

**Geoscience for the Future – The Great Crew Change**  
(special AAPG Session, Cape Town 27 Oct. 2008)

**Key Factors**

- numbers following oil price collapse in end 80's, drop in earth science students  
aging workforce leading to wave of retirements, 'brain gap'  
big (N)OC's require large numbers of new geoscientists (e.g. Aramco, Petrobras)  
training and skilling must accelerate better tailored university programmes  
faster talent development in companies  
(differentiation : broad + specialist)
- some speakers feel the issue is not availability in terms of absolute numbers, but  
'access' – i.e. mis-match between where graduates are being produced and where  
they are employed
- portfolio relative shift of conventional to unconventional (both need substantial staff numbers)  
shift to more difficult, environmentally sensitive and costly environments
- reputation attractiveness, incl. effect of cyclic nature of HC industry (1 mln staff less in 10 years)
- education school curricula too little earth science & energy topics  
we're not creating passion in potential students  
universities inadequate link between curriculum and industry needs  
innovative research projects, linked to industry challenges  
technical language training required

- 
- recruit all companies more or less fishing in the same (limited) pond
  - retention training conventional  
digital (incl. simulation)  
coaching & mentoring requires sufficient number of 'grey-haired specialists'  
(e.g. by contracting retired professionals)  
use new digital communication tools (Facebook, etc.)  
dual careers pose particular challenges: flexibility comes at a cost in terms of  
experience and optimal resource deployment
  - compensation pay, retirement packages, etc.
  - competition poaching of staff, through promotion, financial incentives, relocation, etc.

- 
- mobility dual careers, schooling, changing expectations, etc.
  - demography developing nations have younger populations than developed nations  
mix of nationals and expats required in many locations
  - local culture gender issues  
attractiveness of science as a career path  
position of energy industry in national economy

**Solution Space**

- 5 R's : reputation - HC industry does not have a sufficiently favourable image, although  
it may be improving  
- enhancing our reputation will greatly assist in attracting  
capable students  
- key parties : industry IOC's, NOC's  
OGP  
academia science depts.  
earth science institutes  
Government energy ministries  
education ministries  
professional societies AAPG, SEG, SEPM, etc.
- stronger industry – academia links are key, not just in targeting  
graduate recruits but also in supporting R&D, scholarships and  
professional programmes
- recruit - higher level of engagement of our industry with schools,  
provide materials / programmes to enhance curricula  
- more scholarships  
- the number of geoscientists needing to be recruited by a large  
company is measured in 100's over a decade or so
- retain - flexible approach to work-life balance (e.g. for women)

- sabbaticals for industry staff
- better defined technical career ladders
- systematic mentoring by senior professionals is a cornerstone in graduate development, from the very first day of employment (or even
- retirees may be able to play a role in mentoring (provide their skills and knowledge is still current and relevant

- re-equip
- staff development (technical & personal)
  - companies need structured development programmes (as illustrated by Saudi Aramco's) and the will to stick with these programmes for many years – there is no quick fix
  - re-skill staff in disciplines which are in high demand (carbonate or clastic reservoirs, new exploration technologies, etc.)
  - new training methods (e.g. simulation) and approaches (web-based learning, social networks etc)

- re-distribute
- use the digital highway to offer more flexible (home) work opps.
  - easier cooperation across (country) boundaries

• 6 Aspects of Future Workforce to focus on :

- technically excellent
- knowledgeable and networked
- integrated and cross-disciplinary
- technology adept
- diverse geography and demography
- value proposition

• industry collaboration (also with academia / Govt.)

- in principle, all (international) companies face same issue
- hence instead of trying to outsmart one-another, companies should cooperate in seeking longer-term solutions and growing the size of the available resource pool
  - examples : school programmes
  - scholarships
- being able to “bridge the cycles” in terms of employment will greatly benefit our industry in terms of student attraction

• Gender notes :

+ve : number of women earth science degrees has increased 66% in the US over 1996-2005 so the number of women geoscientists is growing; 45% of the earth science graduates in the USA were women in 2007

+ve : in June 2008 the AAPG had 4,317 women members (14% of total of 30,186, versus only 8% in 1991)

-ve : the industry appears to be losing female staff in the course of their careers, probably because having both a full job and at the same time bearing/raising children is often difficult

Points arising in the panel discussion

The industry needs to hire the elite, industry is not attracting the elite (Cartwright)

Solutions: make industry and its challenges more visible; present the industry role properly – sustainable development, ability for scientists to make a difference, socially responsible; second industry staff into universities to teach and present the ‘right face’. The brightest and best want to save the planet.

Role of professional societies (Gries)

Promote the hiring and retention of women; support universities in non-Western locations – e.g. many geoscience graduate in Africa but eh majority f universities are under-supported, lack funding, facilities, materials. Promoting geoscience in university ma be too late: industry needs to promote (geo)science in (high) schools. Many societies are engaged in these things, opportunity for better coordination.

AAPG could do a survey to find out why people want (or not want) to work for us

Creating productive geoscientists takes time (Kaldi)

He would assert it takes 8-10 years (BSc, MSc, on the job training) before a geo is truly productive. Not all panelists agreed with this. We under-estimate the capacity for the younger generation to learn and contribute simultaneously.

Is there actually a problem? (Rees)

Many companies appear to have good plans in place. It will just take time. There is a limit to how much training can be accelerated; building knowledge and experience takes time. It's a journey we're engaged on, making progress, can't afford to be complacent.

What options do future generations have in our industry (Yilmaz)

These people are ambitious, IT savvy and good at social networking. Geoscience is at the core of our industry, that won't change, it needs creativity and passion. Can't teach passion (basketball – can't teach height). Find out what the new generation want, give it to them, adapt how we work.