the past
the present
the future
of the
the american workforce*
san diego city college | april 2011
doug elliot | career counselor

*that could be you!
160 years of the American Worker
Waaaay back in the day...

1850
FARMING
Back in my great grandparents day...
Back in my grandparents day...
Back in my parents day...

1944
GM CAR DESIGNERS
Back in my infant days...
Back in my college days...

1970 COMPUTERS
Today...

2010 QUALCOMM CONTROL ROOM
The future...
...is here!!!
Phone/reception changes....
1929
2009

MECHANICAL MAINTENANCE ENGINEER
SEEKING EMPLOYMENT
Contact 07950 570829

RESULTS DRIVEN
SALES & OPERATIONS MANAGER
Mark4hire.com
San Diego County unemployed...

July 2007 – 70,000
July 2010 – 172,000
January 2011 – 156,900
Assess your skills, interests, abilities, values, personality type, aptitude, education, experience, motivation. 

S.W.O.T.

Explore career fields and occupations found in the San Diego Region. Learn about the local labor market.

L.M.I.

Decide what you are going to do. Be specific. Set goals. Create a timeline. Keep track of your progress.

S.M.A.R.T.

Three reasons for workplace change...

Globalization – worldwide marketplace
Demographics – aging workforce
Technology – robotics/artificial intelligence/
Economics – recent recession with unprecedented jobless recovery / fewer workers with more productivity
- Future jobs haven’t been created yet!
- Employers want brain not brawn
- There will be a need continuing education
Follow YOUR Career Path...

Realistic – Doers
Investigative - Thinkers
Artistic - Creators
Social - Helpers
Enterprising - Persuaders
Conventional - Organizers
Follow **YOUR** Career Path...

CAREER LADDERS VERSUS CAREER LATTICES....
10 Jobs Not Long for This World

Getting a job is hard enough—you don't want one that won't be around in five or 10 years. *Forbes* pulls out its crystal ball to see which jobs are not long for this world:

Can you guess why?

- News analysts, reporters, and correspondents
- Economists
- Radio announcers
- Travel agents
- Jewelers and precious stone and metal workers
- Farmers and ranchers
- Federal employees
- Computer programmers
- Insurance agents
- Fishermen and fishing-vessel operators
Sewing Machine Operators -8.5%
Home Appliance Repairer -8.6%
Conveyor Operators and Tenders – 8.9%
Conveyor Operators and Tenders – 8.9%
Milling and Planing Machine Setters, Operators and Tenders, Metal and Plastic -8.9%
Cutters and Trimmers, Hand – 9.7%
Word Processors and Typists -9.2%
Chemical Plant and System Operator -9.3%
Farm workers, Farm and Ranch Animals -9.9%
Compensation and Benefits Managers -10.4%
Graders & Sorters, Agricultural Products -11.2%
Drilling and Boring Machine Tool Setters, Operators and Tenders, Metal and Plastic -11.3%
Semiconductor Processors -11.6%
Forest and Conservation Technicians --12%
Tax Examiners, Collectors and Revenue Agents - 12.5%
Actors -13.5%
Textile Knitting and Weaving Machine Setters, Operators and Tenders -14%
Material Moving Workers, Miscellaneous -16%
Health Diagnosing and Treating Practitioners, Miscellaneous -17%
Entertainers and Performers, Sports and Related Workers, Miscellaneous -46%
“Kick-Ass Jobs of the Future”

Doctors and lawyers are so old-school—CNN Money lists the movers and shakers of the future:

• Disease Mapper: Use satellite technology to track and predict epidemics.
• Robot Programmer: Today's robots can analyze blood samples and mix cocktails—if someone shows them how.
• Information Engineer: Combine networking and statistical analysis skills to track trends, troubleshoot, and judge new features for Web 2.0 companies.
• Radiosurgeon: Zap cancer patients with a precision laser beam emanating from a robotic arm.
• Second Life Lawyer: Meet with clients in a virtual office to discuss their real-life issues.
Top 10 Fastest Growing Jobs in San Diego County
(data from the San Diego Workforce Partnership, Inc.)

