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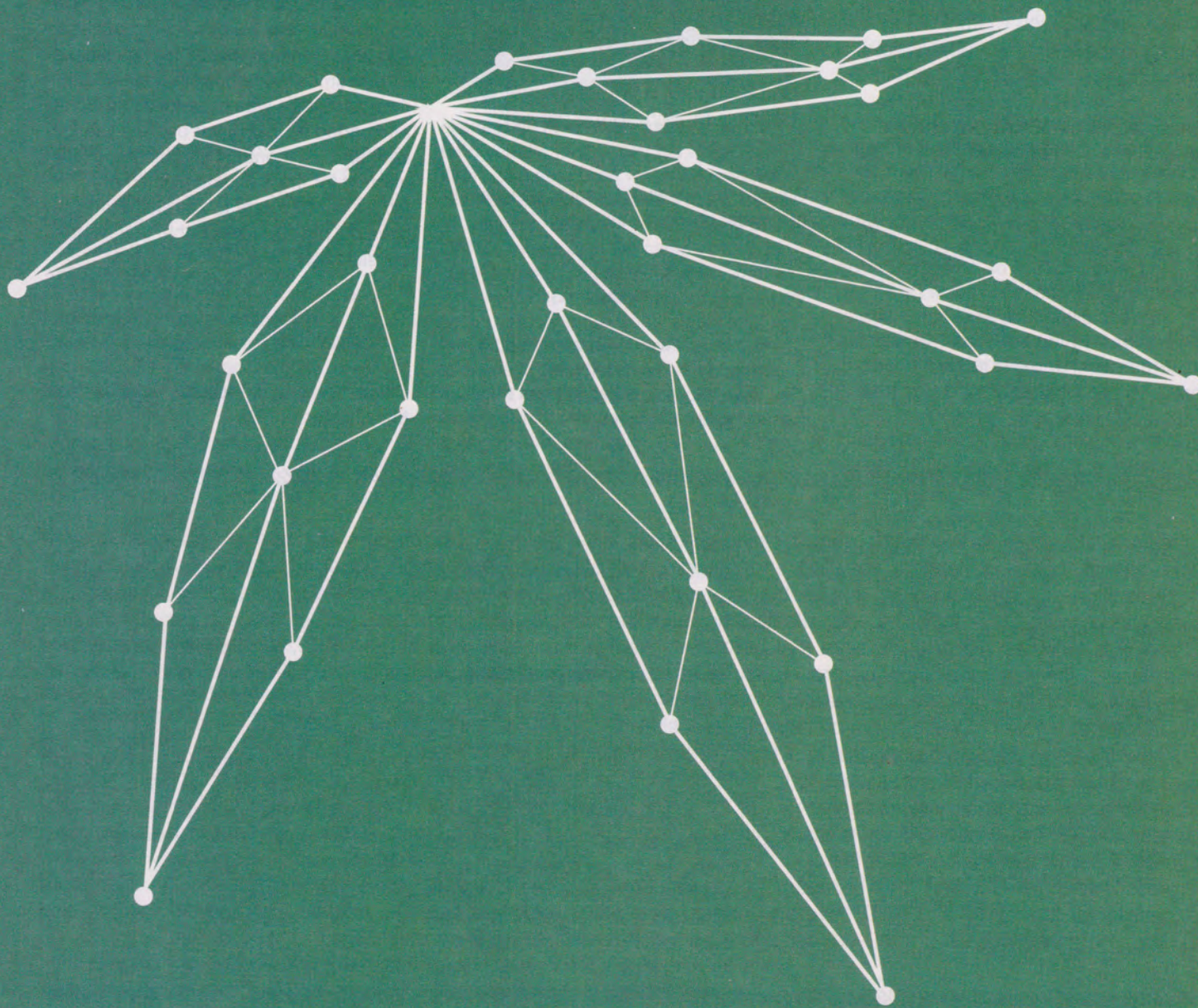
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the language of plants



Plants are living organisms

By Frenchy Cannoli

Photos by Kim Sallaway

Imagine a world where the living environment has been created by a motionless dominant species. These master beings communicate via a sophisticated language of chemical compounds, and biologically influence the subordinate mobile beings to do their bidding. Countless predators inhabit the planet. Life is a fight for survival fraught with dangers and obstacles.

The dominant life form supports the subjected mobile species by creating toxic chemical compounds to protect them from predators, custom designed hormones to facilitate their reproduction, as well as food and medicine for their survival.

