

INSTILLING A NEW ALCOHOL FUEL REVOLUTION THE PERMACULTURE WAY



Is alcohol the
natural solution
to our global
energy crisis?

*Interview with
David Blume –
the ecologist
Big Oil tried to
squelch a quarter
century ago*

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by David Klein, Ph.D.

My interview with bio-systems ecologist David Blume was a wondrously revealing breath of fresh air. This author, teacher, farmer and green activist is one of the grandfathers of the permaculture movement. He is poised to change the world, and I hope many will jump on his alcohol-fueled bandwagon.

*Founder of the International Institute for Ecological Agriculture, David is the world's leading authority and proponent of alcohol fuel for automobiles (this was the original car fuel). His new book, *Alcohol Can Be a Gas*, is the most extensive coverage of the nuts and bolts, whys and wherefores of alcohol fuel—and we hope it sparks an immediate revolution.*

I first met David around 1996 when he gave a brief talk at a San Francisco LiFE meeting about his organic produce subscription program for San Francisco Peninsula residents. David's innovative growing methods were yielding unprecedented bounties. At the time, I had no idea of David's background or of the revolution he talks about here. I reconnected with David this past spring when, out of the blue, my friend Laurie Masters informed me that she'd spent a good six months proofreading the 596 pages of David's earthshaking new book. She sent me David's DVD on the subject; I was hooked and incited to take massive action.

*Later this spring, after reading the pre-press edition of the book, I met with David at the park behind the Marin County Civic Center. I spent a good long time interviewing him and learning a lot more. We covered the basics of David's premises on how and why alcohol is the economic and environmental solution to the industrial world's looming energy crisis, and a major boost for our ailing planet. For more in-depth information, you can order David's book and DVD from *Living Nutrition*, keep updated via this magazine, and visit his website: www.permaculture.com.*

DK: Please tell us how you began with your education and what led you into teaching people about alcohol fuel.

DB: My background as an ecologist and biosystematist began when I was at San Francisco State University in the 1970s studying ecological biology. One of my instructors pointed to a bottle of fermenting beer and said “that stuff would run your car.” I said “You’re a liar—prove it.” He pointed me in the direction of the library, where I was flustered by the huge number of books from the early 1900s that discussed in incredible detail how much of our transportation system is really based on alcohol.

DK: Did the OPEC crisis heighten your interest in alcohol fuel?

DB: Yes. That was going on during that time. Basically, OPEC decided that it was not in their best interest for the United States to support Israel, so as prices rose there were a series of oil boycotts in the U.S. Many still remember having to wait in line for rationed gasoline. This was an incentive for people to find another way to run their cars, and alcohol was right there waiting to be resurrected.

DK: In the next decade, you produced a 10-part series on PBS, titled “Alcohol As Fuel.” What was the sequence of events leading to that?

DB: For two years in the late ‘70s, I taught workshops around the country on how to produce alcohol fuel. Then KQED, the San Francisco PBS station, approached me and asked if I would be willing to put my workshop on the air and write a book to go with it. I was pretty excited about that possibility, seeing it as a way to reach a lot more people, so we spent the next couple of years doing that. The series went on the air in 1983.

DK: *Who funded the PBS series?*

DB: The station itself. Back then, PBS stations were fully funded by the Corporation for Public Broadcasting (a government agency distributing our tax dollars) and didn't really have many corporate donors. That's why I thought it would be no problem doing the series. I was assured by the folks at PBS that the series would air. But, between 1980 and 1983, George H. Bush and Ronald Reagan cut funding for the Corporation for Public Broadcasting, and the oil companies stepped in to take up the slack. A single phone call from Chevron stopped the series after its first airing; KQED stopped distribution to the 140 PBS stations that had also signed up to air the show. PBS said I breached the contract and they sued me.

DK: *What was that about? Did they just make something up?*

DB: Oh, yes. They fabricated all kinds of grounds, which we completely disproved in the lawsuit. KQED's case was almost entirely built on character assassination and not on any facts. The arbitrators were worn down from weeks of hearing this case which really should have only taken two to three days. At one point, they finally just said, "PBS you get to keep the series, Blume, you get the rights to the book back, and everybody can go home." That's how it all ended.

DK: *What happened with your book?*

DB: There were never any funds to publish the book. At the time, gasoline once again had dropped to a low price, so interest in a book had pretty much evaporated—until now.

