The case for including evolutionary theory into the MRCPsych Curriculum
Crisis in psychiatry

- We need an integrative theoretical framework

- Pharmacology
- Neurotransmitter studies
- Genetic studies
- Social origins of mental disorders
- Psychological
- Developmental
- Behaviourism
- Nosological systems
- Systemic theory
- Attachment theory
- Psychodynamic
Revision of the Postgraduate Curriculum: The Gatsby/Wellcome Neuroscience Project

Neuroscience in our Postgraduate Curriculum

Changing a curriculum is like changing the direction of a supertanker. It moves very slowly, takes ages, but has to be done if you do not want to run aground. We feel it is time to update our postgraduate core training curriculum. Not all of it – 'if it ain't broke don't fix it' has always been a good mantra. But we feel that we are lagging behind in equipping the next generation with some of the new developments that have happened in neuroscience and are likely to impact on the profession of psychiatry during their lifetime.

Simon Wessely, 2016
Finished product

- Curriculum that:
  - contains modern neuroscience
  - relates to clinic practice
  - is considered useful by trainees and trainers
  - incorporates the examination syllabus
“Nothing in biology makes sense except in the light of evolution.”

Theodosius Dobzhansky

thelogicofscience.com
Last 50 years of Nobel prizes in Physiology and Medicine

- An understanding of evolution was necessary in 47 of 50 cases:
Charles Darwin
(1809-1882)

- 1859: The Origin of Species
- 1871: The Descent of Man, and Selection in Relation to Sex

“My object is ... to show that there is no fundamental difference between man and higher mammals in their mental faculties”
The Expression of Emotions in Man and Animals (1872)

- The first scientific study of the significance and expression of emotions in an evolutionary framework
- Became the foundation of
  - Ethology
  - Evolutionary psychology
  - Modern psychiatry
Implications of the Evolutionary Theory

- Evolution is about carrying an advantage that ensures successful reproduction
- Evolution is a law of nature, like gravity
- Every living thing is a result of this process
- Human beings are not exempt, but the result of it
- We share our biology, including behaviours with other animals/living things
- The main difference is the larger brain and the long postnatal development which allow more flexible adaptation to the environment
Developments since Darwin
Developments since Darwin

- Ethology
- Molecular biology:
  - DNA sequencing
  - Behavioural genetics
  - Gene regulation
  - Microbiome
- Statistics
- Computer technology:
  - Internet
  - Mobile technology
  - Network science
- Neuroimaging
- Evolutionary biology & psychology:
  - Inclusive fitness
  - Parental investment
  - Reciprocal altruism
  - Life history theory
  - Gender differences
  - Cognitive
  - Development
  - Social brain theory
Evolutionary biology

- Evolution does not happen in isolation
- There is a complex interaction between organisms and the environment
  - Co-evolution
  - Evolutionary arms race

Schnorr et al 2016
Is evolution relevant to medicine?

Deaths attributable to antimicrobial resistance every year by 2050

North America 317,000
Latin America 392,000
Europe 390,000
Africa 4,150,000
Asia 4,730,000
Oceania 22,000

Source: Review on Antimicrobial Resistance 2014
Is gravity relevant to aircraft engineering?
Ethology: emphasis on integrated understanding of behaviours

- Tinbergen’s 4 questions:

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<th>1. Historical</th>
<th>Proximate</th>
<th>Ultimate</th>
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<tr>
<td></td>
<td>How did it develop?</td>
<td>How did it evolve?</td>
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<tr>
<td>1. Single</td>
<td>How does it work?</td>
<td>What is it for? Adaptive value</td>
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What can learning about evolutionary theory offer to the future generation of psychiatrists?

- An integrative theoretical framework
- Help understanding universal human development
  - Development
  - Emotions
  - Behaviour
  - Learning and cognition
  - Relationships
  - Gene-environmental interaction
  - Life history
- Offer a theoretical platform to understand variation (including gender) and pathology
- Offer an understanding of risk
- Offer a theoretical framework for new treatments
Practical implications: Understanding Gender Differences

Men
- Better spatial skills
- More leaders
- More aggression
- More autism
- More schizophrenia
- More LD

Women
- Better empathy
- More caring
- More eating disorders
- More depression
- More anxiety
- More dementia
Practical implications: Inclusive Fitness & Understanding Risk

- Murder: 10x more common in unrelated than related
  - Except wives
- Stepparents are 100 times more likely to kill children in their care
  - Living in a stepfamily is the single most powerful predictor of child abuse
- Child murder is more common when the child and the mother are young and the mother is single/new relationship
Practical implications: prevention and treatment

- Changing environments/conditions to reach optimal health
  - School

- Psychological treatments
  - Need to be compatible with evolutionary understanding of cognition and behaviour
    - Compassion focused therapy, CBT, IPT Non-verbal therapies: music, dance, social contact
Current structure of the syllabic curriculum: Paper A

1.1 BASIC PSYCHOLOGY:
   - 1.1.1 Learning theory
   - 1.1.7 Motivation: needs and drives
   - 1.1.8 Emotion

1.2 SOCIAL PSYCHOLOGY
   - 1.2.3 Interpersonal issues
   - 1.2.4 Leadership, social influence, power and obedience.
   - 1.2.5 Intergroup behaviour
   - 1.2.6 Aggression
   - 1.2.7 Altruism

2. HUMAN DEVELOPMENT
   - 2.1 Nature and nurture.
     - *Historical models and theories: Freud and general psychoanalytic; social-learning, Piaget.*
   - 2.3 Bowlby attachment theory
   - 2.5 Individual temperamental differences
   - 2.17 Genetic influences on development including gene environment interactions

3.4 MOLECULAR GENETICS
What is happening in related sciences?

- There is no biology course without evolution
- Evolutionary psychology departments are increasing in number worldwide
  - Increasing experimental work & research
  - Postgraduate courses
- Calls for including evolutionary science into undergraduate medicine (Nesse)
- Call by the WPA to include evolutionary theory in training of psychiatrists
- No evolutionary psychiatry department/curriculum (yet)
Summary

- The developments in modern evolutionary science can offer a much needed integrative framework for psychiatry.
- Hence the understanding evolutionary sciences is essential for the future generation of psychiatrists.
- This can be part of basic sciences underpinning existing topics in the light of:
  - Evolutionary biology
  - Ethology & evolutionary psychology
- & Critical reading
Thank you
The Catholic Church’s Position on the Evolutionary Theory

John Paul II (1996)

‘New knowledge has led to the recognition of the theory of evolution as more than a hypothesis.’

- 1993: he also formally acquitted Galileo, 360 years after his indictment for heresy
- ‘Two truths cannot be contradictory’
“If scientific analysis were conclusively to demonstrate certain claims in Buddhism to be false, then we must accept the findings of science and abandon those claims”

No one who wants to understand the world “can ignore the basic insights of theories as key as evolution, relativity and quantum mechanics.”