A University for the Tropics

Professor Chris Cocklin
Part 1

HIGHER EDUCATION IN TRANSITION
Higher Education in Transition

The world around us:

- Internationalisation
- Quality
- Pedagogy
- Participation
- Public vs Private

- Business sustainability
- Core business
- Organisational structures
- Nature of work
The future of higher education globally is bright, but the current conception of a university in countries like Australia is not sustainable in the long term, except perhaps for a small number of institutions.

The organisational forms, cultures and practices which developed over the centuries to provide university education for society’s elite have been stretched and panel-beaten as far as they will go for an era of mass participation in higher education. The model is too expensive, capital-intensive and inflexible.

Prof Stephen Parker, *Campus Review*, 2 October 2012
An ‘inflection point’?

Are universities currently experiencing an unprecedented volume, velocity and variety of change?

...I would argue that universities are facing a unique confluence of trends at the same time, creating an unprecedented ‘inflection point’.

[Funding, Quality, Fairness Technology]

University of the future:

*A thousand year old industry on the cusp of profound change*

‘Universities face their biggest challenge in 800 years’ (Vice Chancellor, cited in E&Y, 2012)
Drivers of change

Democratisation of knowledge and access
- Ubiquitous content
- Broadening of access to higher education
- Increased participation in emerging markets

Contestability of markets and funding
- Fiercely competitive domestic and international student markets
- Challenges to government funding
- Competing for new sources of funds

Digital technologies
- Bringing the university to the device – MOOCs and the rise of online learning
- Bringing the device to the university – the use of digital technologies in campus-based learning
- Blended learning

Global mobility
- Emerging markets becoming global-scale competitors in the international student market
- Academic talent increasingly sourced from emerging markets
- Emergence of elite, truly global university brands

Integration with industry
- Scale and depth of industry-based learning
- Research partnerships and commercialisation
- Industry as competitors in the certification and delivery of content
Figure 8: Potential future model – ‘Streamlined Status Quo’

Customers
- Domestic students
- International students
- Industry

Product offerings
- Vocational and further education and training
- Higher education
- Research
- Arts
- Engineering
- Science
- Business
- Medicine/health
- Law
- IT
- Design
- Other

Education disciplines
- Other

Sales
- Schools
- Open days
- Agents
- Roadshows
- Digital
- Partnerships
- Other

Delivery
- On campus
- Digital
- Partnerships

Student services
- Student administration
- Career centre
- Other

Back office
- In-house
- Outsource

Source: Ernst & Young
Figure 10: Potential future model – ‘Niche Dominators’

Customers:
- Domestic students (School leavers, Mature age)
- International students (High-end, Mass market)
- Industry professionals (B2B, Executive education)
- Other education providers

Product offerings:
- Vocational and further education and training
- Higher education
- Research
- Arts
- Engineering
- Science
- Business
- Medicine/health
- Law
- IT
- Design
- Other

Education disciplines:
- Illustrative focus

Sales:
- Schools
- Open days
- Agents
- Roadshows
- Digital
- Partnerships
- Other

Delivery:
- On campus
- Digital
- Partnerships

Student services:
- Student administration
- Career centre
- Other

Back office:
- In-house
- Outsource

Source: Ernst & Young
<table>
<thead>
<tr>
<th>Customers</th>
<th>Domestic students</th>
<th>International students</th>
<th>Industry professionals</th>
<th>Other education providers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>School leavers</td>
<td>High-end</td>
<td>B2B</td>
<td>Executive education</td>
</tr>
<tr>
<td></td>
<td>Mature age</td>
<td>Mass market</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Parents</td>
<td>Content wholesalers</td>
<td>Content consumers</td>
<td>Service providers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product offerings</th>
<th>Vocational and further education and training</th>
<th>Higher education</th>
<th>Research</th>
<th>Mass distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Content aggregation</td>
<td>Entertainment</td>
<td>Financial services</td>
<td>Other</td>
</tr>
<tr>
<td>Sales</td>
<td>Other</td>
<td>Digital</td>
<td>Other</td>
<td>Other</td>
</tr>
<tr>
<td>Delivery</td>
<td>Digital</td>
<td>Partnerships</td>
<td>Other</td>
<td>Other</td>
</tr>
<tr>
<td>Student services</td>
<td>Student administration, career services, other (outsourced)</td>
<td>Customer relationship management (cloud)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Back office</td>
<td>Outsourced</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Ernst & Young
Part 2

