

## DEDICATION

Information Integration Theory and Functional Measurement rest on extensive pioneering work by dedicated investigators in many countries. Their work has given substance and generality to the three laws of information integration. This acknowledgment is brief but it will at least recognize the many who have made this integration-theoretical approach solid and sustaining.

Foremost are my PhD students at UC San Diego. Margaret Armstrong's (1984) landmark thesis presented several ingenious experiments that illustrate single-person analysis in wife-husband discussion and decision. Clifford Butzin did important work on algebraic laws in children's judgment of fairness and understanding of ulterior motivation. John Clavadetscher showed how integration theory provided an effective base of algebraic laws for certain geometrical illusions, including a two-process analysis of the Müller-Lyer illusion. Diane Cuneo helped with an extensive series of experiments that revealed a general adding-type law in young children, which not only demonstrated the falsity of two basic premises of Piagetian theory but did so by presenting a constructive alternative. Her PhD thesis was remarkable for multiple-session experiments that allowed single-child analysis to verify the general-purpose adding-type law for judgments of quantity at age 3½ years. Arthur Farkas did several basic studies of integration laws of equity/fairness. Cheryl Graesser's work established the validity of the social averaging theorem for group discussion and the invalidity of the competing theory of social decision schemes. Edward Karpp studied integration laws in intuitive physics. Manuel Leon revealed algebraic integration laws in fundamental studies of children's moral judgments. Lola Lopes presented a number of results in judgment–decision theory, including her subrational confidence-proportional law in risky bets. Gregg Oden began his extensive studies of integration laws in language including the extension of fuzzy set theory from normative to psychological ground. Anne Schlottmann has continued with insightful studies of numerous issues of child development. Jim Shanteau was my coworker in developing and applying the linear fan theorem for multiplying laws. He has since done outstanding work in diverse issues in judgment–decision theory. Invalidity in the then-dominant method of magnitude estimation coupled with validity of the method of functional rating was demonstrated in work with David Weiss. William Wright's ingenious design showed that people do have personal knowledge of the causes of their actions, contrary to a once-prominent denial, after resolving two subtle difficulties that had vitiated previous efforts. James Zalinski worked extensively to develop the Average computer program for estimating both weight and

value parameters for the ubiquitous averaging law. Shu-hong Zhu demonstrated cognitive reality of language prototypes using methods of cognitive algebra that can be generally useful. Special thanks to Rita Malone for invaluable secretarial work.

Other students at UC San Diego also made significant contributions. Philip Moore's clever experiments indicated an averaging law for integration of legal information and he has extended his approach, including applications to analysis of anxiety. John Verdi performed a notable pioneering study of algebra of conflicting social obligations (see Figure 7.3). Marilyn Borges and Barbara Sawyers Canady ingeniously showed that verbal quantifiers such as *many* and *some*, obeyed a multiplying law with a nonverbal numerosity response. Joe Farley did a remarkable thesis showing that food-shock integration followed a simple integration law that validated bar-press rate by rats as a true linear response. Further evidence for an integration law and linear bar press response was presented by Robert Hawkins and John Yeomans. An ingenious thesis by Leo Stefurak showed that red-green color contrast followed an additive law and that the method of functional rating was linearly related to relative activation of red and green cones. Jeneva Lane helped uncover an adding-type model for gratitude. Donald Blankenship presented evidence for a simple algebra of time judgment.

Postdocs and other visitors to UCSD have done a wide array of impressive work. Martin Kaplan developed a mood-affect integration theory superior to once-prominent alternatives and also did insightful studies of legal psychology. Friedrich Wilkening has done much fine work on children's algebraic rules of intuitive physics. Wilfried Hommers' extensive studies of moral judgment led to theory markedly superior to Kohlberg's stage theory and with practical relevance to legal psychology. Robert McBride made notable extensions of integration theory to the chemical senses. Several alternative formulations to Information Integration Theory were eliminated in penetrating early studies by Michael Birnbaum. Applications to language processing were made by Dominic Massaro. Edward Carterette made useful contributions to integration psychophysics as did Larry Marks. Meticulous work by Rhoda Lindner revealed clear superiority of Information Integration Theory to social balance theory.

At UCLA, Ann Norman Jacobson and Anita Lampel were my coworkers in early work on Information Integration Theory. Richard Bogartz did insightful studies, both in developmental psychology and mathematical analysis. Dwight Risky's PhD thesis solidly supported the interpretation of primacy as attention decrement, not change of meaning. Ralph Stewart, Steven Hubert, Samuel Himmelfarb, and Penny Brooke made useful contributions.

Valuable investigations have also been made by persons in other institutions in the U.S. Foremost among these is Clyde Hendrick who cogently resolved several critical issues in the early theoretical development when the validity of the theory was an open question. Colleen Surber Moore continues making insightful contributions to developmental psychology. Several important contributions were made by Thomas Ostrom. Jordan Louviere demonstrated the importance of Information Integration Theory for optimal scaling. Reid Hastie made useful contributions, as did Irwin Levin. James Jaccard showed the importance of functional measurement for studying social attitudes. Paul Sorum has made instructive studies in medical science, especially in collaboration with Etienne Mullet and Maria Teresa Muñoz Sastre. Bill Jones did early pain integration studies as well as integration models for the tau and kappa effects. Edmund Howe did insightful work on legal judgments. Rhoda Lindner's PhD article replaced Heider's balance theory with Information Integration Theory. For intuitive statistics, Jerome Busameyer showed clear superiority of the integration laws to standard normative theory.