This could be a science fiction story but it is in reality an outline of the actual relationship between the plant kingdom and all other life forms on the planet Earth.

We are conscious that plants are living organisms that help support human life here on earth, but it is mostly an unconscious acceptance of a concept without true awareness or understanding of the plant kingdom and its four hundred and fifty million years of evolution.

Plants are the most successful and the most diversified living organisms on Earth. There are more than 400,000 species of plants¹, which have colonized every corner of the planet that can support life over the course of their evolution.

A stationary living organism needs to extend beyond its physical limitations in order to survive and reproduce which implies the ability to solve the evolutionary challenge of being motionless.

The "ability to learn or understand things or to deal with new or difficult situations" is the definition of the word intelligence given in the Merriam-Webster dictionary². If intelligence is the ability to solve problems, then the concept most certainly applies to plants that overcame their immobility by "employing" other living organisms to take care of life's necessities.

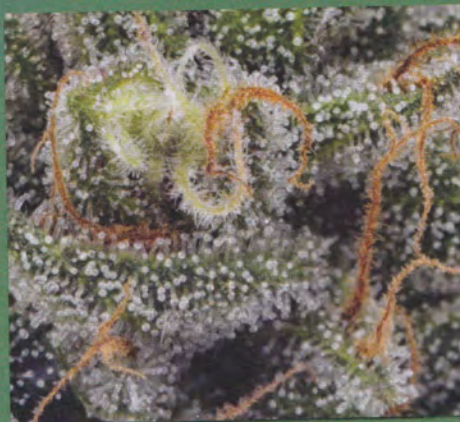
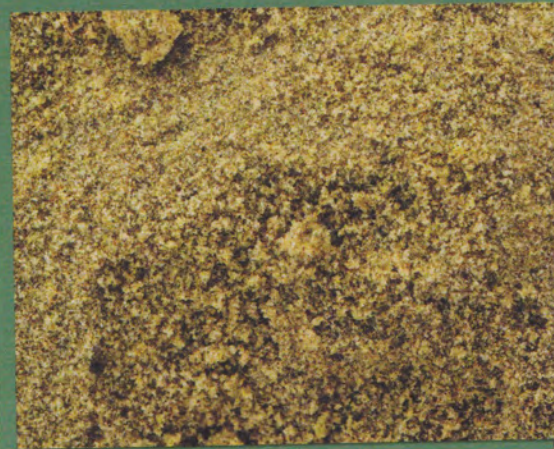
It took the original ancestor of all plants, an alga with photosynthesis³ capabilities, over three hundred million years to diversify into the higher forms of plant life that we know today. Insects and later mammals have been an integral part of this plant-world evolution and possibly even the instruments of it.

The nature of the evolutionary relationship between the plant kingdom, insects, microbes and mammals is based on a "language" made up of chemical compounds, the

secondary metabolites⁴, which plants produce to attract or repel insects as well as to interact with the microbial world, with other plants and with humanity.

As David S.Y. Wang, Assistant Professor Department of Forestry, NCHU points out, "the ability to synthesize secondary metabolites has been selected through the course of evolution in different plant lineage when such compounds address specific needs."⁵ These chemical compounds are made "as required" and used as protection mechanisms for their toxicity, as enticement to facilitate reproduction⁶ or defense, for communication or warfare between plants, and as a defense against microbes and other trauma factors.

The plant kingdom has a "vocabulary" of over 200,000 chemical compounds⁷ at its disposal to take care of all the necessities of the life of a motionless living organism. Alkaloids, phenolic and terpenes, the three major groups of secondary



Cannabis and humanity have a unique bond that goes back to the beginning of life on the planet

metabolites, are very powerful inducing and deterring chemicals that regulate the relationship existing between plants, insects and humans.

The effects of these chemical compounds on human brain function are "due to the cellular, biochemical and molecular similarities between plants and humans, or alternatively they reflect the many similarities between the nervous system of humans and insects."⁸

A billion years ago the first single-celled living organism "possessed all of the hallmark cellular features and metabolic processes of contemporary plants and animals"⁹, meaning that all life forms of the planet are part of the same original life evolution process!

It is nonetheless an evolutionary process that has been somehow "guided" by living organisms whose only purpose was the propagation of their own genetic pool.

Jared Diamond believes that "Agriculture grew from human behaviors and from responses or changes in plants and animals, leading without conscious plan toward domestication of plants and animals"¹⁰. But what if plants were actually guiding human exertion toward agriculture at each new stage of their own evolution?