- Teacher Assistants – education career path
- General and Operations Managers
- Landscaping and Groundskeepers – limited career path
- Janitors – limited career path
- Elementary School Teachers – education career path
- Servers – hospitality career path
- Cooks/Fast Food – food services career path
- Nurses – in the middle of healthcare career path
- Customer Service Reps – entry-level sales career path
- Retail Sales – entry-level sales career path
Top 10 Fastest Growing Jobs in California

- Home health aides – entry-level healthcare career path
- Aircraft cargo handling supervisors -
- Traffic technicians
- Pharmacy technicians – para-professional healthcare
- Dental assistants – para-professional healthcare
- Physical therapist aides – para-professional healthcare
- Ambulance drivers & attendants, except EMT’s – entry-level
- Medical assistants - entry-level healthcare career path
- Interpreters and translators – mid-level limited career path
- Customer service reps - entry-level sales career path
Top 10 Jobs with Most Openings in California

(All are entry-level....what does they indicate?)

1. Retail salespersons
2. Cashiers, except gaming
3. Waiters and waitresses
4. Office clerks, general
5. Personal and home care aides
6. Laborers and freight, stock, and material movers
7. Customer service representatives
8. Food preparation and serving workers, including fast food
9. Counter attendants, cafeteria, concession, and coffee shop
10. Janitors and cleaners, except maids and housekeepers
Top 10 Fastest Growing Jobs in San Diego County
(data from web article by Patty Inglish, M.S.)
(most are NOT entry-level....what does this indicate?)

• Network Systems and Data Comm Analysts
• Home Health Aides and Medical Assistants
• Computer Software Engineers-Applications
• Computer Software Engineers-Systems Software
• Biomedical Engineers
• Network and Computer Systems Administrators
• Database Administrators
• Physician Assistant
• Gaming Dealers and Other Workers
• Forensic Science Technicians
Top 10 Fastest Growing Health Related Jobs in San Diego County
(data from web article by Patty Inglish, M.S.)

- Registered Nurses
- Dental Hygienists
- Nursing Aides, Orderlies and Attendants
- Medical Assistants
- Home Health Aides
- Licensed Practical Nurses
- Dental Assistants
- Radiologic Technologists and Technicians
- Medical Records and Health Information Technicians
- Physical Therapists
The Benefit Of Education
Education and Earnings...

- Professional Degree: $74,500 ($25,500 after taxes)
- Doctoral Degree: $59,500 ($19,900 after taxes)
- Master's Degree: $46,600 ($14,700 after taxes)
- Bachelor's Degree: $39,000 ($11,900 after taxes)
- Associate Degree: $31,500 ($9,100 after taxes)
- Some College, No Degree: $29,000 ($8,100 after taxes)
- High School Graduate: $24,900 ($6,600 after taxes)
- Not a High School Graduate: $18,800 ($23,400 in taxes)
Education and Unemployment...

![Bar Chart]

- Bachelor's Degree or Higher:
  - ASIAN: 2.8%
  - BLACK: 2.8%
  - HISPANIC: 2.2%
  - WHITE: 2.0%

- Associate Degree:
  - ASIAN: 2.4%
  - BLACK: 5.3%
  - HISPANIC: 2.9%
  - WHITE: 2.8%

- Some College, No Degree:
  - ASIAN: 3.7%
  - BLACK: 6.8%
  - HISPANIC: 3.9%
  - WHITE: 3.4%

- High School Graduate:
  - ASIAN: 3.1%
  - BLACK: 8.0%
  - HISPANIC: 4.1%
  - WHITE: 3.7%

- Not a High School Graduate:
  - ASIAN: 3.8%
  - BLACK: 12.8%
  - HISPANIC: 5.5%
  - WHITE: 5.9%
Training and education effects your income and lifestyle!

