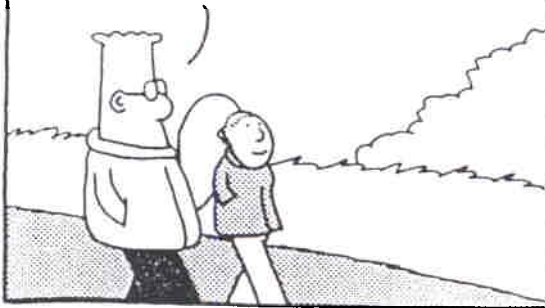


IF I LEFT ENGINEERING AND
BECAME A MANAGER WOULD
I BE AS SEXY AS I AM
NOW, LIZ?

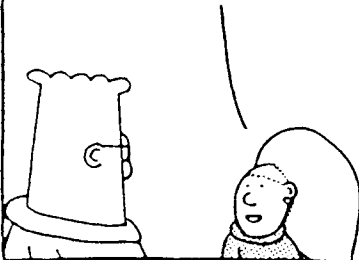


DILBERT

By Scott Adams

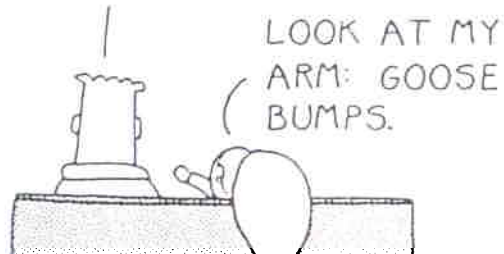
For all the daily Dilbert cartoon strips, sign on to the TimesLink on-line service and "jump" to keyword "comics." Details on Times electronic services, B4.

I THINK IT WOULD
DECREASE YOUR SEX
APPEAL BY 17%. BUT
THAT'S JUST A
PLANNING NUMBER.



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WHAT IF I GOT
MY HAM RADIO
LICENSE TO
COMPENSATE FOR
THE LOSS?



LOOK AT MY
ARM: GOOSE
BUMPS.

S. Adams E-Mail: SCOTTADAMS@AOL.COM

**ENGINEERING
MANAGEMENT
IN
CONTEXT**

ANCIENT CIVILIZATIONS

**Accomplishments
Involving Organized
Effort**

**Little Formalized
Administrative
Knowledge Recorded**

MIDDLE AGES
to
INDUSTRIAL REVOLUTION

Religious & Military
Organizations

Some Defined
Management Practices

INDUSTRIAL REVOLUTION

**Governmental and
Business Organizations**

**Some Techniques
Little Theory**

THE CLASSICAL SCHOOL OF MANAGEMENT

**The Golden Age
of Engineering**

**Frederick Taylor
Henri Fayol**

FREDERICK TAYLOR

Iron & Steel Industry

Empirical Approach

Focus on Physical Tasks

**"The Principles of
Scientific Management"
(1911)**

HENRI FAYOL

**Manufacturing and
Mining Industries**

Process Approach

**Focus on Management
Skills, Principles,
and Universality**

**"General and Industrial
Management" (1916)**

FAYOL'S FOURTEEN GENERAL PRINCIPLES OF MANAGEMENT

Division of Work
Authority and Responsibility
Discipline
Unity of Command
Unity of Direction
**Subordination of Individual Interest
to General Interest**
Remuneration of Personnel
Centralization
Scalar Chain
Order
Equity
Stability of Tenure of Personnel
Initiative
Espirit de Corps

ADDITIONAL CONTRIBUTIONS

THE TAYLOR SCHOOL

Frank & Lillian Gilbreth

Henry L. Gantt

C. Bertrand Thompson

Harrison Emerson

Henry R. Towne

Morris L. Cooke

Carl G. Barth

THE FAYOL SCHOOL

Henry S. Dennison

J.C. Mooney & A.C. Reiley

Luther Gulick & Lyndall Urwick

Alvin Brown

Oliver Sheldon

Russell Robb

Max Weber

**THE HUMAN RELATIONS
or
BEHAVIORAL SCIENCE
SCHOOL OF MANAGEMENT**

Taking Humans into Consideration

Elton Mayo

**"The Social Problems of an
Industrial Civilization" (1945)**

ADDITIONAL CONTRIBUTORS

William Whyte
Chris Argyris
Douglas MacGregor
Robert White
Stanley Schachter
David McClelland
Carl Rogers
Robert Blake
Rensis Likert

SYSTEMS THEORY OF MANAGEMENT

**Harold Koontz
Kenneth Boulding**

**Richard A. Johnson
Fremont E. Kast
James E. Rosenzweig
"The Theory and Management
of Systems" (1963)**

SYSTEMS THEORY

C. West Churchman
"The Systems Approach" (1968)

An Entity of Interdependent Parts
objectives
environment
resources
components
management

