

Like Sex with Gods

Sample Pages

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INTRODUCTION

Human flight is not a simple matter of science and technology. It is a continuing epic of dreams and obsession, of yearning and striving to harness the intellect in the service of the emotions. Humanity's drive toward the heavens has many wellsprings and multiple streams, all of them interacting with and reinforcing the others. Technological ingenuity is simply one outlet for the ancient dream. This book integrates both aspects of this quest, the psychological and the technological, as expressed in art and artifact.

For millennia, people of all cultures have dreamed of flying. Their dreams have had overtones of religion, of liberation and redemption, of sexuality, and of empowerment. Flight is fraught with symbolism, the stuff of legend and myth. Flying has been an end in itself, and a means to other ends. This book explores these complex and varied underlayers of a universal urge, an urge which has not been satisfied by the accomplishments of the twentieth century. Humankind continues to dream of flight: ever higher, further, faster.

The power of these dreams is reflected in the persistent efforts over the millennia to bring them to fruition. From magic carpets and har-

nessed eagles to kites, balloons, and ornithopters, people have devised an astonishing assortment of mechanisms in pursuit of their objective. They have risked, and in many cases lost, their lives. The flight of the Wright brothers marks just one point on a continuing path which extends through the present and into the future, as humanity takes its first steps into space. The psychological aspects of human flight reinforce the technological, showing their mutual relationship and reflecting the complexity of humanity's motivation and ingenuity.

The path from dream to invention has broad implications. Economists studying capitalist systems emphasize the importance of technological development to the health of the economy and our rising standard of living. What are the driving forces behind technological change? How can we understand, and perhaps harness or guide, those forces?

Historians of technology agree that invention is part of a process embedded in society and intended to satisfy values held by members of society. It does not occur in a vacuum; it is not the disconnected product of a single mind or of progress along one "correct" path. The dream of flight, and its fruition, provides one example of this general truth. The various roots of this development include religion, curiosity, literature and the fine arts, the intellectual playfulness of mechanically minded people, and the general social attitudes toward inventiveness in general and flight in particular.

The old proverb says "Necessity is the mother of invention." All too often, Necessity is construed as simple economic pressure, part of the drive for survival. As historian George Basalla points out, plants and animals of all sorts survive very well without invention.¹ The wellspring of invention might be better sought in play, in imagination, and in the capacity for abstract thought. The general direction in which imagination flows is provided by the values and social structure of the community, although there is the rare case of imagination "flowing uphill," as it were, apparently supported only by the sheer persuasive force of genius.

For an invention to become more than a figment of the imagination, however, the time must be ripe. The social and material environment must provide a nourishing atmosphere; materials must be available to construct the invention in a workable manner; there must be rewards for the inventor, and a mindset favorable to adopting the innovation. The cultural reaction must be "oh, that's just what we've been looking for, and didn't realize it" rather than "that might be a clever toy, but it's not really important." Modern Westerners often assume that if some-

thing *can* be done, it *will* be done, ignoring the very real fact that rejection has occurred, that technological and behavioral choices do not always embrace things that seem alien to cultural values.

All these factors are visible in the story of humanity's long-term and universal fascination with flight.

THE APPROACH

There are many ways to approach history. One is to begin with one event or artifact, and look for antecedents; the operative question then is "how did this come to happen?" This is like saying "I'm here: who are my parents, my grandparents, what is my heritage?" You could imagine this as a group of brooks and streams, combining along the way to form one mighty river. If we start with the Wright brothers and their airplane, we would look backwards in time to see where and when the ingredients were developed, and say "See, here we have investigation into the properties of air, there we have development of small motors, over there we have the discovery of cambered airfoils" and so on. We might then draw some more or less straight lines connecting these points, and call it the history of flight.