<table>
<thead>
<tr>
<th>Career Ladder</th>
<th>...with Training</th>
<th>... with Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive</td>
<td>Owner</td>
<td>Professional Degree $109,600</td>
</tr>
<tr>
<td>Manager</td>
<td>Contractor</td>
<td>Doctoral Degree $89,400</td>
</tr>
<tr>
<td>Analyst</td>
<td>Foreman Level</td>
<td>Master's Degree $62,300</td>
</tr>
<tr>
<td>Exec Asst</td>
<td>Journey Level</td>
<td>Bachelor's Degree $52,200</td>
</tr>
<tr>
<td>Office Mgr</td>
<td>Apprentice Training</td>
<td>Associate Degree $38,200</td>
</tr>
<tr>
<td>Admin Asst</td>
<td>6-12 mos. Training</td>
<td>HS Graduate $30,400</td>
</tr>
<tr>
<td>Clerk</td>
<td>Limited Training</td>
<td>Non High School Grad $20,000</td>
</tr>
</tbody>
</table>
Education and Unemployment...

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  - BLACK: 12.8%
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Green Jobs Discussion
As many as one out of four workers in the United States will be working in the renewable energy and energy efficiency industries by 2030, according to a separate recent report from the American Solar Energy Society.

This can include retrofitting buildings, designing new solar cells, organizing recycling programs, carbon trading, or being part of a company's corporate responsibility team.
The “greening” of jobs in America

Renewable energy jobs…
wind and solar are similar to jobs of coal, natural gas, hydro, nuclear power generated electricity.

Most “GREEN” jobs are existing jobs with orientation or short-term training to become acquainted with specifics.

Next10.org: Green jobs grew 1995-2008 by 36%
Total jobs grew by 13%

Energy-efficiency policies in California resulted in 1.5 million jobs. Federal Tax credits, stimulus funds, incentives, etc. all contribute to jobs in the “green” economy.
Top 10 Green Jobs
(GreenCollarHiring.com)

Land Use Planner
Ecotour Operators
LEED Accredited Builder
Environmental Lawyers
Green Building Manager
Environmental Engineer
Green Brand Manager
Solar Panel Installer
Corn Farmer
Green Venture Capitalist
Additional Green Jobs

Land-use planner
Eco-tour operator
Environmental Lawyer
Solar Panel Installer
Environmental Engineer
Eco-consultants for homeowners
Construction and Installers
Design and Engineering
Energy Auditors and Contractors
Imagine curling up on the couch with the morning paper and then using the same sheet of paper to read the latest novel by your favorite author. That's one possibility of electronic paper, a flexible display that looks very much like real paper but can be reused over and over. The display contains many tiny microcapsules filled with particles that carry electric charges bonded to a steel foil. Each microcapsule has white and black particles that are associated with either a positive or negative charge. Depending on which charge is applied; the black or white particles surface displaying different patterns. In the United States alone, more than 55 million newspapers are sold each weekday.
Carbon dioxide is the most prominent greenhouse gas contributing to global warming. According to the Energy Information Administration, by the year 2030 we will be emitting close to 8,000 million metric tons of CO2. Some experts say it's impossible to curb the emission of CO2 into the atmosphere and that we just have to find ways to dispose of the gas. One suggested method is to inject it into the ground before it gets a chance to reach the atmosphere. After the CO2 is separated from other emission gases, it can be buried in abandoned oil wells, saline reservoirs, and rocks. While this sounds great, scientists are not sure whether the injected gas will stay underground and what the long-term effects are, and the costs of separation and burying are still far too high to consider this technology as a practical short-term solution.
Let Plants and Microbes Clean Up After Us

