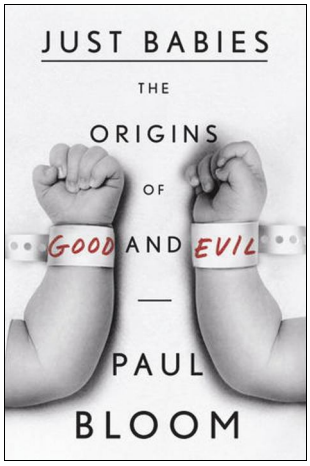

Just Babies: The Origins of Good and Evil. Paul Bloom. Crown Publishers, A Division of Random House, Inc. 1745 Broadway, NY 10019, New York, 2013. 288 pp. Price: US$ 19.00.

'Man was destined for society. His morality, therefore, was to be formed to this object.'

Thomas Jefferson, from Paris,
in a letter to his nephew Peter Carr[1],
10 August 1787

Paul Bloom begins his book on the origins of morality in human infants with this quote from Thomas Jefferson. It appears, however, to be a quote taken in the wrong context, because this is what precedes the selected lines which Jefferson wrote when he was the United States Minister to France, prior to becoming President, as advice to his nephew: '*[On]Moral Philosophy. I think it lost time to attend lectures on this branch. He who made us would have been a pitiful bungler, if he had made the rules of our moral conduct a matter of science.*'

And yet this is precisely the thesis of the book under review: that the moral sense in humans is innate, can be scrutinized using a scientific approach, and can even be studied in babies that are just a few months old.

Just as evolutionary biologists have been interested in understanding the origin and maintenance of co-operation in human and non-human societies that range from those of insects and shrimps, through naked mole rats to bonobos, evolutionary psychologists and behavioural biologists have also been interested in the phylogeny of morality. Is there a moral sense in non-human primates as occurs in humans? When does prosocial behaviour, i.e. behaviour that involves helping others, manifest itself? Is a moral sense innate? The ontogeny of morality in human infants is the professed focus of this book.

In the first 100 pages or so, Bloom describes several recent experiments which claim to demonstrate that human babies from a very young age, just a few months in some instances, are able to distinguish 'good' from 'bad', and are more attracted to helping behaviours as opposed to non-cooperative or indifferent behaviours. Experimenters employ puppets or human agents to enact situations in which infants are tested to see whether they are more interested in the agent that performed a 'helping' act versus one that was 'unjust' or indifferent. In very young infants, the duration of gazing at a particular experimental choice is used as evidence for a choice, and in older infants pointing towards a choice or the response to simple questions about the experiments is believed to be indicative of a choice. The experimental tasks involve, for example, agents that help other agents to push loads uphill versus those that do not, or consist of testing whether young children would spontaneously help an experimenter who had accidentally dropped an object and could not reach it, versus a scenario in which an experimenter intentionally dropped an object. Infants appear to be able to distinguish the contexts of these situations and act accordingly. For example, toddlers are more prone to help someone who has accidentally dropped an object and cannot reach it, than someone who dropped a pencil purposefully. Bloom seems to unambiguously assert that such experiments, especially when done on very young infants, are evidence that a 'moral' sense is innate.

Now there appear to be several problems with such an assertion. It is known that most organisms, and humans are no exception, are quick to learn during their early life and also to pick up on subliminal cues that might even come from the experimenters during such experiments. One has only to think of Clever Hans, the horse that was believed to be able to do arithmetic, but was actually picking up on cues provided by his human handler during the tests[2]. Since it is impossible and, of course, absolutely unethical to isolate human babies at birth and then test them on tasks that distinguish helping or 'good' behaviour from antisocial behaviour, the issue of innateness can never really be addressed. Therefore, the essential thesis of this book is called into question. It appears to be much more fruitful to examine the origins of prosocial behaviour in humans from the perspective of what researchers such as Michael Tomasello call attitudinal reciprocity[3,4]. According to this view, individuals, including infants, develop a positive relationship and thereby a positive attitude towards those who have helped them in the past. Such a positive attitude, especially within the closeness of a family, where helping is usually inevitable, would help foster prosocial behaviour; such behaviour would get positively reinforced over time. It could follow from this that infants, whose psychological ontogeny has occurred within socially pathological conditions, may view 'abnormal' choices as 'right' compared to socially acceptable norms. To the best of my knowledge, no studies on the development of a moral sense in infants with such social handicaps have been conducted.

It appears to be the accepted view that human prosocial behaviour is an adaptation to human evolution in small social groups where helping would have ensured both individual as well as group survival[5,6]. From the perspective of innateness, there is also evidence that genes could be involved at many levels in the development of such prosocial behaviour, and therefore such behaviour could have an innate component which may be ablated or enhanced by the social environment. For example, nurturing behaviour in mice has a genetic component; mouse mothers incapable of nurturing behaviour may in turn produce offspring with faulty social behaviour. Neuropeptides such as oxytocin may govern social interactions; oxytocin levels in humans can modulate affiliative relationships[7]. There is also evidence that empathy, or the ability to have an internal representation of another individual's emotional state, has a genetic basis[8]. The lack of empathy has been implicated in several human social pathologies[9]. Clearly, the development of prosocial behaviour, which is so essential to the social fabric of human and other animal societies, is an important and fascinating field of study.