A BRIGHTER FUTURE FOR THE TROPICS
James Cook University Act
1997

to encourage study and research generally and, in particular, in subjects of special importance to the people of the tropics
The Tropics

- Approaching one-half of world’s landmass
- Approximately 40% of world’s population
- 50-80% of plant and animal species
- 90% of coral reefs
- 20% of Gross World Product
- Rapid population growth
- Infant mortality 11-times higher than Australia

Australia is the only developed country with significant tropical landmass

Australia is a world leader in tropical science, knowledge and innovation
The grand challenges of the global tropics:

- Climate variability, climate change
- Environmental sustainability
- Food security
- Health and wellbeing
- National security
- Stable governance
- Economic growth
- Energy security
In challenges lie opportunities...
Statement of Strategic Intent

Our Intent
A brighter future for life in the tropics world-wide

Our Purpose
Graduates and discoveries that make a difference
Strategic Themes

- Tropical ecosystems and environments
- Industries and economies in the tropics
- Peoples and societies in the tropics
- Tropical health, medicine and biosecurity
JCU is distinctive. The University was established as Australia’s university for the tropics and for more than 40 years James Cook University has drawn scholarly inspiration from its location in the Australian tropics. The distinctive character of James Cook University is a product of our place. Collectively, the priorities of the University define us: they arise from and express the distinctiveness of the University.
Part 3

FOCUS, PERFORMANCE BASED
## JCU Standing in Areas of Research (2010-14)

<table>
<thead>
<tr>
<th>Area of Research (keyword)</th>
<th>JCU Standing*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquatic Science</td>
<td>10th in the World, 4 researchers in top 100</td>
</tr>
<tr>
<td>Aquaculture</td>
<td>17th in world, 3 researchers in top 100</td>
</tr>
<tr>
<td>Coral reef science</td>
<td>1st in world, 16 researchers in top 100 including 7 of the top 10</td>
</tr>
<tr>
<td>Sharks</td>
<td>2nd in world, 5 researchers in top 100 including 1st and 5th</td>
</tr>
<tr>
<td>Tropical fisheries</td>
<td>1st in world, 8 researchers in top 100 including 4 in top 10</td>
</tr>
<tr>
<td>Tropical rainforests</td>
<td>1st in world, 9 researchers in top 100, including 2nd and 10th</td>
</tr>
</tbody>
</table>

* World ranking is based on number of outputs over the period 2010-14.  
Source: Scopus
<table>
<thead>
<tr>
<th>Scopus - All Science Journal Classifications</th>
<th>JCU Standing*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecology</td>
<td>35th in world, 2 researchers in top 100</td>
</tr>
<tr>
<td>Ecology, evolution, behaviours and systematics</td>
<td>37th in world, 6th by Field Weighted Citation Index (FWCI)</td>
</tr>
<tr>
<td>Global and planetary change</td>
<td>99th in world, 2nd by papers in top 10%, 4th by FWCI</td>
</tr>
<tr>
<td>Nature and landscape conservation</td>
<td>24th in world, 8th by FWCI, 3 researchers in top 100 including 6th &amp; 7th</td>
</tr>
<tr>
<td>Oceanography</td>
<td>57th in world, 12th by FWCI, 1 researcher in the top 100</td>
</tr>
<tr>
<td>Parasitology</td>
<td>59th in world, 1 researcher in the top 100</td>
</tr>
</tbody>
</table>

* World ranking is based on number of outputs over the period 2010-14.  
* Source: Scopus
<table>
<thead>
<tr>
<th>International Rankings*</th>
<th>JCU Position</th>
</tr>
</thead>
</table>
| Academic Ranking of World Universities 2015 | 301 – 400 band  
  - 101 – 150 band in Life Sciences |
| National Taiwan University 2014 | 439th  
  - 29th in world & 2nd in Australia in Environmental/ecological sciences |
| QS World rankings 2014/5 | 350th |
| US News 2016 | 354th  
  - 22nd in world and 2nd in Australia for Environment/ ecology  
  - 61st in world Plant and animal science, 5th in Australia |
| Times Higher Education World University Rankings 2015 | 251-300 |
The map shows research collaborations by institution from the past 7 years. 

