PREAMBLE

We, the undersigned members of the Metro Future Vision Commission, herewith submit to the Metro Council and to our fellow citizens this Vision Statement for a desirable fifty-year future for the people of our Region. We hope that the Council will adopt this Statement, with changes as needed, so that the Statement will then become a guiding document for future policy-makers throughout the Region.

In writing this Statement we have consulted with numerous fellow citizens. We thank them for their input, which gives us confidence that our Statement embodies values that are widely shared throughout the Metro Community.

WE MUST KNOW WHAT WE WANT

History teaches the cruel lesson that any community that does not possess a clear vision of the kind of future it wants, is not likely to be satisfied with the one it ends up getting. We citizens of Metro must develop a vision of the kind of future we want, and then actively pursue policies that will bring that future to reality. We must insist that our values drive change, and not be lured into letting change suffocate our values. Otherwise, if we remain passive, the Metro area will surely lose its wonderful qualities at the hands of external forces and internal drift.

Knowing what we want also means seeing our key values as a system in which each key value reinforces the others in a harmonious whole that embraces all major aspects of the Metro way of life: ecological, political, legal, technological, economic, social, and aesthetic.

OUR KEY VALUES

Our Metro way of life has been evolving at least since the days of President Jefferson. It embodies a number of key values that are essential to facing the future wisely. Among these are the following.

_ We value our wonderful livability -- and to protect it we must make plans and provisions for the orderly accommodation of newcomers who move here attracted by that very livability. There might be legal and humane ways of moderating the inflow of new Metronians, but since we live in a federal republic that essentially guarantees freedom of movement, we must face the inevitability of a substantial population inflow.

_ We value placing sufficient weight on long-run social well-being to insure that our livability is permanent. This will inevitably mean that in appropriate instances government must assertively and proactively prevail -- using its powers to tax, finance, regulate, or zone -- over individuals who seek to make large short-run profits through land speculation or similar means.

_ We value the greatest possible individual liberty in politics, economics, ethnicity, lifestyle, belief, and conscience -- but realize that this liberty cannot long endure unless accompanied by an enlightened responsibility toward the Community as a whole.

_ We value maximum economic opportunity -- balanced by suitable social mechanisms to insure equity for all, and compassion for those in need.

_ We value economic development because it can create an abundant life for all -- but recognize that true economic development means protecting everyone's right to an unpolluted workplace and environment, and unimpaired sustainable natural ecosystems.

_ We value our special Metro identity and sense of place -- but also those of all our urban neighborhoods and suburban communities.

_ We value the best possible built environment -- and this means a built environment in harmony with the natural environment. In planning to achieve this harmony, we value the following priorities:

1. to try to conserve and preserve the existing built environment; and

2. if that is not possible, to try to restore and redevelop; and

3. if that is not possible, to convert and develop the natural environment into the built.

_ We value our traditional closeness to the beauty of nature and seek to preserve it by protection of park, farm, forest, and other non-urban land and open space toward the edges of our area, as well as by the preservation and creation of park and natural areas throughout it.

_ We value individual choice in housing arrangements for all -- but also recognize that the true quality of such choices depends on encouraging a settlement pattern creatively designed to provide maximum environmental, aesthetic, recreational, and other benefits for our entire Community.

_ We value maximizing the convenience and efficiency of transporting persons and goods within and through our area --while at the same time minimizing residential crowding, traffic congestion, air pollution, and environmental degradation.

_ We value the creative use of the new information technology for the economic, political, and personal benefit of all Metronians -- but also support institutions that nourish the unique friendly ambience of direct personal contact for which the Metro area is justly famous.

_ We value strong intellectual and aesthetic stimulation that helps us innovate creatively -- while also encouraging a reflective life that seeks to select and preserve the wisdom of the past.

_ We value a Metronian society that places strong emphasis upon lifelong education, both so that our citizens may seek to enrich their lives, and so that our society may remain competitive in a global marketplace portending sudden dangers and offering sudden shifts in economic opportunity.

_ Above all, we value a cultural atmosphere and public policy that will insure that every Metronian child -- regardless of gender, race, ethnicity, religion, family, wealth, or residence --

enjoys the greatest possible educational and other opportunity to fulfill her or his potential in life. It is, after all, primarily for them, and for their children, that we write this Vision Statement.

[902 words.]

Future Vision Commission

Values, Vision Statements, and Action Steps

May 16, 1994 - DRAFT

Preamble...

In 1805, Lewis and Clark came to this region on a journey of peace and friendship, scientific exploration and discovery. Beginning in the 1840's, thousands of pioneers made an arduous 2,000 mile, eight month trek along the Oregon trail to river valleys with rich farmlands and mountains with vast forests. Today, people are still attracted to this region for its jobs, natural beauty, and reputation for livability. Recognizing that we must act to maintain and enhance these qualities, we offer this vision of the bi-state region in 2045 as a first step in developing policies, plans, and actions to serve the region and its people.

The bi-state metropolitan area has effects on, and is affected by, a much bigger region than the land inside Metro's boundaries. Our region stretches from the crest of the Cascades to the crest of the Coast Range, and from Longview on the north to Salem on the south. Any vision for a territory as large and diverse as this must be regarded as both ambitious and a work in progress. We offer this document in that spirit.

This vision has been developed with the expectation that individual dreams and effort will matter here. Ours is a region that rewards those who commit themselves to keeping and making it a great place to live. History teaches the sometimes cruel lesson that any community that does not possess a clear vision of the kind of future it wants is not likely to be satisfied with the one it gets. Taking the time to identify what we want, and then acting purposefully and collectively to achieve it, is critical.

Our way of life in this region embodies a number of key values that are essential to facing the future wisely:

- We value the greatest possible individual liberty in politics, economics, lifestyle, belief, and conscience, but realize that this liberty cannot long endure unless accompanied by an enlightened responsibility toward the community and our environment as a whole.

