

INNOVATION, JOBS, AND PATENTS: AN HISTORICAL PERSPECTIVE

W. BERNARD CARLSON
DEPT. OF SCIENCE,
TECHNOLOGY, AND SOCIETY



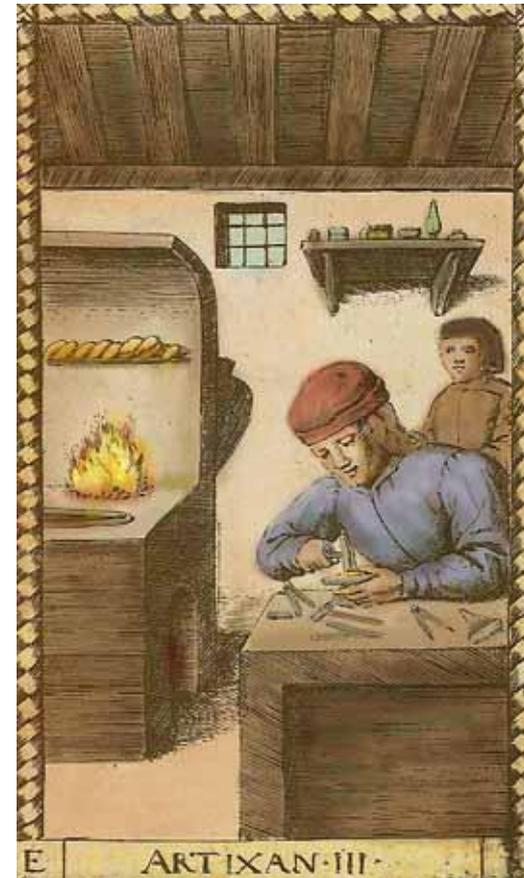
*PRESENTED AT
SCIENCE AND THE CONGRESS PROJECT
AMERICAN CHEMICAL SOCIETY,
8 JUNE 2011*

*LEFT: PUBLIC SEARCH ROOM, U.S. PATENT
OFFICE, CIRCA 1901.*

QuickTime™ and a
decompressor
are needed to see this picture.

PATENTS HAVE ALWAYS BEEN ABOUT JOB CREATION

- BEGINNING IN THE FOURTEENTH CENTURY, THE ENGLISH MONARCHY REALIZED THAT DOMESTIC INDUSTRIES WERE LAGGING BEHIND THOSE ON THE EUROPEAN CONTINENT;
- TO ATTRACT SKILLED CRAFTSMEN TO ENGLAND, THE MONARCHY BEGAN ISSUING “LETTERS PATENTS” –MONOPOLIES– TO SKILLED CRAFTSMEN WHO WOULD BRING THEIR TECHNIQUES TO ENGLAND AND CREATE NEW ENTERPRISES.



PATENTS, HOWEVER, RAISE TWO CHALLENGING QUESTIONS...

FIRST, IF A SOCIETY WANTS TO STIMULATE ECONOMIC GROWTH AND TECHNOLOGICAL CHANGE, IT HAS TO GIVE MONOPOLY RIGHTS TO SOMEONE. BUT WHO SHOULD THAT SOMEONE BE?

—THE INVENTOR WHO COMES UP WITH A NEW IDEA?

—THE INNOVATOR WHO DOES THE ENGINEERING, MANUFACTURING, AND MARKETING NEEDED TO CONVERT AN IDEA INTO A SUCCESSFUL PRODUCT AND A NEW BUSINESS?



TOP: DOUG ENGELBART WITH COMPUTER MOUSE HE INVENTED IN 1963. BOTTOM: MASS-MARKET MOUSE INTRODUCED BY APPLE IN 1983.

PATENTS RAISE CHALLENGING QUESTIONS. . .

- **SECOND, HOW DO YOU STIMULATE BOTH**
 - **DISRUPTIVE, BLOCKBUSTER INVENTIONS (THE AIRPLANE OR THE INTERNET)**
 - AS WELL AS**
 - **INCREMENTAL INNOVATIONS (A NEW DUSTPAN)?**

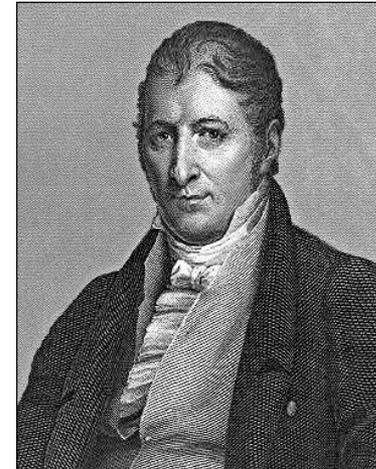
A MODERN DYNAMIC ECONOMY NEEDS BOTH.

