Complexity:
The science of the 21st century?

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Complexity

- Uncertainity is a major problem in the business world
- Complexity grows exponentially with the number of variables
- Winners will be those who understand better complex businesses and social dynamics

Three generations

- Business Technology Enterprises
- e-Business & e-Commerce Enterprises
- Knowledge Driven Enterprise Networks
  - Knowledge Management · Intellectual Capital · Learning Organizations · Organizational Learning · Systems Thinking · Chaos Theory · Systems Dynamics · Adaptive Systems · Complexity · Complex Systems · Emergence · Virtual Communities · Communities of Practice · Reflective Learning · Collaborative Learning · Collaborative Communication · Knowledge Portals · Creative Innovation · Critical Thinking · Critical Inquiry · Business Intelligence · Emotional Intelligence · Knowledge Creation · Rationality · Epistemology · Ontology · Brain and Mind

Complex systems

- The brain, an ant colony, a stock market, an human society, or an industrial supply chain, they all feature a large number of interacting constituents
- Distributed intelligence
- There are mechanisms and laws common to all domains of current life

The complexity toolbox

- Genetic algorithms (take their cue from natural selection)
- Intelligent agents (autonomous programs that can modify their behaviour)
- Cellular automata (array of cells that interact with one another)
- Ant algorithms (find optimal solutions by laying down "pheromone" trails)
- Fuzzy systems (model the way people think, approximating the gray areas)

Complexity management

- The future of Europe
- Zara
- Unicer

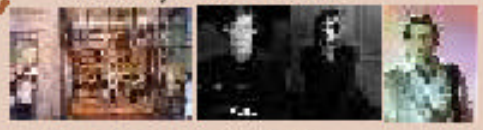
Close watch on trends & buying behaviour

Market research on university campuses, discos & other venues

Feedback from the stores
- Sales report
- Qualitative comments

Quick decisions

A HQ regional managers collect and analyse the feedback.

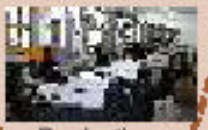


Commercial team sits with designers to use the information to create new lines and tweak existing ones -deciding with the commercial team on the fabric, cut, and price points of a new garment

Inventory Control

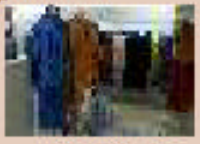
Fabrics from stock

Dyeing/Finishing (if required)



Production

Distribution



Linen Stores

Fleet to stores

R&D

- Santa Fe Institute (http://www.santafe.edu/)
- New England Complex Systems Institute (http://necsi.org/)
- Complex Systems Research Center, University of New Hampshire (http://www.csrc.sr.unh.edu/)
- Center for Complex Systems and Brain Sciences, Florida Atlantic University (http://www.ccs.fau.edu/)
- Center for Complex Systems Research, University of Illinois at Urbana Champaign (http://www.ccsr.uiuc.edu/)

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Contact Information - SFI mailing address and main phone numbers as well as directions and transportation information