- We value maximum economic opportunity balanced by suitable social mechanisms to insure equity for all and compassion for those in need.

- We value economic development because of the opportunities it affords us all, but recognize that true economic development means protecting everyone's right to an unpolluted workplace and environment, and unimpaired and sustainable natural ecosystems.

- We value our regional identity and sense of place, and unique reputation and accomplishments among metropolitan areas, but also the identity and accomplishments of our urban neighborhoods and suburban communities as well.

- We value participatory decisionmaking which harnesses the creativity inherent in a wide range of views about the past, present, and future.

- We value a life close to the beauty and inspiration of nature, but which occurs in a model for regional urban development and function in the next century.

- We value meeting the needs of our communities through grass-roots initiatives, but always questioning whether the actions to be taken will be in the collective interest of our metropolitan communities, and lead to greater capacity for adapting to new challenges and conditions in the future.

- Above all, we value a cultural atmosphere and public policy that will insure that every child in every community enjoys the greatest possible educational and other opportunity to fulfill his or her potential in life. It is, after all, primarily for them, and for their children, that we write this Vision Statement.

Vision Statements, Actions, and Indicators...

Our Vision is composed of the following vision statements and the accompanying maps. For each vision statement, we have identified actions to be taken, starting today, to realize our 50-year goals. We have also identified indicators that will be monitored and discussed on an annual basis as a means for continually engaging the community in piloting this region towards its future.

The vision statements are sorted into three groups, based on our belief that as inhabitants of this bi-state region, we are committed to:

1) Each Individual - the development of each individual as a productive, effective member of their community. We believe that this region must make clear and unambiguous commitments to each individual if we want to enjoy the fruits that come only from long-term commitments by individuals to make this a vibrant, healthy place to live. This doesn't mean that our region must be all things to all people. Rather, our challenge is to speak clearly about what we can and will do to support the ability of individuals to participate in

the stewardship and prospering of this region.

2) Our Society - the ability to state and act on the collective interest of individuals through civic involvement, collective action, and societal institutions. People working together is the fundamental ingredient for great communities and flourishing societies. We believe that the creation of a society and societal institutions which engage people with each other to solve problems and act on dreams must be a cornerstone for how we go forward into the future.

3) Our Place - the physical landscape of the bi-state region, the settlement patterns that have evolved within it, and the economy that continues to evolve. We live in a landscape of great variety and beauty, a stage for an enviable range of possibilities. Preserving that vast sense of potential must be the core of our legacy of inhabitation. We believe, therefore, that our first commitment must be to the conservation and preservation of natural and cultural landscape resources. Our next focus must be the restoration and redevelopment of resources already committed to sustaining our communities and economy. Finally, and only after we have exhausted other options, will we look to the conversion of land to urban uses to meet our present and future needs.

Each Individual

• In 2045, education, in its broadest definition, stands as the core of our commitment to each other as shown by:

-- the availability of a high quality education to all, emphasizing skills for learning how to learn in the earliest years, and life-long learning opportunities thereafter;

-- an emphasis on foreign languages, technology, and the ability to engage national and international opportunities at home, in the community, and on the job;
-- the integration of community institutions...libraries, schools, museums, community centers, etc....with this educational mission; and
-- opportunities for all children and community residents to engage in the visual and performing arts in community centers in their neighborhoods.

- We will achieve this vision by:
    --Metro will work with other government entities and with educational and cultural organizations to ensure that:
        * 99% of new parents receive an understanding that the foundation of a child's language is developed in the first six months of life, and that infants should be read to from birth
        * Public library policies, staffing, and resources are strong enough to reach out and effectively serve 99% of children ages two to twelve. (As well as all others.)
        * 99% of children receive an education that brings them to the entry competency level of post-secondary education.
    --Metro will help the region utilize all public and private enterprises in the education and cultural growth of residents to ensure that:
        * Community arts and performance centers, community libraries and schools, concert halls, galleries, museums, magnet and theme schools, nature centers, and theaters are considered as vital links in the education of children as part of their total function.
        * Business and industry work with children in the areas of human relations, international relations, education for individual development and for the

workplace, advances in science and technology -- and how an individual can contribute to the region's production and economy with dignity. (This would help business and industry as well as children.)

--Metro will help the region ensure:

* Universal access for children, regardless of income, to learn, participate in and perform in art, dance, drama and music; and like access extended to all area residents.

- We will keep track of how we're doing by monitoring:

• In 2045, workforce development from Battleground to Salem and all points in between is a key priority for government and educational institutions. A cornerstone for that activity is the development of a well-educated workforce capable of contributing to the development and intensification of local, national, and international trade and commerce.

- We will achieve this vision by:
- We will keep track of how we're doing by monitoring:

• In 2045, all residents, old and young, rich and poor, men and women, minority and majority, are supported and encouraged to be active participants in the civic life of their communities and the bi-state region. Ours is a region that thrives on interaction and engagement of its people to achieve community objectives.

- We will achieve this vision by:
- We will keep track of how we're doing by monitoring:

• In 2045, we recognize children to be our most precious resource for the future. Their welfare and education are of critical importance to our present and future well-being. Creating and sustaining economic and social programs that support family life are among our highest priorities.

- We will achieve this vision by:
- We will keep track of how we're doing by monitoring:

Our Society

• In 2045, personal safety within communities and throughout the region is commonly expected as well as a shared responsibility involving citizens and all government agencies. Our definition of personal safety extends from the elimination of racism and sexism, to the physical protection of life and property from criminal harm.

- We will achieve this vision by:
- We will keep track of how we're doing by monitoring:
  --emergency and public safety services response time

• In 2045, our communities are known for their openness and acceptance. This region is distinguished by its ability to honor diversity in a manner that leads to civic cohesion rather than a narrow separateness. Truly public space exists in every community, and serves as the stage for a rich and productive civic dialogue.