This approach makes it much too easy for us to judge each stream or brook by its contribution to the river; to assume that the primary purpose of each little watercourse is to ultimately become part of the river, and if it does not do so then it has somehow "failed." If we think of "flight" as meaning only the airplane, we would dismiss everything that did not lead directly to airplane development, ignoring all the other aspects of flying. This approach invites such summaries as "misguided and eccentric characters ran riot over the field of aviation in the 19th century, while a few wise men strove to keep it on the right lines of development."² We would regret the time "wasted" trying to imitate birds, or to utilize human power. We might ignore the balloon, the kite, and the dirigible as irrelevant to the "real" history, as dead ends on the road to the airplane. Or we might notice these things, but consider them quaint minor diversions along the mainstream. Grudgingly, we might concede that they helped keep the dream alive, and provided means for scientific exploration of the atmosphere. They would deserve only a brief mention before our attention turned to the Wright brothers and their contemporaries. We would miss a lot of fun, and some important lessons.

It is also much too easy to get caught up in the image of accumulating waterflows, and ignore the fact that life is seldom so tidy.

Trying to draw a picture of the development of flight is incredibly frustrating. Start with any of the ingredients, and you soon encounter a tangled web. Each of the main sources is a large-scale river in and of itself, with only a small branch or two wandering over to become part of “flying.” Religion, for example, can include flying as part of the ritual or as part of the symbolic structure, but the main purpose of religion is not concerned with flying per se. Literature may adopt flying as a symbol of freedom, but literature is concerned with many other things as well. The scientific exploration of the atmosphere provided the foundation for systematic pursuit of “flying machines,” but was not primarily dedicated to that purpose. Even hardware such as kites and balloons and gliders and small engines, “lead” toward powered flight capable of carrying people aloft but are not completely dedicated to that end. Some are intended as children’s toys, others as ritual objects, still others as sheer intellectual play at a time when actual flight occurs only in the imagination.

We could try another perspective. Begin with the very vague notion of “flying” and see where it leads us. Looking at flight this way, we ask “What has the idea of flying contributed to these other rivers of human thought and action?” What has “flying” meant to religion, to art, to literature, to the scientific and mechanical imagination? And how have these other areas contributed back to the development of physical flight? Some people would not call this “history” at all, even though we would be looking at the whole sweep of the human record through time.

This book tries to take a middle path, looking both at the development of the various ingredients that eventually wound up enabling humankind to physically fly, and at the mutual relationships between flying and other human activities. What were the components of the dream, and how did the dream influence the eventual physical reality? The journey toward physical flight seems to flow, from mystical flight expressed in spiritual terms of communication and love, through magical flight and its attempt to control the supernatural, to our present engineered flight which seems to rely only on the physical but draws its inspiration and driving forces from our emotions and culture. At the same time, metaphorical flight continues to represent a wide range of intangible, abstract concepts.

We approach flying-tales from two directions: their function as myth or symbol, and their function as imaginative groundwork for actual mechanism. Various possibilities imagined for flight have been woven

into the flying-tales; sometimes the mechanism is the main focus, at other times it is secondary. Not surprisingly, scholars generally concentrate on their own interests: historians looking for “precursors” of this or that present-day mechanism tend to look only at the means of flight; psychologists, anthropologists, and literary analysts tend to concentrate on the symbolic issues. The result is an artificial separation of motive from method, where both should be considered together.

Most of all, we look at the junction of mental and mechanical circumstances, at the supporting social and material structures that encourage invention. Neither will suffice without the other. The roots of human flight lie both in the desire to do it, and in the imagination and ability to put materials together in effective fashion. For the result to be more than a grownup’s toy also requires that the social, cultural, and economic environment absorb the new invention into the mainstream.

It is tempting to read backwards, finding the “origins” of modern technologies in the imaginative musings of ancient writers or artists. Many writers include elements of myth and fable only in order to contrast them with the “sober” scientific history of flight, as if to say that modern approaches have outgrown mere superstition and magic. Look, look, they boast, see how we have matured.

The truth is much more complex: all aspects of past thought about flying, whether mechanical, symbolic, religious, or emotional, contribute in tangled ways to the motivations and imaginations of those who attempt to bring these dreams to reality. The groundwork is laid in the past, for later folk to think “It is desirable, and it may be possible.” The creativity and the variety of detail found in the older materials is grist for the mill of those who come later. “It is desirable”—this is the crucial element for eventual success.