Investigators in other countries have made investigations of diverse issues. In Sweden, Lennart Sjöberg made early insightful contributions to psychological measurement theory. In Italy, Sergio Masin's cogent theoretical-experimental work clarified certain theoretical controversies, especially in psychophysics. Sergio also organized the first biennial International Conference on Information Integration Theory and Functional Measurement in Padua in 2007. Michele Vicovaro has reported neat work on intuitive physics of collisions. Giulio Vidotto and Marco Vicentini have applied functional measurement in pioneering work on interpersonal trust.

In Portugal, truly fundamental work on emotion has been accomplished in a series of articles by Armando Oliveira and his associates, including Ana Duarte Silva, Nuno de Sá Teixeira, Ricardo Viegas, Isabel Fonseca, Miguel Oliveira, Telmo Pereira, and Joana Gonçalves. Their work on face cognition has done much to clarify the long confusion over holistic cognition and reduced it to mathematical law.

In Belgium, Peter Theuns has made novel progress on the perplexing problem of comparing subjective well-being (Quality of Life) across different cultures with colleagues Barbara Baran (Poland), Greet Hellenbosch, Valerie Möller (South Africa), Habib Tiliouine (Algeria), and Rebecca Van Vaerenberg. Joeri Hofmans has made a cogent unification of integration laws with cluster analysis for analysis of individual differences. Hofmans also served as editor of the proceedings at the second and third international conferences on Information Integration Theory and Functional Measurement published in *Psicologica* (2010, 2012).

Olivier Mairesse has studied homeostatic circadian rhythms in daytime sleepiness. Good work has also been done by Laurence Turcksin and Daniel Neu. In the Netherlands, Frederik van Acker has studied breast feeding practices. In East Germany, useful contributions were made by Andrea Abele and Peter Petzold.

In India, extensive careful studies by Ramadhar Singh found solid support for the integration laws, both in managerial psychology and in ingenious experiments with children. In Israel, Yuval Wolf has done important work with children and also on criminal psychology. Insightful applications by Danny Algom clarified certain issues in psychophysics. In Taiwan, Mingshen Wang and Jen-Shou Yang have done basic studies of organizational psychology. These cross-cultural studies extend the generality of the three integration laws.

In Canada, Lonozou Kpanake has conducted studies on medical ethics and studies on ethics in politics in western African countries, in collaboration with Simliwa Kolou Dassa and Akouda Patassi.

In France, María Teresa Muñoz Sastre has done insightful studies of a number of ethical life issues including physician-assisted suicide and physician confidentiality, in collaboration with Julie Camus, María Dolores Cano Romero, Mélanie Esterle, Stéphanie Frileux, Alexandra Gamelin, Myriam Guedj, Astrid Lhermitte, Céline Mas, Julie Mazoyer, Mathilde Nacher, Elodie Pajot, and Charlotte Petitfils. Etienne Mullet has studied a remarkably diverse array of social and educational issues with innumerable collaborators who include: Roseline Armange, Badiâa Bouazzaoui, Gérard Chasseigne, Joel Crétenet, Vincent Dru, Anne Fernandez, Eric Fruchart, Caroline Giraudeau, Mélanie Gauché, Michèle Girard, Laurent Guillet, Marco Heimann, Danièle Hermand, Peggy Lafon, Catherine Hervé Ligneau, Valérie Igier, Véronique Léoni, Laurent Liégeois, Laetitia Marquié, Stéphanie Nann, Nathalie Przygotski, Bernadette Rogé, Patricia Rulence-Pâques, Natalie Teisseyre, and Geneviève Vinsonneau.

Etienne Mullet has also energized workers in other countries. Most striking is the work on forgiveness after the religious civil wars in Lebanon with Fabiola Azar (see *Algebra of Forgiveness* in Chapter 7). Others of his international coworkers include Aminata Ouédraogo in Burkina Faso (see her *In Memoriam*, p. 301 in my *Unified Social Cognition*), Germano Vera Cruz in Mozambique, Immaculée Mukashema in Rwanda, Orneilhia Zounon in Benin, Ramadan Ahmed in Kuwait, Asli Bugay in Turkey, Shanmukh Kamble in India, Felix Neto, Maria da Conceição Pinto, and Joana Sequeira Neto in Portugal, Ioannis Makris and Dimitra Macri in Greece, Bogdan Popa in Romania, Ernesto López Ramirez and Guadalupe Morales Martinez in Mexico, Cecilia Olivari in Chile, and Ana Gabriela Soares Guedez in Venezuela, as well as Claudia Pineda

Marín and Wilson López López who have studied forgiveness in the civil wars in Columbia.

This brief acknowledgement does not begin to do justice to the earnest work and cogent contributions of these dedicated pioneers. It is fitting to conclude with Aristotle's judgment on empirical science:

*Each one adds something to our knowledge of nature . . . and from the whole arises a certain grandeur.*