- We will achieve this vision by:
- We will keep track of how we're doing by monitoring:

- In 2045, citizens respond to a high degree of individual liberty by embracing responsibility sustaining a rich, inclusive civic life. Political leadership is valued and recognized to be in service to community life. Here, civic pride has become a virtue, not a vice.

- We will achieve this vision by:
- We will keep track of how we're doing by monitoring:

- In 2045, broad-based civic literacy, including the ability to participate in government and community-based future visioning activities, is a hallmark of what we have achieved. Individual civic responsibilities are known and understood at the neighborhood, local, and regional levels. The information needed by informed, involved citizens is free and easily available throughout the region. All individuals, communities, levels of government, public institutions, private organizations, and businesses are part of the social contract.

- We will achieve this vision by:
- We will keep track of how we're doing by monitoring:

- In 2045, the neighborhood is our safety net. Government initiatives and services have been developed to empower neighborhoods to actively meet the needs of their residents. The economic life of the neighborhood is inseparable from its community life. Coordinated initiatives for health

care and support for meeting basic needs are extended to those in need, where they live.

- We will achieve this vision by:
- We will keep track of how we're doing by monitoring:

- In 2045, our history serves us well, with the lessons of the past remembered and incorporated in our strategies for the future. The cultural history of this region is evident and connects human history to the natural history we depend on and value so dearly.

- We will achieve this vision by:
- We will keep track of how we're doing by monitoring:

Our Place

- In 2045, rural land shapes our sense of place by keeping our cities close to nature, providing open areas, and contributing to the environmental and economic productivity of this area.

- We will achieve this vision by:

  --Development and implementation of regional framework plan elements shall actively reinforce the protection of lands currently reserved for farm and forest uses for those purposes. (note: we should probably include a list of all of the RFP elements and respond to each one, either with specific direction or to indicate that there is no connection)

  --Metro and the Future Vision Commission will work with _____ to develop a

broad program of public education about and contact with this region's agricultural and forest products producers.

- We will keep track of how we're doing by monitoring:
  - --acres of land reserved for farm and forest use
  - --number of rural residential homesites available
  - --acres of land served by irrigation districts
  - --number of agricultural and forest product processors
  - --gross farm gate receipts (by county)
  - --agricultural and forest employment
  - --agricultural and forest product exports
  - --attendance at county fairs
  - --exhibitors at county fairs (number and type)

- In 2045, our region is composed of numerous communities which offer citizens a wide variety of healthy, appealing housing and neighborhood choices. They are physically compact and have distinct identities and boundaries. Boundaries between communities have been developed through the use of parks, rivers, streams, creeks, and other landscape features.

- We will achieve this vision by:
  - --Targeting greenspaces, transportation, and other funds to communities which act to provide a range of housing types within their boundaries.
  - --Linking the provision of building permits for single family detached structures to the creation of mixed use neighborhood centers.
- We will keep track of how we're doing by monitoring:
  - --number of active neighborhood or citizen planning organizations
  - --number of households paying in excess of 30% of their gross income for rent

--percentage of new housing units that are multifamily (per year)

--number of neighborhood or civic festivals per year

--number of subdivisions within which multifamily housing is available or planned

• In 2045, our region is known for the intelligent integration of urban and rural development with natural systems as evidenced by:

-- improving air and water quality, and increasing biodiversity;

-- views of Mt. Rainier, Mt. St. Helens, Mt. Hood, Mt. Jefferson, and other Cascade and coastal peaks, unobstructed by either development or air pollution;

-- ribbons of green bringing greenspaces and parks within walking distance of every household;

-- a close and supportive relationship between natural resources, landscape, and the economy of the region; and

-- active efforts to restore damaged ecosystems, complimented by planning and development initiatives that preserve the fruits of those labors.

• We will achieve this vision by:

--Proposed regional framework plan elements will positively affect the indicators listed above.

--Metro and the Future Vision Commission will work with partners in the region to develop interpretive programs for the ecosystem(s) of the area

• We will keep track of how we're doing by monitoring:

--air quality

--water quality

--species counts

--number of protected view corridors

--acres of protected habitat

--acres of parks

--miles of hiking trails and greenways

--acres of habitat restored

--number of employees in environmental service sectors

--participation in environmental education programs

--percentage of population within a 10-minute walk of protected open space

--groundwater elevations

• In 2045, residents of this region can shop, play, and socialize by walking or biking within their neighborhoods. Walking, biking, or using transit are attractive alternatives for all citizens making all types of trips within neighborhoods, between important regional centers, and outside of the urban area. This region is known for the quality of its non-auto transportation alternatives.

- We will achieve this vision by:
- We will keep track of how we're doing by monitoring:

--non-auto mode split(s)

--pedestrian environmental factors (by neighborhood)

--acres of land zoned for neighborhood commercial uses

--etc.

• In 2045, the easy movement of goods and materials throughout the bi-state region is a competitive advantage for our economy. Manufacturing, distribution, and office employment centers are linked to the transportation system in a comprehensive and coordinated manner.

- We will achieve this vision by:
- We will keep track of how we're doing by monitoring:

- In 2045, our bi-state, regional economy is diverse, with urban and rural economies linked in a common frame. Planning and governmental action have created conditions that support the development of family wage jobs for low income households, in locations throughout the region.

- We will achieve this vision by:
- We will keep track of how we're doing by monitoring:

- In 2045, downtown Portland continues to serve an important, defining role for the entire metropolitan region. In addition, reinvestment, both public and private, has been focused in historic urban centers such as Ridgefield, Camas, Vancouver, Gresham, St. Helens, Beaverton, Hillsboro, Molalla and others throughout the bi-state region. This pattern of reinvestment continues to be the centerpiece of our strategy for building and maintaining healthy communities.

