ARCHITECTURE (p. 8) “The direct-execution computer directly accepts and executes a high-level language program, with no need for multiple layers of conventional software. … There is only one language: the high-level programming language, which is the machine language recognized by the bare hardware.”

CHIPPED LISP (p. 10) “We have designed and implemented Scheme-79, a single-chip microcomputer that directly interprets a typed-pointer variant of Scheme, a dialect of LISP. To support this interpreter, the chip implements an automatic storage allocation system for heap-allocated data and an interrupt facility for user interrupt routines implemented in Scheme.”

DIRECT EXECUTION (p. 22) “Direct-execution computer architecture can make programming truly interactive, offer a means for a complete programming language definition, and provide a measure of programming language complexity.”

EFFICIENCY (p. 41) “Today I use a timesharing system that is five times faster than the one I used a decade ago; it also has eight times the primary memory and vastly more secondary storage. Yet, it supports about the same number of people, and response is worse. The reason for this anomaly is simply that our aspirations have grown much faster than technology has been able to satisfy them.”

EARLY DIRECTNESS (p. 49) “Reflection on the Symbol IIR computer a decade and a half after its inception suggests that we tried to incorporate too many advanced features about 15 years too soon. There is a strong temptation to measure the system by today’s standards, forgetting the state of computer technology in 1966 when the design was committed.”

TIMESHARING (p. 55) “The primary goal of the Symbol research project was to demonstrate with a full-scale working computer that a procedural general-purpose programming language and a large portion of a timeshared operating system could be implemented directly in hardware, resulting in a marked improvement in computational rates.”

IN JAPAN (p. 68) “This article, a survey of Japanese activities relating to HLL [High Level Language] machines, outlines their significant characteristics, emphasizing the intermediate-language architectures, hardware structures, software/firmware/hardware trade-offs, and evaluation data.”

GRAPHIC COLOR (p. 82) “The best use of color and design requires an experienced graphics designer. But even engineers and businessmen can improve the appearance of their information displays.”

TUTORIAL (p. 89) “Addressing electronic rather than mechanical design automation, this article focuses on today’s LSI/VLSI designs. Not limited to chips, these designs include all levels of computer packaging.”

BUSINESS DESIGN (pp. 102-103) “The specification of a problem in business data processing should explain precisely and in the most accessible form the formulas by which the set and order of output data are obtained from the given set of input data.”

COMPUTER INSTRUCTION (p. 111) “Brown University’s Department of Computer Science is adding 20 Apollo personal computers as part of a project for developing a computer science laboratory that will essentially bring an interactive computing environment to classroom instruction.”

DATA FLOW (p. 115) “Worldwide protectionist legislation is threatening the free flow of data across national boundaries. … Seven European nations have already enacted data protection and privacy laws that restrict transborder data flow … and similar statutes are under consideration in a dozen other countries.”

THE FUTURE (p. 117) “… four crucial changes for the microcomputer industry—the advent of micros that are so low-priced they successfully compete with typewriters and profoundly impact white-collar jobs, the separation of the hardware and software industries to achieve the true economics of volume, the rise of common software written for use on a wide variety of micros, and the production of industry-standard machines.”
MARKETS (p. 6) “Apple’s remarkable achievement had little
to do with the technology per se. … Rather, it had to do with
the cultivation of a new market for shallow-learning-curve,
graphical computing environments.”

INTELLIGENCE (p. 8) “To imagine that intelligence can
be equated with skill at chess playing is to completely
misunderstand what intelligence is. Chess playing is to
logic and calculation what intelligence is to relationships
and negotiation. Chess is abstract; intelligence is social.”

DOMAIN NAMES (p. 12) “The staggering increase in the
number of Internet users has caused serious problems
for the domain name system. The Internet community’s
inability to agree on a solution could fragment the Internet
and change the way we use it.”

WEB DYNAMICS (p. 15) “Since affordable 3D accelerator
chips hit the market last year, many industry observers
have said that interactive online 3D technology will soon
dominate mainstream computing, particularly on the
World Wide Web. They say the Web will change from its
current static structure to a colorful, richly textured realm
where virtual people and objects interact freely.”

SOFTWARE LIABILITY (p. 18) “Currently, software is sold as
a commodity, like a microwave oven. Users who claim they
bought defective software can sue vendors for damages
beyond the price of the product. Software vendors have
tried to protect themselves with shrinkwrap licenses
designed to limit their liability.”

SPEEDING DATA (p. 23) “With data prefetching, memory
systems call data into the cache before the processor
needs it, thereby reducing memory-access latency. Using
the most suitable techniques is critical to maximizing data
prefetching’s effectiveness.”

OBJECTIVES (p. 31) “… we embarked on an effort to develop
an integrated set of diagrammatic languages for object
modeling, built around statecharts, and to construct a
supporting tool that produces a fully executable model
and allows automatic code synthesis.”

WOODEN VISION (p. 43) “To some extent, vision technology
has existed in the forest products industry since the early
1980s … While this has been most useful in improving
efficiency, it has done little to maximize the value of the
resulting products. Much research, then, has gone into
developing other technologies that can detect and plot
features in the wood.”

COMPUTER Driven (p. 49) “Despite its demands and
complexity, computer vision offers a powerful way to
sense the environment. It has been widely used for such
vehicle-related tasks as road following, platooning (where
an automatic vehicle follows a manually driven one),
overtaking and passing slower vehicles, and automatic
parking.”

DISTRIBUTED MULTIMEDIA (p. 56) “Our efforts focus
on developing a framework for remotely manipulating
microscopic objects. Two diverse applications demonstrate
our framework’s usefulness: microdissection of DNA
molecules and in-situ examination of crystal formation.”

PERFORMANCE (p. 71) “The Cache Visualization Tool’s
(CVT’s) purpose is to address the second task,
understanding the causes of poor cache performance. It is
thus a complement to cache profilers.”

MORE DOMAIN NAMES (p. 104) “In recent months a
growing number of organizations have come forward to
support the plan … whose main features include … seven
new generic top-level domains (gTLDs): .firm, .store, .web,
.info, .arts, .rec, and .nom.”

SYSTEM DEVELOPMENT (p. 110) “A model-based approach
to the definition and development of a system (whether it
be a business organization, a process, or a product) can
reduce development costs while matching the system to
the marketplace and business strategy.”

SOFTWARE REUSE (p. 113) “Reuse can only succeed with
some injection of formal methods. And the only chance
for formal methods to succeed on a large scale is if they
are applied to the development of reusable components.”

LINKAGE (p. 115) “Hypertext linking is often embraced
uncritically by Web authors eager to explore the power
of hypertext without first considering its effects on their
readers’ comprehension.”

SIMULATION (p. 120) “Emergent behavior may be one of
the principal driving factors in future businesses. Through
a new kind of simulation called agent-based simulation,
forward-thinking companies are discovering the laws of a
new economy—the ‘friction-free economy.’”

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