SYSTEMS THEORY OF MANAGEMENT

Johnson, Kast and Rosenzweig

**organization as system
organization as subsystem
resource coordination
performance measurement
information transfer**

ADDITIONAL CONTRIBUTORS

C. W. Churchman

Simon Ramo

Robert Machol

Henry Rowen

Philip Morse

Herbert Simon

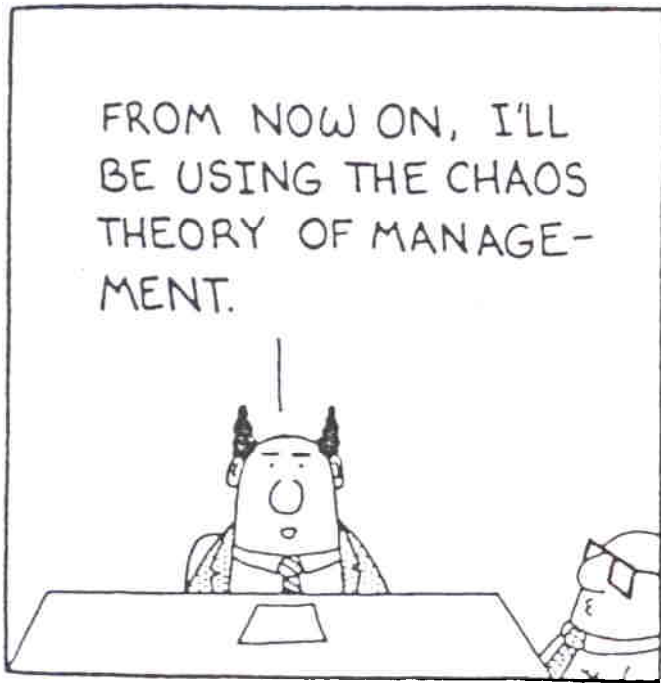
David Cleland

Warren Bennis

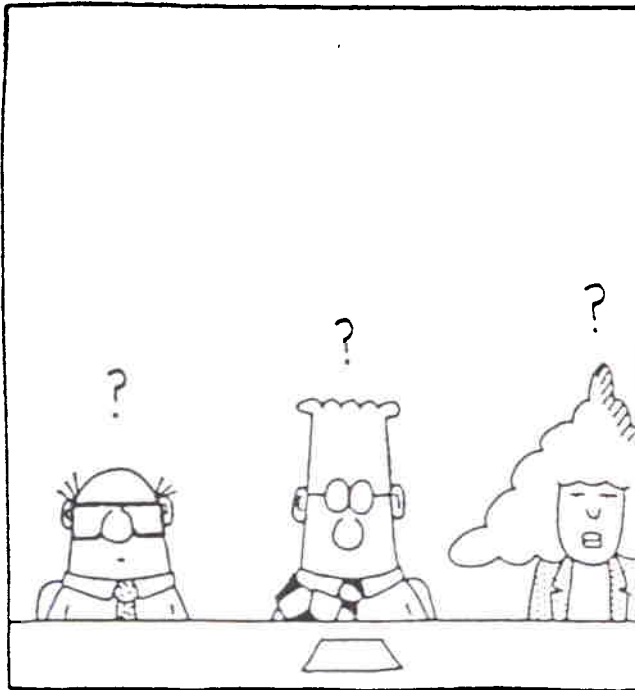
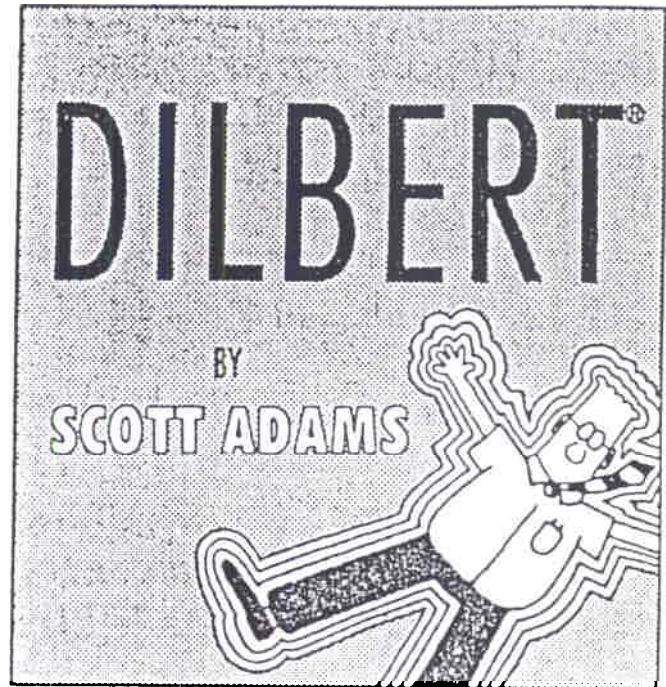
John Dearden

Stanley Young

D. B. Malcolm



S. Adams E-mail: SCOTTADAMS@AOL.COM



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TOWARD ENGINEERING MANAGEMENT

**Lack of general agreement
regarding definition**

**Limited research and
publication tradition**

**Elusive assessment in relation
to general management theory**

DEFINITION

Daniel Babcock

management of technical functions
broad management in high-technology enterprise

Dundar Kocaoglu

making and implementing decisions to provide
leadership for the technological system

Bernard Sarchet

ENGINEERING MANAGEMENT
first- and second-level management
MANAGEMENT OF TECHNOLOGY
control over strategic and operational objectives

RESEARCH / PUBLICATION

Dundar Kocaoglu

definition of mission and strategic
directions for Engineering Management

Robert Waters

Management of Technology
program funding

Bernard Sarchet

need research in use of competitive technology,
forecasting technology for competitive advantage,
bringing new technology to the marketplace

ASSESSMENT IN CONTEXT

ENGINEERING

BUSINESS ADMIN

1750 Engineering Education starts
Professional engineering society
starts

1800 U.S. engineering education starts

1850 Engineering specialization begins
increasing significantly

1890 Early management theory
developed by engineers

1900

1910

Professional business organizations
start; business education starts

1920

1930 Management education for
engineers begins fall into disfavor

Human relations approach to
management starts

1940 Systems theory and Management
Science begin to emerge

1950

1960 Management and practice
eliminated from engineering
education

Business Administration adopts
Management Science; MBA
programs are started

1970 Engineering Management
programs start

1980 American Society for Engineering
Management starts

1990

Management of Technology
programs are started

2000