- We will achieve this vision by:
- We will keep track of how we're doing by monitoring:

- In 2045, the tradeoffs associated with growth and change have been fairly distributed throughout the region. The true environmental and social cost of new growth has been paid by those, both new to the region and already present, receiving the benefits of that new growth.

- We will achieve this vision by:
- We will keep track of how we're doing by monitoring:

- In 2045, growth in the region has been managed. Our objective has been and still is to live in great cities, not merely big ones. Performance indicators and standards have been established for the Future Vision and all other growth management efforts, and citizens of the bi-state region annually have an opportunity to review and comment on our progress. The results of that review process are used to frame appropriate actions needed to maintain regional quality of life.

- We will achieve this vision by:
- We will keep track of how we're doing by monitoring:

M E M O R A N D U M

METRO

Date: May 23, 1994

To: Ethan Seltzer fax 797-5199

From: Ted Spence

Re: #178

We will achieve the Vision by:

- Focusing citizen, business and government programs and resources to assure equal access to all civic and occupational opportunities.

- Investing in all of the region's children to assure they have the ~~judgemental~~ Fundamental skills and literacy to acquire higher paying jobs to develop self confidence and self reliance.

- Creating neighborhoods and communities that include a broad range of housing and mixed use centers where people of different races, gender, ethnic, economic and social backgrounds live and interact in mutual harmony.

We will keep track of how we are doing by monitoring:

- Reported hate and other crimes in the communities.

- Degree of business and civic participation by all the groups in our communities.

- Rate of participation by all the differing groups in skilled and higher paid jobs.

- Rate of involvement by all groups in cultural and educational opportunities.

- Availability of public services to all groups.

FVC Values, Visions, Actions Edit of 5/16/94 Draft LHF

Preamble.

line 6-7 Start Preamble with second sentence..."Beginning in the 1840's... this is a colorful and active sentence and grabs the reader's attention.
line 9...vast forests. add: Today, we and our children are on an equally arduous journey into the future. We, a people of many races and origins, of different traditions and beliefs, of different incomes and standards of living, are planning for future generations. Our goals are to keep what is good and to help make our region a place that is attractive to our children so that they continue to live here, work here, and fulfill our hopes for the region's future. In this spirit, we offer this vision of the bi-state region in 2045 as a first step in developing policies, plans, and actions that (omit 'to') serve the region and all (add 'all')its people

line 17 work-in-progress (insert hyphens)

line 22 lesson that a (replace 'any') community

lines 23-24 Making the effort (replace Taking the time)

At this point I believe we can strengthen our case by both putting lines 27-61 in a box or sidebar, and by going immediately from line 25 to line 63.

edit of lines 27-61 that are to be enclosed in a box or sidebar:
LINES:
30- We value individual freedom, diversity, responsibility, and are proud of
32- the level of civility in the region and our outstanding record of citizen
32 participation in government.
34- We value universal and meaningful participation in our economy, and
35- recognize that economic health and the health of individuals and families
go hand in hand.
37- We value everyone's right to an unpolluted workplace and region, and the
40 preservation of the area's natural beauty.

42-44 as is

OMIT 46-47 (now part of 30-32); 49-50 (now part of 37-40) and 53-56 (now part of 30- 32)

New value statement to be inserted after 44 (new line 46-48):

We value Portland as the most liveable major city in the nation, and for its contributions to the economy, education, and cultural life of our region, our state, and our country.

58-75 as is

76 replace individuals with all of us

77-79 as is

81- omit line 81 after Our Society through societal institutions like so:
82- Our society - people working together is the fundamental ingredient of
83- truly liveable communities. We believe that the growth (omit: creation)
84- of a society and its organizations (omit societal institutions) which
85- engage people with each other to solve problems and act on dreams is a
86- basic (omit must be) cornerstone for how we go forward into the future.
(add); We also recognize the value of the individual who questions accepted wisdom and majority opinion.

88-94 as is

95 omit: Finally, and Start sentence with: Only

Each Individual

100-101 as is

103- change to read: — the availability of high quality education to all,
104- beginning at birth, and an emphasis on life-long learning;
105- change to read: — the determination to bring to all children an
understanding of our heritage in all areas of learning, of other cultures

and languages, as well as training in preparation for national and international opportunities.

107- replace integration with:cooperation.

108 as is

109- change to read: — universal access for all children to learn and perform
110- in art, dance, drama, and music groups; and like access extended to all area residents.

112-114 as is

115 (replace receive an understanding) with: are made aware

116-119 as is

120 - remove parenthesis: twelve, as well as all others.

121- as is

122- reverse competency level: entry level competency

123-127 as is

128- add comma after children

129- add after industry: develop ways to

130-131 as is

132-133 remove parenthesis

134-37 as is

139/147/156/163 -- remove keep and of:we will track how we're doing by monitoring:

141

163- *We will achieve this vision by:

— Metro will work with other government and private entities to ensure that no child shall live in poverty and that all children receive:

* Clean air, clean water, safe food and good diet
* Effective health care
* Safe streets, neighborhoods and shopping places
* Protection from commercial exploitation
* Freedom from becoming homeless
* Disciplined social and education environment
* Freedom from threatening and violent environments
* High quality education and learning facilities.
* Convenient access to community arts and performance centers, libraries, and museums.

— Parents:

* Employment outside the home will be arranged so that one of the parents will be home when the children are present.
* Employees and employers will be encouraged to build humane and productive interrelationships that are profitable for all, and that strengthen individual, family, and community life.

FAX TRANSMITTAL

TO: Ethan Selzer

725-5199

FROM: Wayne Lei

PORTLAND GENERAL ELECTRIC COMPANY
121 SW Salmon St., 3WTCBR05
Portland OR 97204

DATE: May 20, 1994

PAGES: 5 (Including Cover Page)

VERIFICATION NO. (503) 464-7428/464-8970

COMMENTS:

Ethan:

Didn't See any need to mess with indicators / the "how to" statements of your "Our place" piece. I did expand on the ones I gave you earlier. I like the way this is heading. Nice JOB! Wayne

i:\es\fax.cvr

Statements of How We Achieve & How We Measure

OUR PLACE

In 2045, the easy movement of goods and materials throughout the bi-state region is a competitive advantage for our economy. Manufacturing, distribution, and office employment centers are linked to the transportation system in a comprehensive and coordinated manner.

