly braids these tales of discovery, hubris, and sorrow with moving accounts of his family's history of heart ailments and the patients he's treated over many years. He also confronts the limits of medical technology, arguing that future progress will depend more on how we choose to live than on the devices we invent. Affecting, engaging, and beautifully written, *Heart: A History* takes the full measure of the only organ that can move itself.

The Turing Test *Springer Science & Business Media*

This book gives the most comprehensive, in depth and contemporary assessment of this classic topic in artificial intelligence. It is the first to elaborate in such detail the numerous conflicting points of view on many aspects of this multifaceted, controversial subject. It offers new insights into Turing's own interpretation and is essential reading for research on the Turing test and for teaching undergraduate and graduate students in philosophy, computer science, and cognitive science.

The Creative Mind *Routledge*

How is it possible to think new thoughts? What is creativity and can science explain it? And just how did Coleridge dream up the creatures of *The Ancient Mariner*? When *The Creative Mind: Myths and Mechanisms* was first published, Margaret A. Boden's bold and provocative exploration of creativity broke new ground. Boden uses examples such as jazz improvisation, chess, story writing, physics, and the music of Mozart, together with computing models from the field of artificial intelligence to uncover the nature of human creativity in the arts. The second edition of *The Creative Mind* has been updated to include recent developments in artificial intelligence, with a new preface, introduction and conclusion by the author. It is an essential work for anyone interested in the creativity of the human mind.

The Analogical Mind *MIT Press*

Analogy has been the focus of extensive research in cognitive science over the past two decades. Through analogy, novel situations and problems can be understood in terms of familiar ones. Indeed, a case can be made for analogical processing as the very core of cognition. This is the first book to span the full range of disciplines concerned with analogy. Its contributors represent cognitive, developmental, and comparative psychology; neuroscience; artificial intelligence; linguistics; and philosophy. The book is divided into three parts. The first part describes computational models of analogy as well as their relation to computational models of other cognitive processes. The second part addresses the role of analogy in a wide range of cognitive tasks, such as forming complex cognitive structures, conveying emotion, making decisions,

and solving problems. The third part looks at the development of analogy in children and the possible use of analogy in nonhuman primates. Contributors Miriam Bassok, Consuelo B. Boronat, Brian Bowdle, Fintan Costello, Kevin Dunbar, Gilles Fauconnier, Kenneth D. Forbus, Dedre Gentner, Usha Goswami, Brett Gray, Graeme S. Halford, Douglas Hofstadter, Keith J. Holyoak, John E. Hummel, Mark T. Keane, Boicho N. Kokinov, Arthur B. Markman, C. Page Moreau, David L. Oden, Alexander A. Petrov, Steven Phillips, David Premack, Cameron Shelley, Paul Thagard, Roger K.R. Thompson, William H. Wilson, Phillip Wolff

Computational Creativity *Springer*

Computational creativity is an emerging field of research within AI that focuses on the capacity of machines to both generate and evaluate novel outputs that would, if produced by a human, be considered creative. This book is intended to be a canonical text for this new discipline, through which researchers and students can absorb the philosophy of the field and learn its methods. After a comprehensive introduction to the idea of systematizing creativity the contributions address topics such as autonomous intentionality, conceptual blending, literature mining, computational design, models of novelty, evaluating progress in related research, computer-supported human creativity and human-supported computer creativity, common-sense knowledge, and models of social creativity. Products of this research will have real consequences for the worlds of entertainment, culture, science, education, design, and art, in addition to artificial intelligence, and the book will be of value to practitioners and students

in all these domains.

The Question of Artificial Intelligence *Routledge*

Originally published in 1987 when Artificial Intelligence (AI) was one of the most hotly debated subjects of the moment; there was widespread feeling that it was a field whose 'time had come', that intelligent machines lay 'just around the corner'. Moreover, with the onset of the revolution in information technology and the proclamation from all corners that we were moving into an 'information society', developments in AI and advanced computing were seen in many countries as having both strategic and economic importance. Yet, aside from the glare of publicity that tends to surround new scientific ideas or technologies, it must be remembered that AI was a relative newcomer among the sciences; that it had often been the subject of bitter controversy; and that though it had been promising to create intelligent machines for some 40 years prior to publication, many believe that it had actually displayed very little substantive progress. With this background in mind, the aim of this collection of essays was to take a novel look at AI. Rather than following the path of old well-trodden arguments about definitions of intelligence or the status of computer chess programs, the objective was to bring new perspectives to the subject in order to present it in a different light. Indeed, instead of simply adding to the endless wrangling 'for' and 'against' AI, the source of such divisions is made a topic for analysis in its own right. Drawing on ideas from the philosophy and sociology of scientific knowledge, this collection therefore broke new ground. Moreover, although a great deal had been written about the

social and cultural impact of AI, little had been said of the culture of AI scientists themselves – including their discourse and style of thought, as well as the choices, judgements, negotiations and competitive struggles for resources that had shaped the genesis and development of the paradigmatic structure of their discipline at the time. Yet, sociologists of science have demonstrated that the analysis of factors such as these is a necessary part of understanding the development of scientific knowledge. Hence, it was hoped that this collection would help to redress the imbalance and provide a broader and more interesting picture of AI.

International Handbook on Giftedness *Springer Science & Business Media*

This handbook presents a panoramic view of the field of giftedness. It offers a comprehensive and authoritative account on what giftedness is, how it is measured, how it is developed, and how it affects individuals, societies, and the world as a whole. It examines in detail recent advances in gifted education. The handbook also presents the latest advances in the fast-developing areas of giftedness research and practice, such as gifted education and policy implications. In addition, coverage provides fresh ideas, from entrepreneurial giftedness to business talent, which will help galvanize and guide the study of giftedness for the next decade.