The hundred million years of shared evolution between plants and insects brought a successful domination of the planet but also a final limitation to individual expansion of the species due to specialization and interdependency.

Insects have co-evolved to fulfill the reproductive requirements of plants but their sphere of influence is rather small and limited when compared to humans.

Awareness is "the knowledge or perception of a situation or a fact", according to the Oxford Dictionary¹¹; if plants have enough intelligence to learn, understand and act upon that knowledge in order to influence other living organisms with chemical compounds, it implies a certain level of awareness as plant neurobiology suggest - "Plant neurobiology is a newly focused field of plant biology research that aims to understand how plants process the information they obtain from their environment to develop, prosper and reproduce optimally."¹²

The apparition and spread of humanity on the planet must have been detected, the potential benefits of this new ambulatory human carrier analyzed, targeted and exploited as was done with insects during the past five hundred million years of co-evolution.

The Cannabis plant's origin is

unknown due to an early prehistoric dispersion; nonetheless Central Asia, where agriculture was born 15,000 years ago¹³, is considered the most probable center of origin¹⁴. Cannabis was one of the first plants domesticated by humans therefore we must assume that we have had a "relationship" with the Cannabis plant that could go as far back as the appearance of humanity on the Asian continent, which archeological evidence dates to 1.8 million years ago¹⁵.

Cannabis offered humans a unique therapeutic and psychoactive compound, the Cannabinoids. Phenols and terpenes, two of the three major groups of secondary metabolites, produce a one-of-a-kind compound made of over 80 cannabinoids when bounded in the resin heads of a Cannabis plant. Why would these chemical's compounds be custom tailored by earth's plant life evolution specifically for the physical and mental well-being of humanity? I will refer to Michael Pollan's book, *The Botany of Desire* to answer that question; it is simply the means for the living organism that is a plant "to spread their genes. How? By playing on the animal's desire, conscious or otherwise"¹⁶. Pollen attracts bees, and medicinal consciousness-altering compounds attract human beings.

The relationship between Cannabis and humanity is based on the genetically controlled ability of the plant to synthesize a custom designed compound¹⁷ personalized to fit specific receptors of the physiological system of another living organism. As Martin A. Lee notes in his write up on the topic titled, *The Discovery of the Endocannabinoid System*¹⁸, the National Institute on Drug Abuse inadvertently facilitated a series of major discoveries about the workings of the human brain; "Cannabis is a unique, natural medicine that taps into how we work biologically on a very deep level. Thanks to this plant, scientists have been able to decipher the primordial language that nerves and brain cells use to communicate"¹⁹. The Cannabis plant communicates through a language that humanity understands at the cellular level. It is very hard to conceive of such a mindboggling exchange of data between such different living organisms but it nonetheless exists, has existed

since the Dawn of Time and may have been a directive force in our evolution.

As David O. Kennedy points out in his book *Plants and the Human Brain*,

"Answering the simple question of why plant chemicals modulate brain function" or in other words "Understanding the chemical language of plants" would give us the best perspective of humanity's co-evolution with Cannabis and other psychoactive plants but that would "require the integration of thoughts and concepts from a diverse range of disciplines, including molecular biology and biochemistry, plant science, zoology, entomology, pharmacology, medicine, neuroscience and psychology."²⁰

Speaking a foreign language is an incredibly rewarding experience; it is the doorway to understanding the essential values of diversity and appreciating the beauty of humanity's cultural heritage. I have been trying to find a word to encompass what speaking and understanding the language of a plant like Cannabis would be, only the word "Godlike" come close enough to fully embracing such a concept.

Humanity has been a major implementer of the plant kingdom's reproduction and evolution since the birth of agriculture but we are becoming something else, a destructive parasite that may soon reach the limit of its usefulness. We are at a crossroad in the evolution of the planet and all its life forms; our ecosystem will not support the destroying force we have become for very much longer.

Cannabis and humanity have a unique bond that goes back to the beginning of life on the planet, "the ability of cells to synthesize molecules that are categorized as "endocannabinoids" in mammals is an evolutionarily ancient phenomenon that may date back to the unicellular common ancestor of animals and plants".²¹

I believe that Cannabis is our Rosetta Stone to the language of plants and that prohibition not only endangers the health of humanity but also the survival of the planet itself. The eco-system that supports all life on our planet evolved from an incredibly complex and powerful living organism into the amazing diversity of inter-dependent life forms that exist on the planet today. It would be very wise to start "listening" to these other life forms that share a co-evolution with us before our time as useful genetic propagators runs out.

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