The first 100 pages of this book give the reader a selection of the various kinds of experiments recently conducted

with very young human infants, none of which solves the issue of innateness as already mentioned, although they certainly make for interesting reading. What follows in the remaining 100 pages or so has nothing to do with babies at all, but rather moves on disconnectedly to racial issues, examples of the development of 'group identity' behaviour within school summer camps reminiscent of William Golding's classic social psychology novel *Lord of the Flies*, and several rather graphic sections such as the origins of disgust. I wished then that the book was shorter.

Considering the contemporary culture of sound bites, information capsules and such pabulum, where textured arguments are often lost, one bemoans a lost opportunity to explain the evolution of ethics to a lay audience, and to present newer findings within a multiplicity of contexts. The phylogeny and ontogeny of morality as well as the new science of moral psychology deserved better treatment.

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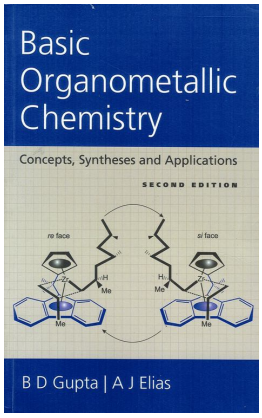

Basic Organometallic Chemistry: Concepts, Syntheses and Applications. B. D. Gupta and A. J. Elias. Universities Press (India) Private Ltd, Hyderabad. 2013. 2nd edn. 513 pp. Price: Rs 695.

The book under review is a considerably improved and updated version of the earlier edition brought out in 2009 and fulfils the needs of chemistry students at the postgraduate, and senior undergraduate levels as well as research scholars. It is an admirable blend of basic facts, conceptual framework and industrial applications. The coverage of the various topics is comprehensive and the text is enlivened with box items describing historical landmarks, personalities involved in the development of the subject, interesting episodes and real-world applications.

Organometallic chemistry, broadly defined as the chemistry of compounds containing metal–carbon bonds, straddles between the traditional bounds of inorganic and organic chemistry, yet transcends both. Prior to 1950, organometallic chemistry of main group elements and their applications in organic synthesis had developed significantly whereas knowledge of transition metal organometallics was sparse. The serendipitous synthesis of dicyclopentadienyl iron (ferrocene) in 1951 by two groups (Kealy and Pauson; Miller, Tebboth and Tremaine) and the recognition of its sandwich structure independently by Wilkinson and Fischer in the following year, heralded a renaissance in transition metal organometallic chemistry, which has witnessed phenomenal growth during the last 60 years. New bonding paradigms have emerged. Compounds with unusual structures and reactivity have been synthesized. Applications of organometallics in industrial catalysis and their use as reagents in organic synthesis have grown rapidly. The importance of the field is reflected in the award of several Nobel Prizes (K. Ziegler and G. Natta, 1955; E. O. Fischer and G. Wilkinson, 1973; W. S. Knowles and R. Nayori, 2001; Y. Chauvin, R. H. Grubbs and R. R. Schrock, 2005 and A. Suzuki, R. F. Heck and E.-I. Negishi, 2010) over the years. The book has succeeded in capturing the essence of these developments and conveying the vibrant nature of the field.

The chapter on 'Eighteen electron rule' provides the theoretical basis for understanding the structure and bonding in transition metal organometallic compounds. This is followed by the descriptive chemistry of metal carbonyls, complexes of alkenes, alkynes, carbenes, carbynes, metallocenes and complexes of other cyclic and acyclic polyenyl ligands (chapters 5–7) and a discussion on the various types of reactions in organometallic chemistry (chapters 8 and 9). The biggest impact organometallic chemistry has made is in industrial catalysis. The book makes an extensive coverage of all important aspects of these developments in seven chapters (chapters 11–17), constituting nearly one-third of the book.

I am particularly delighted to see separate chapters on phosphines and *N*-heterocyclic carbenes, metal clusters, organometallic polymers and the rapidly emerging area of bioorganometallic chemistry. The inclusion of topics such as stereochemical non-rigidity in organometallic compounds, isolobal analogy and Jemmis' mno rules is commendable.

The strength of the book lies in its lucid exposition of the concepts and a large number of exercises at the end of each chapter with solutions provided at the end of the book.

I have a minor criticism which does not detract from the overall excellence of the book. I would like to see a future edition of the book to include a few chapters on main group organometallic chemistry, with emphasis on the spectacular developments in multiple bonding of heavier main group elements. Some of the chapters in the present edition may be slightly abridged in order to keep the length of the new edition not too unwieldy. An alternative would be to rename the book as 'Transition Metal Organometallic Chemistry'.

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