Computers and Creativity *Springer Science & Business Media*

This interdisciplinary volume introduces new theories and ideas on creativity from the perspectives of science and art.

Featuring contributions from leading researchers, theorists and artists working in artificial intelligence, generative art, creative computing, music composition, and cybernetics, the book examines the relationship between computation and creativity from both analytic and practical perspectives. Each contributor describes innovative new ways creativity can be understood through, and inspired by, computers. The book tackles critical philosophical questions and discusses the major issues raised by computational creativity, including: whether a computer can exhibit creativity independently of its creator; what kinds of creativity are possible in light of our knowledge from computational simulation, artificial intelligence, evolutionary theory and information theory; and whether we can begin to automate the evaluation of aesthetics and creativity in silico. These important, often controversial questions are contextualised by current thinking in computational creative arts practice. Leading artistic practitioners discuss their approaches to working creatively with computational systems in a diverse array of media, including music, sound art, visual art, and interactivity. The volume also includes a comprehensive review of computational aesthetic evaluation and judgement research, alongside discussion and insights from pioneering artists working with computation as a creative medium over the last fifty years. A distinguishing feature of this volume is that it explains and grounds new theoretical ideas on creativity through practical applications and creative practice. *Computers and Creativity* will appeal to theorists, researchers in artificial intelligence, generative and evolutionary computing, practicing artists and musicians,

students and any reader generally interested in understanding how computers can impact upon creativity. It bridges concepts from computer science, psychology, neuroscience, visual art, music and philosophy in an accessible way, illustrating how computers are fundamentally changing what we can imagine and create, and how we might shape the creativity of the future. Computers and Creativity will appeal to theorists, researchers in artificial intelligence, generative and evolutionary computing, practicing artists and musicians, students and any reader generally interested in understanding how computers can impact upon creativity. It bridges concepts from computer science, psychology, neuroscience, visual art, music and philosophy in an accessible way, illustrating how computers are fundamentally changing what we can imagine and create, and how we might shape the creativity of the future.

Analogies Between Analogies *Univ of California Press*

During his forty-year association with the Los Alamos National Laboratory, mathematician Stanislaw Ulam wrote many Laboratory Reports, usually in collaboration with colleagues. Some of them remain classified to this day. The rest are gathered in this volume and for the first time are easily accesible to mathematicians, physical scientists, and historians. The timeliness of these papers is remarkable. They contain seminal ideas in such fields as nonlinear stochastic processes, parallel computation, cellular automata, and mathematical biology. The collection is of historical interest as well, During and after World War II, the complexity of problems at the frontiers of science

surpassed any technology that had ever existed. Electronic computing machines had to be developed and new computing methods had to be invented based on the most abstract ideas from the foundations of mathematics and theoretical physics. To these problems and others in physics, astronomy, and biology, Ulam was able to bring both general insights and specific conceptual contributions. His fertile ideas were far ahead of their time, and ranged over many branches of science. In fact, his mathematical versatility fulfilled the statement of his friend and mentor, the great Polish mathematician Stefan Banach, who claimed that the very best mathematicians see "analogies between analogies." Introduced by A. R. Bednarek and Francoise Ulam, these Los Alamos reports represent a unique view of one of the twentieth century's intellectual masters and scientific pioneers. This title is part of UC Press's Voices Revived program, which commemorates University of California Press's mission to seek out and cultivate the brightest minds and give them voice, reach, and impact. Drawing on a backlist dating to 1893, Voices Revived makes high-quality, peer-reviewed scholarship accessible once again using print-on-demand technology. This title was originally published in 1990.

Textbook Of Transpersonal Psychiatry And Psychology *Basic Books*

This important new book brings together the work of top scholars and clinicians at leading universities and medical centers on the benefits and risks of transpersonal therapy. After comparing a variety of multicultural approaches -- Zen Buddhism, existential phenomenology, and Christian

mysticism, among many others -- the book offers a wealth of information on specific disorders and the application of transpersonal psychology techniques such as visualization, breathwork, and "past lives" regression. With solid scholarship, wide scope, and accessible style, *Textbook of Transpersonal Psychiatry and Psychology* will become the standard work for students, researchers, clinicians, and lay readers interested in extending psychiatry and psychology into sciences that describe the functioning of the human mind, thereby building bridges between those disciplines and spirituality.

Creativity and the Agile Mind *Walter de Gruyter*

Creativity is a highly-prized quality in any modern endeavor, whether artistic, scientific or professional. Though a much-studied subject, and the topic of a great many case-studies, the field of creativity research is still very much an open one. Creativity remains a field

where absolute definitions hold very little water, and where true insight can only emerge when we properly appreciate - from a nuanced, multi-disciplinary perspective - the crucial distinction between the producer's perspective and the consumer's perspective. Theories that afford us a critical appreciation of a creative work do not similarly afford a explanatory insight into the origins and development of the work. As researchers, we must approach creativity both as producers - to consider the vast search-spaces that a producer encounters, and to appreciate the need for heuristic strategies for negotiating this space - and as consumers, to appreciate the levels of shared knowledge (foreground and background) that is exploited by the producer to achieve a knowingly creative effect in the mind of the consumer. This volume thus brings together both producers and consumers in a cross-disciplinary exploration of this complex, many-faceted phenomenon.