DK: *When I met you at the SF LiFE meeting around 1996, what were you involved with besides permaculture farming?*

DB: During the '90s I pretty much focused on sustainable agriculture and farming. Per acre, I had 450 people eating all their vegetables from my 2-acre polycultural organic farm. Of course I'm sure they also bought other things. We were delivering 10 pounds of vegetables per person per week. And we never really had more than two-thirds of the farm in cultivation at any one time. The rest of the time it was in cover crop. We had about eight times the yield that the U.S.D.A. says is possible.

I got reinvolved with alcohol fuel when I closed my farm in 2001 because we lost the lease on the land, and with what our country was doing in regard to Iraq and the whole Middle East, I thought it was time I dusted off the book and got it published.

DK: *Do you obtain alcohol fuel from a local farm?*

DB: Right now I don't have a farm. I run my vehicle on alcohol that I purchase from farmer co-ops in the Midwest.

DK: *Are there any stations here yet?*

DB: We're trying to get the first public station in California opened in Santa Cruz in the next few months.

DK: *How do you get alcohol here?*

DB: Alcohol is in all the gas here in California. It is delivered to gasoline companies from the midwest. When they phased out MTBE, they needed to put an additive in gasoline to reduce emissions, and alcohol is an extremely clean fuel. Almost all of California gas contains 5.7% alcohol. We can buy alcohol straight from the same midwest sources. In my case, it's delivered to a 1000-gallon tank from which I fill up.

DK: *So, alcohol is trucked to depots and you can buy it directly from the depots in California?*

DB: Most individuals can't yet do that. You'd have to hire a fuel trucker to go into the depot and deliver it to your home or neighborhood storage tank. This is one of the major focuses of the second half of my book: we can set up local driver-owned cooperative alcohol stations.

DK: *How many alcohol fuel co-ops across the U.S. have you helped set up?*

DB: During the 1980s, over 100 co-ops formed after my workshops, but most faded away after oil dropped to \$10 a barrel. Recently, two new co-ops formed as a result of some of my lectures, and we are about to open the first driver-owned station in Santa Cruz.

DK: *Are there some alcohol fuel co-ops in other states in the U.S.?*

DB: There are about 100 alcohol fuel plants in the U.S. They are pretty big operations. Most are in the Midwest where the huge quantity of corn is located. About half of those plants are farmer-owned cooperatives. This is not a movement that is being spearheaded by the big four agribusiness companies. But, just recently, the venture capital people have awakened to the fact that alcohol is profitable. This is worrisome in that new alcohol plants will be corporate-owned and not owned by the farmers. Thus, one of the points of my book is to help small-scale farmers actually retain control of alcohol production by joining together with just a few of their neighbors to produce 1 to 5 million gallons of alcohol per year, which is basically just 5% of the size of big plants that the corporations build. There are significant advantages for the small scale and that is why we want to see the small farmers do this.

DK: *How can someone who is really enthused about this go about investing in alcohol fuel cooperatives?*

DB: There are many factors involved in this emerging industry. One of the goals of my book is to demystify small-scale production of alcohol so that your average entrepreneur can take it on. The other thing that I think we need to recognize is

that the demand for alcohol is constrained by the fact that the oil companies own all the gas stations, and they don't want to offer alcohol at the pump.

So, the first thing that needs to happen is for people to join together and start their own alcohol stations. Once you've got 500 or 1000 people who are getting their fuel at a given station, that's maybe a million gallons per year. That station can then contract with a farmer or a group of farmers to produce the fuel supplies. I think that is a very viable model because if the farmers know they've got a market for the fuel, and it's a safe market as it would be in the case of a driver-owned station, they can then go ahead and sever themselves from the current system where they grow corn or soybeans just to sell at Cargill or ConAgra and get almost nothing for it. In this way, the farmers could turn their corn or other energy crop into alcohol, which is much more profitable than the raw material. The byproducts from making alcohol fuel are also very valuable, as covered in my book.

Those are the steps. People need to create the demand for driver-owned alcohol stations. I think the activism really starts with getting the distribution monopoly broken, and it's easy to do. We have successfully done this already in agriculture. My farm was one of hundreds that based its structure on community-supported agriculture where I grew food for up to 450 subscribers. That's why in my book I call the budding driver-owned cooperative system "Community Supported Energy."