Technological evolution mirrors biological evolution. The small increments of change leading to bird flight must have had some value before flight was achieved; natural selection mercilessly prunes useless characteristics, especially when they affect energy and metabolic resources. Why do species of flightless birds continue to develop feathers, when fish confined to lightless caves for generations often lose the very anatomy of their eyes? Also, characteristics that originally served one function are often co-opted by evolution to serve another. Some experts believe that feathers served as insulation before being incorporated into the mechanism of bird flight. Most recently, the suggestion has been made that the “lift” produced by flapping primitive wings was an advan-

tage to running birds, increasing their running speed and helping them rapidly climb trees to escape predators. So far, no single theory has managed to account for all the ingredients of animal flight.³

So too with human flight. Kites, balloons, sails, and billowing garments, primitive flapping-wing contraptions doomed to failure, all serve some human purpose beyond their straight-line contribution to the development of powered aircraft. In some cultures, but not all, these technologies become part of the history of aviation. In some cultures, but not all, they are ends in themselves.

Human motivation is complicated. Why does anyone want to fly? Why does anyone want to invent at all? The reasons may be rooted in religion, economics, social status, or playfulness, or the reasons may be buried too deeply for clear expression. Or perhaps “all the above.” The youngster who watches the birds just knows that flying is something wonderful, and may grow up to find some way to do it, and to give meaning to it. Magic and superstition may be left behind when science and technology come to dominate our thoughts, but humanity’s spiritual and emotional needs must still be served. Again, flying may be an end in itself, or a means to some other goal—riches, glory, sheer physical or intellectual pleasure.

Motivation, ingenuity, the material wherewithal, and social acceptance all are necessary ingredients for the successful pursuit of human flight.

The airplane and the space ship are not really “the end,” either; so we will look at ways in which the dream continues, shaped by the results so far. Time is a stream which does not end with us; it continues to flow toward the future.

ORGANIZATION

Part 1 looks at the intangibles, the concept of “flying” and its relationship to the imagination in religion, art, and literature. Chapter 1 describes the inhabitants of heaven, and the symbolism associated with height and flying. Chapter 2 explores the mythical and spiritual accounts of flight as attempts to approach or conquer the heavens. In Chapter 3, we see the association of flight with intellectual freedom.

Part 2 focuses on the mechanics of flying and how the dream was realized by small steps and diverse ways from the 1500s to the present. Each section and even each chapter has cross-connections to the others, and it must always be kept in mind that the division is arbitrary. Thus,

Chapter 4 contains the exuberant speculations of those just beginning to find “invention” an important cultural pastime; Chapter 5 explores mechanisms based on bird flight, and Chapter 6 presents kites, gliders, and parachutes. Balloons and dirigibles, lighter than air, are the subject of Chapter 7.

Chapter 8 follows the dream from the Wright brothers’ flight onward into the future, and touches on some ways that the apprehensions of early thinkers have proved all too accurate.

The difficulty we encounter in trying to separate the material into reasonably coherent strands reflects the essentially holistic nature of the story. It has been said that “time is what keeps everything from happening at once”—a linear account tries to keep everything from being said at once, but plucking one strand from the web necessarily involves all the others to which it is related. Our classifications are much like the vertical bar divisions in sheet music; they help us mark time, but “they’re not *in the music*.”⁴ [Original emphasis.] To help orient readers chronologically, dates and relative chronology are given frequently throughout the book, and a timeline is provided at the back.

Wings, kings, religion, horses, dreams, and myths; balloons, kites, sails, and birds appear and re-appear. At each occurrence, I have tried to provide as much context as appropriate for the moment and for the purpose of the discussion. The timeline, the index, and the glossary may help those who wish to rearrange information; the bibliography and suggestions for further reading may help those who wish more depth on any given topic.

A word of warning: this account is nowhere near complete, nor does it try to be. Whole books have been written, for example, on the artistic expression of the association of flying with sex, or on examples of supernatural, legendary, and mythical flight. Other books have concentrated on the principles of aerodynamics, on balloons and ballooning, or on the “straight-line” history leading to the Wright brothers’ historic flight. I have tried for some balance between acknowledging the important material which can be found in almost any history of flight, and exploring the less well-known material at the margins of the direct line. I have emphasized human interest and cultural context, rather than strictly technological contributions. The bibliography contains references to material for further reading, as well as to books and articles directly quoted in the text.