THE U.S. PATENT SYSTEM HAS RESPONDED TO BOTH CHALLENGES BY EVOLVING OVER THE LAST 200 YEARS.

- **THE SYSTEM HAS CHANGED AS A RESULT OF**
 - **NEW TECHNOLOGIES (ELECTRICITY, CHEMICAL, BIOTECH, AND COMPUTERS);**
 - **IMPORTANT PREVAILING POLITICAL AND SOCIAL VALUES.**
- **LET'S CONSIDER BRIEFLY SEVERAL STEPS IN THIS EVOLUTION. . .**

A REGISTRATION SYSTEM, 1790-1836

- **IN RESPONSE TO THE CONSTITUTION, CONGRESS CREATED A PATENT SYSTEM IN WHICH INVENTORS COULD REGISTER THEIR CREATIONS.**
- **FUNCTIONING MUCH LIKE A “FIRST-TO-FILE” SYSTEM (I.E., PATENT WENT TO WHOMEVER FILED APPLICATION FIRST), IT WAS UP TO INVENTORS TO ENFORCE PATENTS BY TAKING INFRINGERS TO COURT.**
- **SYSTEM FRUSTRATED INVENTORS LIKE ELI WHITNEY WHO NEARLY WENT BANKRUPT SUING INDIVIDUALS WHO USED HIS COTTON GIN WITHOUT PAYING ROYALTIES.**



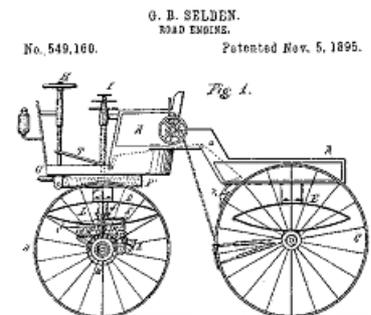
A DEMOCRATIC SYSTEM, 1836-1890s

- **IN 1836, CONGRESS OVERHAULED THE PATENT SYSTEM IN RESPONSE TO NEW TECHNOLOGY (STEAM AND NEW MANUFACTURING MACHINERY) AND JACKSONIAN DEMOCRACY. CHANGES INCLUDED:**
 - **FIRST TO INVENT (PATENT BASED ON DATE OF CONCEPTION);**
 - **EXAMINATION PROCESS;**
 - **PATENT MODELS (WHICH EVERYONE COULD STUDY), AND**
 - **ALL PATENTS PUBLISHED.**
- **IN THIS ENVIRONMENT, BELL PATENTED THE TELEPHONE (1876), EDISON PATENTED THE PHONOGRAPH (1877) AND INCANDESCENT LAMP (1879).**

QuickTime™ and a decompressor are needed to see this picture.

MASS PRODUCTION AND MASS MARKETS, 1890s-1930s

- **IT'S ONE THING TO INVENT AN INCANDESCENT LAMP, ANOTHER THING TO MAKE SUCH A PRODUCT WIDELY AVAILABLE-TO DO THE WORK OF INNOVATION.**
- **TO DO SO, CORPORATIONS HAD TO INVEST IN ENGINEERING, MANUFACTURING, AND MARKETING; TO PROTECT THESE HEAVY INVESTMENTS, THEY ASSEMBLED LARGE PATENT PORTFOLIOS.**
- **SINCE NON-INVENTORS COULD USE PATENTS TO INTERFERE WITH THIS WORK, HENRY FORD DIDN'T HESITATE TO GO AFTER GEORGE SELDEN, THE FIRST PATENT TROLL, WHO TRIED TO CONTROL THE NASCENT AUTO INDUSTRY THROUGH A SINGLE PATENT.**