DK: *What are the legal implications of setting up one's own still in his backyard?*

DB: When I first started doing this in the '80s, it was illegal to make alcohol in any form. You weren't even allowed to make beer or wine in any quantity back in 1980. The Bureau of Alcohol Tobacco and Firearms (ATF) had that all locked up; distilling was really out of the question. Some of us alcohol fuel pioneers learned that there was an experimental permit that the ATF had for corporations that wanted to try some new piece of equipment. It allowed corporations to operate an experimental still without having to fill out the reams of paperwork that would normally be required. So, we wrote about that in various magazines and 250,000 people applied for this permit.



Photo: Matt Farnegio

Jim Hall's self-built 12-inch continuous distillery. Mash cooker and grain auger are to the left. Fermentation tanks are in the back.

There were only two people that were employed to process permits and we overwhelmed them. So they made the permit free. As a result, you can make up to 5,000 gallons of alcohol per year on this free permit. That permit is still in existence today, and it is easy to fill out.

DK: *So, anybody, your next-door neighbor, could construct a still and make 5,000 gallons of alcohol per year?*

DB: Correct. You could make more, but the free permit takes you up to 5,000 gallons.

DK: *I understand that government regulations require that something be added to the alcohol fuel to "denature" it, or make it non-potable. What is commonly used and are there any bio-friendly additives?*

DB: Right now they aren't giving us many choices for denaturing the alcohol. We must use 2% gasoline. There aren't any eco-friendly denaturants right now; that is one of the problems we need to solve. I'd like to get 1% allylmercaptan permitted as the denaturing agent. Extracted from garlic, it is the chemical that used to add odor to natural gas.

DK: *So, it's legal to run your car on an alcohol mixture right now and your book teaches you how to make a still, start a co-op and convert your car. As far as getting your car smogged and registered, are there any issues about that.?*

DB: You must learn how to hold in your laughter when you get your vehicle smogged. They stick the probe in the exhaust pipe, go back to the meter, see no movement in the smog gauges and start banging on the machine thinking it's jammed. When I bring in my Ford Ranger for smog testing, it registers all zeros on nitrous oxide, carbon monoxides and hydrocarbons.

DK: *Are there any particulates?*

DB: The petro fuel hydrocarbons contain the particulates; alcohol registers a big zero. Most cars running on 98% alcohol will register at zero or nearly zero in pollutants.

DK: *How many miles per gallon are you getting and what's the cost per gallon?*

DB: My car gets about 12% fewer mileage per gallon than it did with gas. Right now I'm buying alcohol for about \$1.80 a gallon. I could make it for 43 cents a gallon.

DK: *What fuel crops would you choose in California?*

DB: I'm really partial to the "Donut Tree" in California. They "harvest" those donuts and bring them into the bakeries every morning where they sell them to the police, and the police can only eat so many so they have to throw away all the rest.

DK: *Yikes! So, as a result of that junk food there's a big excess of carbohydrate fuel that normally ends up in the landfill?*

DB: Right. A pickup truck full of doughnuts would make 100 gallons of alcohol. I like doughnuts for a particular reason: they are fried in fat. All of the fat floats to the top, making it easy to skim off and use it to fire the stills. So, I wouldn't have to use any energy source.

DK: *How does one decide which fuel crops to grow?*

DB: Every place is different; the best crops vary depending on what kind of land you're on and what climate you're in. A lot of things that you might not think of as crops actually



Photo courtesy of Erik Van Bockstaele.

Fodder Beets, Turbo Klein Variety.

are good energy crops. For instance, cattails. We're sitting here by an estuary, and you can see some over there. They basically produce a huge amount of starch in the base of the stalk. You could expect 2,500 to 10,000 gallons of alcohol per acre from that starch. The higher figure is achieved when cattails are used in a natural marsh sewage treatment system.

If you are in the southwest, there are mesquite trees. They are nitrogen fixing, need no water, no fertilizer and no inputs whatsoever. You can get as much alcohol from just picking the pods, which are 35% sugar in season, as you obtain from an acre of corn: about 300 gallons per acre.

DK: *So, high sugar or starch content are the keys, and fruit processing-byproducts are perfect?*

DB: That's correct.