- We will achieve this vision by:

  Encouraging free market communication and transportation services and developments that are contained in a fixed, urban growth boundary.

- We will keep track of how we're doing by monitoring:

  -- The increase of businesses relying on multi-mode, -node transportation in the Metro region

  -- The increase in transportation grants from Federal and State sources

  -- The decrease in per capita miles driven

  -- The increase in innovative transportation, communication and energy usage initiatives including:

  - Use of electric vehicles
  - Use of station cars for mass transit users
  - Integration of transportation & communication pathways
  - Distributed energy sources including photovoltaic applications
  - Undergrounding most utility wiring connections for esthetic and reliability reasons

In 2045, our bi-state, regional economy will be diverse, with urban and rural economies linked in a common frame. Planning and governmental action have created conditions that support the development of family wage jobs for low income households, in locations throughout the region.

- We will achieve this vision by:

  Expansion of the responsibilities of the regional governance body to ensure coordinated and equitable economic progress.

- We will keep track of how we're doing by monitoring:

-- A level or increased percentage of fresh fruits/vegetables/flowers delivered to the Metro region from regional producers

-- Increased neighborhood rehabilitations - revitalizations based on diversified manufacturing & service businesses that locate in those areas

-- Increased economic incentives of small to medium sized businesses to locate in the inner urban core

-- Increased economic incentives for large, multi-national corporations to sub-contract work to Metro-region small and medium sized companies as partners in manufacturing and services support

In 2045, downtown Portland continues to serve an important, defining role for the entire metropolitan region. In addition, reinvestment, both public and private, has been focussed in historic urban centers such as Ridgefield, Camas, Vancouver, Gresham, St. Helens, Beaverton, Hillsboro, Molalla and others throughout the bi-state region. This pattern of reinvestment continues to be the centerpiece of our strategy for building and maintaining healthy communities.

- We will achieve this vision by:

  Encouraging market forces and infrastructure planning (streets, roads, utilitites, sewers, etc.) that concentrates on downtown Portland as "core" within a fixed, urban growth boundary.

- We will keep track of how we're doing by monitoring:

  -- Periodic livability surveys with target results that indicate a majority (7 out of 10) of respondents know of other distinct "village" or urban center points within the Metro region

  -- The continued, healthy presence of small-town newspapers and other localized, "village" fellowship and communication devices.... this is a main indicator that other urban centers indeed exist

  -- Annual comparisons of fixed North-South and East West transect profiles spanning the downtown & surrounding metropolitan area-- these profiles, when "smoothed" will always mimic a "bell-shaped" curve in form

---

-- Periodic surveys collected in randomly selected neighborhoods suggest that health services, food shopping, recreational, cultural and educational opportunities are sufficient and accessable in what folks perceive as their "neighborhood"

In 2045, the tradeoffs associated with growth and change have been fairly distributed throughout the region. The true environmental and social cost of new growth has been paid by those, both new to the region and already present, receiving the benefits of new growth.

- We will achieve this vision by:

  Providing regional examples and leadership in implementing specific or implicit, market-based "Users fees" that tax negative outcomes e.g., pollution, instead of positive benefits e.g., profits that generate jobs.

- We will keep track of how we're doing by monitoring:

  -- Increased location of industries that create environmentally benign products or services (e.g., electric vehicles) in the Metro region

  -- Evidence of time of use rates for utility services

  -- Decreases in public and private subsidies that do not consider environmental and social impacts

  -- Improved air and water quality

  -- Decreases in the need for command and control environmental regulation

  -- Higher valuation of urban, "previsously used land" by real estate listings

In 2045, growth in the region will be managed. Our objective has been and still is to live in great cities, not merely big ones. Performance indicators and standards have been established for the Future Vision and all other growth management efforts, and citizens of the bi-state region annually have an opportunity to review and comment on our progress. The results of that review process are used to frame appropriate actions needed to maintain regional quality of live.

- We will achieve this vision by:

  Annually, requiring the regional governance body to describe the "state of the region" in a concise manner pointing out strengths and weaknesses in performance and then requiring a ballot vote of the citizenry indicating simply whether they are satisfied or not with growth management performance. The report is largely quantitative while the ballot vote is a qualitative measure of performance thereby matching hard facts against expectations. Short and long-term corrective actions will be deduced from these results.

- We will keep track of how we're doing by monitoring:

  -- That each political entity (whether municipal or not) will have meaningful input into an overall regional planning document & sign-on as a "stakeholder"

  -- The term "Portland-style sprawl" doesn't exist in annually-conducted, word searches of five randomly selected Metro periodicals

  -- Evidence of regionally integrated planning and management processes spanning environmental, economic, transportation (infrastructure), social, educational interests

  -- National, positive polls by disinterested parties always rate the Portland-region in the top five regardless of how trivial the topic.

ROBERT B. TEXTOR
3435 N.W. Luray Terrace
Portland OR 97210

Tel: 503/223-6370Fax: 503/223-2521

Internet: 73143.1570@compuserve.com

Wed May 18/94

To: Prof. Ethan Seltzer
PSU, IMPS

Via: Fax: 725-5199

From: Robert B. Textor

Re: Some Gaps in Current Version of Draft "Word" Part of Future Vision Statement

Dear Ethan:

As agreed at our FVC meeting Mon May 16, here is my list of gaps in the draft Statement's coverage to date. It's sort of tentative and not full-fledged because of other demands on my time, but might be of some use. I can flesh it out further tomorrow if you would like.