PATENTS AND THE NEW DEAL, 1930s-1940s



SUSPICIOUS THAT THE LARGE CORPORATIONS HAD ACCUMULATED TOO MUCH POWER, ROOSEVELT AND THE NEW DEAL PURSUED

- ANTITRUST INVESTIGATIONS AGAINST GE, AT&T, AND RCA;**
- THEY BEEFED UP THE NONOBVIOUS CLAUSE (TO GET A PATENT, AN INVENTION HAS TO BE NEW, USEFUL, AND NOT OBVIOUS TO SOMEONE SKILLED IN THE ART) TO FAVOR INVENTORS.**

PATENTS IN THE INFORMATION AGE, 1950s-PRESENT

- **NEW TECHNOLOGIES -BIOTECH AND COMPUTERS- HAVE PROMPTED THE PATENT OFFICE (USPTO) AND COURTS TO BROADEN THE NOTION OF WHAT CAN BE PATENTED.**
- **SINCE THE 1970s, EFFORTS HAVE BEEN MADE TO “HARMONIZE” AMERICAN PATENT PRACTICES WITH EUROPEAN AND JAPANESE PRACTICE.**
- **BOTH INNOVATORS AND INVENTORS HAVE PUSHED HARD TO STRUCTURE THE PATENT SYSTEM TO FAVOR THEM OVER THE OTHER.**
- **INNOVATORS, FOR INSTANCE, HAVE USED ADMINISTRATIVE AND COURT ACTIONS TO ARGUE THAT “EVERYTHING UNDER THE SUN” CAN BE PATENTED.**



LOOKING AHEAD TO PATENT REFORM

- AMERICANS NEED TO ASK HOW CHANGES IN PATENT LAW WILL REWARD BOTH INVENTORS AND INNOVATORS.
- CLEARLY BOTH GROUPS WILL BENEFIT IF THE PATENTING PROCESS CAN BE STREAMLINED AND SPED UP; A BETTER SYSTEM PROVIDES GREATER INCENTIVES TO CREATIVITY.
- EVERYONE ALSO WINS IF THERE ARE FEWER OPPORTUNITIES FOR PATENT TROLLS TO ENGAGE IN FRIVOLOUS, EXPENSIVE AND TIME-CONSUMING LITIGATION.

BUT PATENT REFORM WILL INVOLVE TRADEOFFS

- **FOR INSTANCE, FIRST-TO-INVENT (FTI) VERSUS FIRST-TO-FILE (FTF):**
 - **FTI REQUIRES A MORE EXTENSIVE EXAMINATION PROCESS BUT GIVES INVENTORS PATENTS WITH GREATER ECONOMIC LEGITIMACY; ALLOWING THEM TO SECURE INVESTMENT FOR STARTUPS; REWARDS MORE RISKY, DISRUPTIVE TECHNOLOGY.**
 - **FTF FAVORS INNOVATORS, ALLOWING THEM TO SECURE PATENTS NEEDED TO DEVELOP PRODUCTS, DRIVE DOWN COSTS, AND GAIN A COMPETITIVE ADVANTAGE IN THE MARKETPLACE; WOULD CERTAINLY SPEED UP PATENT PROCESS; FAVORS SMALLER, INCREMENTAL DEVELOPMENTS.**

IN CONCLUSION

FOR A DYNAMIC, MODERN ECONOMY THE PATENT SYSTEM
NEEDS TO

- REWARD BOTH INVENTORS AND INNOVATORS

AS WELL AS

- STIMULATE DISRUPTIVE AND INCREMENTAL CHANGES.

ONLY BY DOING SO, WILL WE LIVE UP TO
ABRAHAM LINCOLN'S VISION:

*"THE PATENT SYSTEM SHOULD ADD THE
FUEL OF INTEREST TO THE FIRE OF
GENIUS."*



ANY THOUGHTS ON JOB CREATION?

- **FTI: HISTORICALLY, SMALL NEW VENTURES LIKE INVENTOR STARTUPS OFTEN CREATE NEW JOBS.**
- **FTF: PROPONENTS ARGUE THAT BILLIONS SAVED FROM NOT PURSUING COSTLY APPLICATION PROCEDURES AND LITIGATION COULD BE USED BY FIRMS TO CREATE NEW JOBS; BUT IT ALSO DEPENDS ON WHAT A FIRM HAS TO DO TO GAIN A COMPETITIVE ADVANTAGE-
- CREATE JOBS? PAY DIVIDEND?, INVEST IN NEW EQUIPMENT? MOVE INTO GLOBAL MARKETS?**