DK: *I like your description of alcohol as "liquid solar energy." For a home still, if someone doesn't have a farm, could you even make alcohol from grass clippings and leaves?*

DB: Grass clippings and leaves are cellulosic materials. Like starch and like fruit, the basic component of those materials is sugar. Plants make sugar and then they make that sugar into different things. You can link a bunch of sugars together and they become starch, or you can link many sugars together, 10,000 or more, and they become cellulose fiber. So, grass and leaves and stuff are mostly cellulose and a resinous substance called "lignin," which is what gives the cellulose its strength.

In theory, those materials can be made into alcohol. In prac-

tice, that is better suited to a larger scale process, something you really couldn't do easily in your backyard. It is one of the challenges that I want to work on: to come up with a farm scale or small scale way of turning that cellulose back into sugar so that we can then ferment it and make alcohol. It's just a matter of taking equipment that's currently used on a big scale and figuring out how to miniaturize it.

DK: *It seems that a neighborhood composting facility which takes in yard waste would be a perfect scenario for this.*

DB: Oh, yes. In the U.S. we have 70 million acres of corn. We also have 30 million acres of lawns. So we can provide about 15% of the fuel we use in the U.S. just by turning our grass clippings into alcohol. And that's not counting all the green waste—the prunings of our shrubs and bushes and leaves. Our lawn clippings alone could replace about one-half of what we get from the Middle East.

DK: *For the fermentation process, how is the yeast obtained? Can it be made at the plant?*

DB: Yes. In my book we talk about how you can use a very small quantity of purchased yeast and multiply it out many times in a yeast fermenter.

DK: *Regarding the distillation process where the mash is cooked to greatly increase its fermentability, what are the best fuel choices for the heat?*

DB: There are a lot of different ways to provide the heat for distillation without using fossil fuels. In Brazil, after they crush the sugarcane to extract the juice for fermenting, they take the leftover plant matter and burn it in boilers to provide the heat to run the alcohol plant.



Photo courtesy of Syngenta.

Tropical Sugar Beet.

In India, after the alcohol process is finished, they take the liquid mash, which contains some remaining sugar-cane juice, and place it in methane digesters. The methane is a natural gas which powers the alcohol plant.

DK: *Could alcohol be used to run big diesel equipment—even trains, tractors and generators—and be used for home heating, too?*

DB: Alcohol can fuel diesel vehicles. Any turbine engine, like

those on jets or trains, can run on alcohol. Biodiesel can be blended with alcohol. There are six different ways in my book that I show how to convert diesel engines to alcohol. But, unlike biodiesel, which is about as dirty as gasoline, alcohol is nearly pollution free.

DK: So, we could stop using coal and other fossil fuels altogether?

DB: Absolutely. We have no need for fossil fuels. The only reason we are using fossil fuels now is politics. There is no reason why the entire planet can't easily be run by solar energy—and it's cheap!

For instance, we have already spent \$500 billion on the Iraq war. Follow these numbers with me: to make an alcohol plant, it costs about \$1 for every gallon of annual capacity; to produce 100 million gallons per year, the plant costs \$100 million

QUOTES FROM ALCOHOL CAN BE A GAS! by David Blume

“During the press conference making the premiere of my television series, ‘Alcohol As Fuel,’ Bucky [Buckminster Fuller] said that he had been in charge of America’s alternative energy research for the military during World War II. He himself had run an engine on alcohol for two years during his war research. In a very thinly veiled comment, he noted his voluminous notes and research done within the military-industrial establishment are now missing, apparently stolen from military archives in 1970.”



“I firmly believe that if my television series had gone on in 1983, we would not have had the first Gulf War, and we would not have found ourselves in Afghanistan and Iraq—because we would not have been dependent on Middle East oil.”

“...ecologically, Nature favors creatures that cooperate... So, what might that cooperation look like? Farmers among your circle might produce an energy crop, and provide you a place to operate a distillery to produce the fuel.”

“...the most exhaustive (and least-cited) study on the energy balance, by Isaias de Carvalho Macedo of Brazil, shows an alcohol energy return of more than eight units of output for every unit of input, and this study accounts for everything right down to smelting to make the steel for tractors. But perhaps there’s a more important measurement to consider than EROEI [energy returned

on energy invested]. What is the energy return for fossil fuel input? Using this criterion, the energy returned from alcohol fuel per fossil energy input is much higher. Since the Brazilian system supplies almost all of its energy from biomass, the ratio of return could be positive by hundreds to one.”