Bioremediation uses microbes and plants to clean up contamination. Examples include the cleanup of nitrates in contaminated water with the help of microbes, and using plants to uptake arsenic from contaminated soil, in a process known as phytoremediation. The U.S. Environmental Protection Agency has used it to clean up several sites. Often, native plant species can be used for site cleanup, which are advantageous because in most cases they don't require pesticides or watering. In other cases scientists are trying to genetically modify the plants to take up contaminants in their roots and transport it all the way to the leaves for easy harvesting.
It's a wonder that this concept attributed to the Hanging Gardens of Babylon, one of Seven Wonders of the World, didn't catch on sooner in the modern world. Legend has it that the roofs, balconies, and terraces of the royal palace of Babylon were turned into gardens by the king's order to cheer up one of his wives. Roof gardens help absorb heat, reduce the carbon dioxide impact by taking up Co2 and giving off oxygen, absorb storm water, and reduce summer air conditioning usage. Ultimately, the technique could lessen the "heat island" effect that occurs in urban centers. Butterflies and songbirds could also start frequenting urban garden roofs, and like the king's wife, could even cheer up the inhabitants of the building. Here, a green roof is tested at Penn State.
Harness Waves and Tides

The oceans cover more than 70 percent of the Earth's surface. Waves contain an abundance of energy that could be directed to turbines, which can then turn this mechanical power into electrical. The obstacle to using this energy source has been the difficulty in harnessing it. Sometimes the waves are too small to generate sufficient power. The trick is to be able to store the energy when enough mechanical power is generated. New York City's East River is now in the process of becoming the test bed for six tide-powered turbines, and Portugal's reliance on waves in a new project is expected to produce enough power for more than 1,500 homes. Here, a buoy system capable of capturing the ocean's power in the form of offshore swells is illustrated by researchers at Oregon State University.
Ocean Thermal Energy Conversion

The biggest solar collector on Earth is our ocean mass. According to the U.S. Department of Energy, the oceans absorb enough heat from the sun to equal the thermal energy contained in 250 billion barrels of oil each day. The U.S. consumes about 7.5 billion barrels a year. OTEC technologies convert the thermal energy contained in the oceans and turn it into electricity by using the temperature difference between the water's surface, which is heated, and the cold of the ocean's bottom. This difference in temperature can operate turbines that can drive generators. The major shortcoming of this technology is that it's still not efficient enough to be used as a major mechanism for generating power.
The sun's energy, which hits Earth in the form of photons, can be converted into electricity or heat. Solar collectors come in many different forms and are already used successfully by energy companies and individual homeowners. The two widely known types of solar collectors are solar cells and solar thermal collectors. But researchers are pushing the limits to more efficiently convert this energy by concentrating solar power by using mirrors and parabolic dishes. Part of the challenge for employing solar power involves motivation and incentives from governments. In January, the state of California approved a comprehensive program that provides incentives toward solar development. Arizona, on the other hand, has ample sunshine but has not made solar energy a priority. In fact in some planned communities it is downright discouraged by strict rules of aesthetics.
The 'H' Power

Hydrogen fuel cell usage has been touted as a pollution-free alternative to using fossil fuels. They make water by combining hydrogen and oxygen. In the process, they generate electricity. The problem with fuel cells is obtaining the hydrogen. Molecules such as water and alcohol have to be processed to extract hydrogen to feed into a fuel cell. Some of these processes require the using other energy sources, which then defeat the advantages of this "clean" fuel. Most recently, scientists have come up with ways to power laptops and small devices with fuel cells, and some car companies are promising that soon we'll be seeing cars that emit nothing but clean water. The promise of a "hydrogen economy," however, is not one that all experts agree will ever be realized.
According to the United Nations, water supply shortages will affect billions of people by the middle of this century. Desalination, basically removing the salt and minerals out of seawater, is one way to provide potable water in parts of the world where supplies are limited. The problem with this technology is that it is expensive and uses a lot of energy. Scientists are working toward better processes where inexpensive fuels can heat and evaporate the water before running it through membranes with microscopic pores to increase efficiency.
Make Oil from Just about Anything

Any carbon-based waste, from turkey guts to used tires, can, by adding sufficient heat and pressure, be turned into oil through a process called thermo-depolymerization. This is very similar to how nature produces oil, but with this technology, the process is expedited by millions of years to achieve the same byproduct. Proponents of this technology claim that a ton of turkey waste can cough up about 600 pounds of petroleum.
the past
the present
the future
of the
the American workforce

Slides available at:

cds.sdce.edu
(decide and set goals folder)

Doug Elliot
career counselor