Some of these gaps we might decide not to fill at all. Others we may decide to fill, but not until our meeting with MPAC-JPAC. Still others we may decide to fill before said meeting.

CARRYING CAPACITY

This concept is mentioned explicitly in the Charter's charge to the FVC, so we have no choice but to address it. Whether we choose to address it broadly or in detail (or a bit of both) is up to us. But we can't duck it.

The charge in the Charter seems to suggest that if we know what our carrying capacity is, we can in some instances legislate restrictions on further population inflow. I understand that this is legally doable in some cases, and not in others. An example of the

former might be a scenario in which inflow of population so exacerbates Metro air quality that federal law already on the books is violated. I am guessing here. We need to remove as much guesswork as we can on this one.

The problem as I see it is that carrying capacity is a really complex concept. For example:

_ the same area would have a higher carrying capacity with one type of technology available, than another. Example: the Metro area could exceed its carrying capacity re air quality with one type of pollution-reduction technology, but with another, not.

_ Even holding area and technology constant, the same area would have different carrying capacities depending on what standards of health and comfort are used. E.g., by some such standards, Hong Kong today is still well below its carrying capacity. (The distinction between ecological and social carrying capacity.)

The staff engaged Wim Appeslagh to give us a very detailed paper on this. I think he did a fine job, and we should mine this material. See, for starters, his Executive Summary.

ECONOMIC GROWTH

Population growth does not necessarily promote economic growth and better jobs for Metronians long resident in the area. However, such economic growth almost certainly cannot occur unless there is some population inflow, hence some population growth. The Eco paper was commissioned by the staff and has some excellent economic analysis in it. We should use this paper.

ADAPTABILITY

The staff commissioned a study by Steve Schriver on changes in work-roles. I find this study quite well grounded and reasoned. We should use it.

Schriver's piece screams out with the implication, "Adapt or stagnate." For reasons he gives, plus others, I recommend that our

Statement make "adaptation" a key theme, just as important as "stewardship" -- and clearly related to it.

Metronians in the future are likely to change careers -- not just jobs -- several times during a life career. If they are adaptation-oriented, and if the total situation here is conducive to good adaptation, they will find new niches in the world economy, new ways to make a good living and feel good about the contribution they are making to society. The "total situation" means among other things that the total educational establishment must be responsive to people's emerging needs, and proactively so. PSU is, I believe, much more responsive than most public universities in the US, right now. Here is a fine tradition to build on. The same is true, I would guess, of OHSU, and the Graduate Center for Technology. Local four-year colleges such as Reed, Lewis and Clark, and Marylhurst also have a role to play, as do, of course, the community colleges, which have a long-established "responsive" tradition. Washington State/Vancouver, and (especially when the rapid rail becomes a reality) UO, OSU, and even the University of Washington will be sources of available talent. While our local universities have innumerable highly talented professors, one does hear complaints about their limitations. One of our writing groups has called for the creation in Metronia of a "major research university." I think this should go into our Statement; it can be phrased tactfully.

Having said the above, I think we should include appropriate phrasing to show that we are not advocating that our institutions of higher learning become just "economic adaptation machines." They also exist for many other purposes, such as to educate effective citizens and to promote appreciation of the arts. The challenge is to do it all, and do it well, but with enough sense of priorities so that techno-economic adaptatability is strongly emphasized.

PROBABLE TECHNOLOGICAL CHANGES

In general, we have to lard into the Statement evidence of our awareness that technological changes in certain domains are highly likely. This can be done without committing ourselves to particular

changes by a particular date, which would be risky. But we are safe in projecting that more fuel-efficient vehicles are likely to materialize, whether they take the form of cars that get 100 miles to the gallon, or electrically powered cars, or even hydrogen-powered ones. At the same time, we should point out that prudence requires that we visualize and plan conservatively, and not assume these developments in advance. By such conservatism, we make it more likely that future Metronians will be pleasantly surprised, than unpleasantly.

TELECOMMUTING

This is a fact of life right now. My personal opinion is that so far we have tended to underestimate this already very powerful trend. I think we should overtly recognize, and indeed welcome, it. Why?

_ Because local people who telecommute will use private autos less, or at least be inclined to use them in off-peak hours.

_ Because many people will be enabled by telecommuting to vote with their feet to move here, and they will come with money to invest and jobs to create for people who already live here. They will also contribute to a richer mix of information-oriented professions and resources, with numerous positive ripple effects.

_ Because the people who vote with their feet will have experienced the demise of livability elsewhere, and on average be quite active in contributing to its preservation here.

My own view is that Metro should consider positive steps to pursue, in actively fostering telecommuting and telecommuters. I am not referring to tax breaks, but to such things as maintaining a favorable technological and legal infrastructure; helping to insure adequate supplies of private start-up capital, etc.; offering appropriate courses in our educational institutions, etc.

All for now. Please phone with comments.

Sincerely,
s/Bob

THE FUTURE OF BEND: CITIZEN'S CHOICE

Wm. Boyer

The future of Bend is essentially out of control of the people living here. As in other cities, Bend expands as people come. Businesses open up, and land is developed for houses. That growth process is the engine of expansion which now provides one of the shortest doubling times of population for any part of the state of Oregon. Current expansion is about 4 per cent per year, a doubling time of 17 years. If that rate of increase continues, Bend would have a million people well before the end of the 21st century.

Doubling time is exponential and moves from 2 to 4 to 8 to 16 to 32, etc. In other words if Bend were to get to one million, and if doubling time were to continue, Bend would have two million within 15 to 20 years.

Long before then it is likely that congestion, pollution, crime, and high taxes would give Bend a reputation for the place to avoid. And current residents would often migrate out the way people are now doing in southern California.

Bend, like most places, is built on a faith which is increasingly considered the prevailing myth--that progress is the result of quantitative growth--the more the better.