“...the system facilitated by alcohol fuel production actually allows us to reduce carbon dioxide emissions. How? The growing of plants actually ties up many times more carbon dioxide than is created in the production and use of the alcohol. The portion of the plant that becomes fuel is not all of the plant. All of the vegetative portions of a plant, from roots to stalk and leaves, are made of sequestered carbon dioxide and water, primarily the carbohydrate cellulose. Plants sequester up to ten times more carbon dioxide from the air, compared to just the balanced CO₂ recycling from the part of the crop (e.g., grain) that is used to make the alcohol. Plants also exude up to 80% of the carbon they absorb from the air through their roots, as sugars, to feed beneficial fungi and bacteria.

The implications are staggering. If a balance were struck (as it could be using alcohol as fuel), the oceans and plants would absorb the excess CO₂ over a period of 50 to 100 years. Increasing plant growth by converting from hydrocarbon to a carbohydrate economy could reduce atmospheric carbon dioxide far more quickly. A crash program of reforestation, energy crop planting and ocean kelp farming could rapidly reverse global warming!”

“It’s up to...each one of us to take back our lives and, take back our planet, take care of ourselves. Yes, I am talking about a revolution here...fully taking on the responsibility for providing a healed planet and, therefore, a future worth living for all of Earth’s life. We can do it. Share. Organize. Win. ”

to build. The entire world uses 500 billion gallons of diesel and gasoline a year. So, if we took the money that we have already spent in Iraq, we could have built alcohol plants that would have fueled every single country on earth permanently with pollution-free alcohol fuel. Instead, we have flushed that money down the drain in Iraq in a ridiculous attempt to get a bit of the oil that is left.

DK: *From the standpoint of the corporate oilgarchy, what is alcohol up against?*

DB: Alcohol is the bulls-eye target at the American Petroleum Institute's firing range. Few are willing to stand up to them. You can promote biodiesel all day and get all the great press, unlike promoting alcohol, because the oil companies don't see biodiesel as any kind of threat at all. If all the oil in the U.S. were converted to biodiesel, it wouldn't even replace 2% of the diesel fuel. But, alcohol is a big threat because it's easily produced by plants.

A whole acre of soybeans produces only 40 to 50 gallons of biodiesel. A whole acre of sugar beets will produce 1000 gallons of alcohol. Even higher yields are possible.

Alcohol has always been a huge threat to the oil industry. For nearly 100 years, it has perpetuated a constant barrage of fabricated misinformation about alcohol fuel. This puts people at risk for speaking up.

DK: *Please sum up some of the myths about alcohol fuel covered in your book. Firstly, the myth that alcohol doesn't do anything to alleviate greenhouse gas emissions or makes it worse.*

DB: The standard propaganda is: when you burn a gallon of alcohol you get 20 pounds of carbon dioxide, and when you burn a gallon of gasoline you get the same quantity. The difference between alcohol and gasoline is that the plants that we use to produce alcohol have absorbed more than 20 pounds of carbon dioxide out of the air—there is a cycle involved. When we burn the alcohol, carbon dioxide and water go out in the exhaust. When the plants are growing, they take in carbon dioxide and water and make carbohydrates that we use for making alcohol. But we only use a small part of the total plant to make the alcohol. The whole plant is made of carbon dioxide and water, not to mention the sugar that plants pump into the soil as part of their natural processes.

A really nicely-done study came out on December 8, 2006 in Science magazine. It showed that a polyculture of 13 energy crops grown together took 14 times the carbon dioxide out of the atmosphere than was emitted in the production and burning of the alcohol. So, alcohol fuel production is actually not just neutral in regard to greenhouse gases—it's a way of reversing global warming.

DK: *This spring, President George W. Bush announced an*

agreement between the U.S. and Brazil. Brazil is now predominantly into alcohol fuel. What was that about?

DB: There really wasn't any substance to it. Basically, every time George Bush talks about alcohol fuel, the reason is to try to keep it from being an issue the Democrats can call their own. The bottom line: Bush does not put any money into helping develop alcohol fuel. In fact, he does everything he can to derail alcohol fuel production. He'll say we are addicted to oil and we need to go to ethanol, but his government does absolutely nothing in the way of following through.