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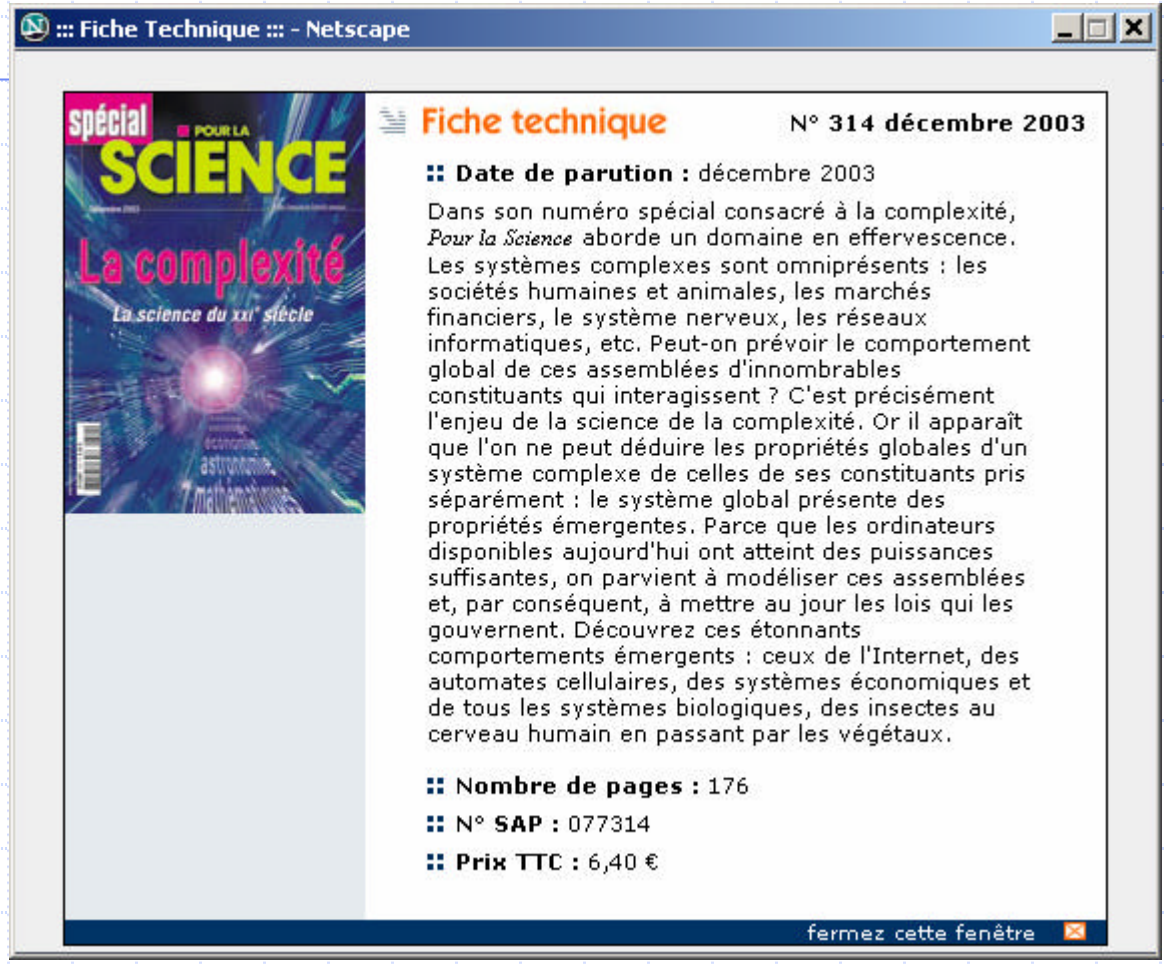
SANTA FE INSTITUTE

This Week

Events 11/30-12/6
Calendar
December Visitors
Upcoming Talks

The Santa Fe Institute is a private, non-profit, multidisciplinary research and education center, founded in 1984. Since its founding SFI has devoted itself to creating a new kind of scientific research community, pursuing emerging science.

Operating as a small, visiting institution, SFI seeks to catalyze new collaborative, multidisciplinary projects that break down the barriers between the traditional disciplines, to spread its ideas and methodologies to other individuals and encourage the practical applications of its results.


::: Fiche Technique ::: - Netscape
spécial
POUR LA
SCIENCE
La complexité
La science du XXIe siècle
Fiche technique
N° 314 décembre 2003
:: Date de parution : décembre 2003
Dans son numéro spécial consacré à la complexité, Pour la Science aborde un domaine en effervescence. Les systèmes complexes sont omniprésents : les sociétés humaines et animales, les marchés financiers, le système nerveux, les réseaux informatiques, etc. Peut-on prévoir le comportement global de ces assemblées d'innombrables constituants qui interagissent ? C'est précisément l'enjeu de la science de la complexité. Or il apparaît que l'on ne peut déduire les propriétés globales d'un système complexe de celles de ses constituants pris séparément : le système global présente des propriétés émergentes. Parce que les ordinateurs disponibles aujourd'hui ont atteint des puissances suffisantes, on parvient à modéliser ces assemblées et, par conséquent, à mettre au jour les lois qui les gouvernent. Découvrez ces étonnants comportements émergents : ceux de l'Internet, des automates cellulaires, des systèmes économiques et de tous les systèmes biologiques, des insectes au cerveau humain en passant par les végétaux.
:: Nombre de pages : 176
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