This model of "progress" depends on constant expansion, as if Prineville would be better if it expanded to the size of Bend, if Bend expanded to become like Eugene, if Eugene became the size of Portland, and Portland became like Los Angeles. And Los Angeles? The size of Mexico City?

A decision to stop or slow down is likely to occur too late, when it is impossible to reverse the damage resulting from a community out of control. The first sign of revolt is toward higher taxes. Proponents of growth promise that growth lowers taxes and makes life better.

We live under a political philosophy of democracy which means we participate in the rules under which we live. Yet it is a form of heresy to suggest that democracy should apply to what is truly important to people--the future of their community. The conventional growth model says, "leave it to the market--everything will work out all right."

GROWTH VERSUS DEVELOPMENT

Increasingly a crucial distinction is made between "growth" and "development". Whereas "growth" is economic expansion, "development" focuses on community quality of life, achieved through integrating transportation, education;

the arts, recreation, and the quality of air and water. Such planning permits a community to define its future within a sustainable resource base and provide a high level of predictability useful for business. The goals are to increase human "development" and the common quality of life.

Mere growth means the community is constantly trying to catch up, reacting to each crisis with mitigation planning, while traffic, infrastructure decay, crime, and higher taxes move ever upward.

Real development requires long range goals, planning for quality of life which puts the community in control of its future.

The admirable Your Bend 2000 project has assigned specific "benchmarks" for a better future, but if current population increase continues, the goals will be largely nullified.

THE ALTERNATIVES

Three kinds of community responses can be made to Bend's current future:

1. KEEP THE FOOT ON THE ACCELERATOR,

2. TAKE THE FOOT OFF.

3. PUT ON THE BRAKE.

1. Currently the foot is on the accelerator and growth is promoted by both the public and private sector through advertising, subsidy, and land use decisions. The foot has been taken off slightly by having developers pay some of the costs of development, but much of it is still subsidized from public taxes. New house development fees are about $4000 but the total impact nationally and probably locally is closer to $20,000, according to a publication of the American Planning Association. Taxpayers make up the difference.

2. The foot would be taken off the accelerator if growth were not subsidized by tax money nor promoted. The doubling time would not be as rapid, but even then Bend could have a million people in the future.

3. The brake is already being applied in the rural areas through land use laws. Population in rural areas will rise slightly and then be flat, limited by land use goals.

Urban planning has been the weakest of the state land use laws. Use of urban growth boundaries have been the main tool, but in Bend the urban growth boundary, if added to the

city limits, would permit a population the size of Los Angeles, if high density development and high rises were used.

Most Americans have not yet confronted the question of whether they have a right to designate the future size of their community, as though change is a mystical force that can only be mitigated. Nearly all current planning is mitigation planning--when traffic is too great, widen the road, when crime goes up, build more jails--when taxes go up, pass more bond issues. Leave solutions to future generations. Respond to symptoms while basic forces of change have their own laws beyond the control of mere mortals.

Natural resources have limits that we can ignore at our peril, yet permits are given for underground water in central Oregon as though there were no limit. Carrying capacity of water, our most crucial resource, may already be exceeded.

We don't yet have definitive research on the amount of underground water in our central basin. Offering more permits in central Oregon currently means flying blind.

The soon to be conducted U.S. Geological Survey will provide accurate information that is needed about our water carrying capacity and vulnerability to pollution. This information is needed to decide on whether there should be any additional water allocation.

If we are now beyond undergound water carrying capacity, new permits should be denied and rationing should be considered. If there is sufficient surplus to continue issuing permits, the doubling time of Bend will soon exceed carrying capacity. If carrying capacity is exceeded on the on the basis of current per capita demand, everyone will need to be rationed, and the rationing will need to be in proportion to the increased population and economic use. Bend currently has so little concern for water use that houses don't even have to use meters.

Santa Barbara used their water shortage as a way of improving their quality of life, leaning on a California law which permitted them to control development rather than exceed carrying capacity.

Other cities have tightened land use and development rules to have more control over the future quality of their communities. But Bend still has the foot on the grow+h accelerator, even though all surveys show that growth out of control is the major public concern.

Communities can increase their quality of life when they move beyond the never-catch-up game of band-aiding symptoms

by trying to mitigate the negative effects of perpetual expansion. Doing nothing perpetuates population doubling time and if citizens permit trends to continue they live with an axe poised above their head.

PEOPLE ARE NOT LEMMINGS. ISN'T IT TIME TO CHOOSE THE BEST ALTERNATIVE BEFORE IT IS TOO LATE?

William Boyer, a local author and professor, has published books and articles on alternative futures and long range planning. Monday April 11 at 7PM at the Environmental Center he will lead a public discussion on planning for the future of Bend. tel 548-6544 17575 Jordan Rd. Sisters, Or 97759.

ROBERT B. TEXTOR
3435 N.W. Luray Terrace
Portland OR 97210

Tel: 503/223-6370 **Fax: 503/223-2521**

Internet: 73143.1570@compuserve.com

Mon May 23/94

To: Colleagues of FVC "Wordsmith" Group

From: Bob Textor

Re: Some Gaps in Current Version of Draft "Word" Part of Future Vision Statement

Dear Colleagues:

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This concept is mentioned explicitly in the Charter's charge to the FVC, so we have no choice but to address it. Whether we choose to address it broadly, or in detail, or some of both, is up to us. But we should not try to duck it.

The staff engaged Wim Appeslagh to give us a very detailed paper on this. I think he did a fine job, and we should mine this material. See, for starters, his Executive Summary.

The charge in the Charter seems to suggest that if we know what our **ecological** carrying capacity (as defined by Appeslagh) is, we can envision that in some future situations the Metro Council can and should **legislate** restrictions on further housing

or building starts, freeway starts, etc. I understand that this is legally doable in some cases (e.g. Santa Barbara, Petaluma), but not in others.