Note: Map points are indicative of the countries or states that institutions are associated with.
# Climate Change Research: Institutions Ranked by Citation Impact

<table>
<thead>
<tr>
<th>Rank</th>
<th>Institution</th>
<th>Impact 1999-2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Smithsonian Institution</td>
<td>40.53</td>
</tr>
<tr>
<td>2</td>
<td>James Cook University</td>
<td>33.93</td>
</tr>
<tr>
<td>3</td>
<td>NASA</td>
<td>32.32</td>
</tr>
<tr>
<td>4</td>
<td>Natl. Ctr. for Atmospheric Res.</td>
<td>31.33</td>
</tr>
<tr>
<td>5</td>
<td>Rutgers University</td>
<td>30.99</td>
</tr>
<tr>
<td>6</td>
<td>Met Office (UK)</td>
<td>30.88</td>
</tr>
<tr>
<td>7</td>
<td>University of California, Santa Barbara</td>
<td>30.70</td>
</tr>
<tr>
<td>8</td>
<td>Stanford University</td>
<td>30.03</td>
</tr>
<tr>
<td>9</td>
<td>Livermore National Lab</td>
<td>29.21</td>
</tr>
<tr>
<td>10</td>
<td>University of California, San Diego</td>
<td>29.08</td>
</tr>
</tbody>
</table>
Therefore, it is plain that ecology and environmental sciences is a focus area for the nation and, in particular, ocean acidification, marine habitats, and specifically coral reef studies in which Australia plays a global leadership role. The Australian Research Council’s Centre of Excellence for Coral Reef Studies, headquartered at James Cook University in Townsville, is one explanation of the nation’s research impact in the field.
James Cook flies even higher in Nature research ranking

JULIE HARE  THE AUSTRALIAN  MARCH 21, 2013  5:00AM

JAMES Cook University's continuing trajectory in the annual Nature Publishing Index seems likely to push it into the world top 100 universities next year, ahead of the universities of Queensland and Sydney.

JCU was placed fifth in Australia and 30 in the Asia Pacific region, up from 65 just one year ago and 351 in 2010.

JCU vice-chancellor Sandra Harding said their continuing performance was a result of a clear and deliberate strategy.

"We have always been a research-intensive university with a particular bias towards the tropics and in recent years deliberately sought out distinguished researchers and teachers to further boost our output.

"The substantial improvement on the Nature index over the years shows not only that our strategy is bearing fruit but also that world ranked research is not confined to the sandstone universities in capital cities."
Part 4

INSTITUTING FOCUS
Australia’s International Standing in Coral Reef Science

Source: ISI Essential Science Indicators, 2008-2013
Publication Output & Impact

Cumulative Impact Factor (Blue)

Number of Papers (Orange)

ARC CoE
University of Hawaii
AIMS
NOAA
Smithsonian Institute
University of Miami
University of Newcastle upon Tyne
University of Perpignan
Woods Hole Oceanographic Institute
Scripps Institution of Oceanography
THE CAIRNS INSTITUTE

Advanced studies in sustainable industries, economies, people and societies in the tropics

Funded by the Australian Government Department of Education, Employment and Workplace Relations
Vision and Mission

To enhance human life in the tropics and contribute to a brighter, more equitable and enriching future for its peoples, through globally informed scholarship, research excellence and a commitment to social justice.
The Cairns Institute pursues research excellence and maximal impact across a wide range of projects in collaboration with its national and international partners. Its unique profile is built on the following key concerns:

<table>
<thead>
<tr>
<th>Research Areas</th>
<th>Social Justice &amp; Community Wellbeing</th>
<th>International Aid Development</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regional Economic Development</strong></td>
<td>Promote stronger economic development and diversification of industry to sustain livelihoods in the tropics</td>
<td>Strengthen Australia’s engagement with our neighbours in the Asia-Pacific to meet international sustainable development goals</td>
</tr>
<tr>
<td><strong>Aboriginal &amp; Torres Strait Islander Futures</strong></td>
<td>Support Aboriginal and Torres Strait Islander development and prosperity across such areas as health, education, employment, housing, law, justice, and language and cultural maintenance</td>
<td></td>
</tr>
<tr>
<td><strong>Education Futures</strong></td>
<td>Address issues of skill shortages, pathways to education and access to opportunities</td>
<td></td>
</tr>
<tr>
<td><strong>Governance &amp; Political Innovation</strong></td>
<td>Improve the effectiveness and inclusiveness of governance and connectivity across corporate, government and non-government sectors</td>
<td></td>
</tr>
<tr>
<td><strong>Sustainability &amp; Tropical Environments</strong></td>
<td>Identify and respond to the challenges of sustainability through education and community engagement in social and environmental planning and management in the tropics</td>
<td></td>
</tr>
<tr>
<td><strong>Language, Culture, Agency &amp; Change</strong></td>
<td>Support cultural expression, creativity, identity and the preservation and documentation of tropical cultural and linguistic heritage</td>
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</tbody>
</table>
A world-class network in health and medical research focused on reducing the burden of tropical diseases
• Improve detection, diagnosis & treatment of existing & emerging tropical diseases through research, commercialization & program support
• Reduce health risks associated with biosecurity and bio-health threats
• Improve health outcomes for tropical Australia, the Asia-Pacific and other tropical regions
• Enhance education and training of national and international health professionals and researchers
• Provide advice and advocacy for national and international health policy development
AITHM will undertake work across areas of significant interest and importance in our tropical region such as neglected tropical diseases, tropical public health, molecular diagnosis of pathogens and ways to improve the delivery of health services to rural and remote tropical communities.
Part 5

STATE OF THE TROPICS
State of the Tropics

- 47 social, economic & environmental indicators
- Trends since 1980
- Data sourced from UN agencies, World Bank, IUCN, FAO, WHO...
- Launched on 29 June 2014 by Daw Aung San Suu Kyi
State of the Tropics

109 nations in 8 tropical regions
State of the Tropics

Ecosystem

Atmosphere

Land & water

Biodiversity

Human System

Society, Health & Education

Economy

Governance
Poverty

30% live on less than $1.25 per day

Globally, extreme poverty has declined by 50% since the early 1980s, but >2/3 of world’s poorest live in the Tropics

Most poverty reduction in South East Asia & Central America

Although the % of people has declined the number living in extreme poverty in Central & Southern Africa has more than doubled since 1980
Economic output

• Tropics have outperformed rest of the world in economic growth over the past 30 years. 20% faster

• Now represents 18.7% of global economic activity

• However, GDP per capita in the tropics is estimated to be only 1/3 that of the rest of the world
Education

Mean years of schooling of adults doubled between 1980 and 2010.

2.5 years less than the rest of the world

Now around 7 girls for every 10 boys finish high school (3 in 1950).
Primary forests
Rates of deforestation in the tropics have slowed since 2000 but remain large & are ongoing
OCEANS AND AQUACULTURE

More than half of tropical coral reefs at medium or high risk

150,000 km$^2$ mangrove forest lost since 1980

6.1% of territorial waters is protected

36% of global aquaculture production (22 million tonnes) and growing...
The trajectory of the Tropics will affect the future of the world.

A role for governments, multilateral institutions, major NGOs, business and education and research institutions.

Sustainable economic and social development is critical and will have a particular character in the Tropics.
Summary

• Flux in the higher education sector globally underscores the imperative for strategy.
• Focus (‘niche’) is one strategy for institutional sustainability.
• James Cook University was founded on the basis of a defined mission – scholarship oriented to the tropics.
• That mission now provides the foundation for a future-oriented institutional strategy in a time of profound change.
• The enactment of that strategy demands precise focus, backed by a commitment to scholarly excellence.
• The strategy is buttressed by targeted engagement, selective investments, and a supportive institutional geography.