DK: *In your DVD, you stated that the 2008 Olympics in China are going to be fueled by alcohol. Is that still the plan?*

DB: As far as I know, the 2008 Olympics in China will be fueled by a number of alternative fuels. Alcohol is one and hydroelectrically produced hydrogen is another. It is a major wake-up call to the U.S. that the Olympics will be renewably powered, demonstrating to the world that oil is not that important.

DK: *Please bust the myth that all these crops deplete the soil.*



DB: Consider corn, an energy crop. If we take the starch out of that corn to make alcohol, everything that came from the soil is still there in the byproduct. That is, nothing from the soil ends up in the alcohol because it is simply made

up of solar energy, carbon dioxide and water. If we take that mash and return it to the soil, we have basically taken all the nutrients feeding that crop and transferred them to next year's crop. Thus, we don't need any fertilizer at all for the following year's crop. And we don't need any herbicides because, as we have found, the byproducts from the corn fermentation are very good natural herbicides. With this, we have taken Monsanto and its genetically-engineered corn and herbicide completely out of the picture. We have also eliminated the oil companies, because they are the ones who usually sell the fertilizer to the farmers.

So, without even using the word "organic," we have effectively brought farming to a place where it is 99% organic, by using this technique.

DK: *Please cover one more myth: "energy returned on energy invested" is not good for alcohol.*

DB: Alcohol fuel production is a renewable energy process; oil is not. In my book I demolish the studies of David Pimentel, a scientist who says there is less energy yielded than expended in alcohol production. Although he is a laughingstock in the scientific world, his studies get the same attention in the press as, for example, the six scientists who claim that global warming is an unproven theory. Although, in comparison, 6,000 scientists have said global warming is a fact, the media always quotes one of those six dissenting scientists, for “balance.” In this, David Pimentel can be said to be our version of the “Climate Change Doubting Six.” Every other statured scientist has found alcohol to have a very positive energy balance, from a low of about 70% positive with corn to 830% positive in the case of sugar cane. But you would never know it from reading the popular press. In fact, 20% of a barrel of oil is used up in transporting it 11,000 miles from the Mideast and refining it to make gasoline, so the negative energy balance is actually in oil.

DK: So, is alcohol profitable?

DB: Alcohol is very profitable. We are basically looking at a production cost of about \$1.00 per gallon right now. Alcohol sells for \$2.00 a gallon wholesale. That’s about a 100% return on investment a year. That’s the biggest object of smear. As long as we are above \$40 a barrel of oil, alcohol is a more profitable fuel.

DK: In the end of your book you talk about your model for the community-sustainable co-ops. Please sum up your vision of that model.

DB: I based my model of the future for auto fuel and other energy systems on the community-supported farming model. It’s been around for about 15 years now, whereby a group of consumers contracts with a farmer to produce their food. I would like to see driver-owned stations contracting with farmers to produce their own alcohol for their stations as well as using all the byproducts to provide high value vegetables, fish for those who want to eat that kind of thing, flowers, earthworm castings and many different things from all the byproducts of alcohol fuel. This way, the farm becomes a multi-faceted, community-supported supply system, not just for energy, but also for food and alcohol fuel, making the enterprise profitable, not just for the farmers, but also for all who are involved in the community.

My ultimate goal is to buy land here, with good secure land tenure, so that farmers can come and spend a week at our hands-on center where we would demonstrate all the things we show in the book. They would learn how to produce alcohol and organic vegetables and all the other byproducts. At such a center, we would do long-term projects showing how we integrate polyculture forestry with alcohol production.

DK: One of my goals is to help to see that you are appointed world energy czar! The development of ethanol, solar and

wind power technologies seems like the most natural solutions to the looming energy crunch. I want to thank you tremendously for all your work. You deserve enormous thanks and support for all this, and Living Nutrition will stand up front with you in support of this revolution.

DB: Thank you, Dave. This revolution is actually quite simple. If you don’t like what transnational corporate capitalism has done to the food you eat and the energy you need, then the way to take it out of the picture is pretty clear: stop giving them your capital. Buy your food from farmers and support your local alcohol station. As I say in my book: “Do we let MegaOilon take the world down into the hell it is creating, or do we withdraw our support and dollars, hitting this capitalist oligarchy where it hurts the most? Share, Organize, Win.” 



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