Example. According to Appeslagh (Table 9) it is estimated that the EPA federal air quality standard for Metroland will be exceeded in 2006. Assume that it is now 2001. One scenario is that the Metro Council in that year decides to head off violation of the Clean Air Act by putting legal brakes on new building and freeway starts. My guess is that this would hold up in court. If I guess correctly, then the question becomes: Should we write into the Vision Statement a "We envision..." that under such conditions Metro Council **would** take such action? If so, we would also write that such a proactive stance would, well before 2001, have been written into Metro law.

I might have a bad example here, but my point is that the **principle** involved is important. It is not the sort of principle that planners relish getting involved with. But, as **envisioners**, we cannot duck it.

I attach herewith a recent statement re this general problem written by my colleague Prof. William Boyer of Sisters OR. He is currently trying to get local authorities in the Bend area to put a temporary stop to large developments until the State completes a survey of available ground water.

ECONOMIC GROWTH

Population growth does not necessarily promote true economic development and better jobs for Metronians long resident in the area. However, such economic development almost certainly cannot occur **unless** there is some population inflow, hence probably some net population growth. The EcoWest paper was commissioned by the staff and has some excellent economic analysis in it. We should use this paper.

ADAPTABILITY

The staff commissioned a study by Steve Schriver on changes in work-roles. I find this study quite well grounded and reasoned. We should use it.

Schriver's piece screams out with the implication, "Adapt or stagnate." For reasons he gives, plus others, I recommend that our Statement make "adaptability" a key theme, just as important as "stewardship." Happily, there is a relationship between the two: the better adapted to the external world we are, the better stewards of our internal Metro world we can be.

Metronians in the future are likely to change careers -- not just jobs -- several times during a lifetime. If they are adaptation-oriented, **and** if the total situation here is **conducive** to good adaptation, they will find new niches in the world economy, new ways to make a good living and feel good about the contribution they are making to society. The "total situation" means among other things that the total educational establishment must be **responsive** to people's emerging needs, and proactively so. PSU is, I believe, much more responsive than most public universities in the US, right now. Here is a fine tradition to build on. The same is true, I would guess, of OHSU, and the Oregon Graduate Institute. Local four-year colleges such as Reed, Lewis and Clark, and Marylhurst also have a role to play, as do, of course, the community colleges, which have a long-established "responsive" tradition. Washington State/Vancouver, and (especially when the rapid rail becomes a reality) UO, OSU, and even the University of Washington/Seattle, will be sources of available talent.

While our local universities have numerous highly talented professors, one does hear complaints about limitations. One of our earlier writing groups has called for the creation in Metronia of a "major research university." I think this should go into our Statement.

Having said the above, I think we should include appropriate phrasing to show that we are **not** advocating that our institutions of higher learning become mere "institutions of higher training," or "economic adaptation machines." They also exist for many other purposes, such as to educate effective citizens and to promote the examined, appreciative life. The challenge is to do it all, and do it well, but with enough sense of priorities so that techno-economic adaptability is strongly emphasized.

In addition, we need to stress the already-large and growing role of industry to do its own training, based on its own proactive assessment of its training needs -- with assistance, as needed, from our universities and colleges.

PROBABLE TECHNOLOGICAL CHANGES

In general, we have to lard into the Statement evidence of our awareness that technological changes in certain domains are highly likely. This can be done without committing ourselves to **particular** changes by a particular date, which would be risky. But we are safe in projecting that more fuel-efficient vehicles are likely to materialize, whether they take the form of cars that get 100 miles to the gallon of gasoline, or electrically powered cars, or even hydrogen-powered ones. At the same time, we should point out that prudence requires that we visualize and plan **conservatively**, and not **assume** these developments in advance. By such conservatism, we make it more likely that future Metronians will be pleasantly surprised, than unpleasantly.

TELECOMMUTING

Here is a stellar example of the need for technological anticipation. Telecommuting is a fact of life right now, as witness the facts that both Craig Berkman in the gubernatorial campaign, and Mike Ragsdale in the Metro Exec campaign, mentioned it as an important current dynamic factor.

My personal opinion is that so far we on the Commission have tended to underestimate this already very powerful trend. I think we should overtly recognize it, and indeed welcome it. Why?

- Because local people who telecommute will use private autos less, or at least be inclined to use them in off-peak hours.
- Because many people will be enabled by telecommuting to vote with their feet to move here, and they will come with money to invest and jobs to create for people who already live here. They will also contribute to a richer mix of information-oriented professions and resources, with numerous positive ripple effects.
- Because these people who vote with their feet will have experienced the demise of livability elsewhere, and on average be quite active in contributing to its preservation here.

HEALTH

On this subject, so far we are mute. We should deal with it, and not shrink from some sort of general statement linking livability broadly to good mental health.

SAFETY

On this subject, so far we are almost mute. We should shout.

...ooOoo...

Hope this helps some.

Cheers,

RBT

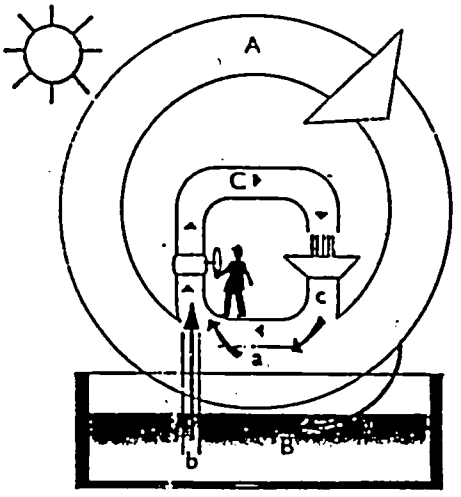
Incl: Boyer Statement

FIRST DRAFT.

The

Natural Step

from consensus to a cyclic society



LINEAR vs. CYCLIC PROCESSING OF RESOURCES

The earth can be conceived as a closed system from which no matter "disappears". Energy, on the other hand, flows steadily from the sun to the earth, and then out into space.

The ecosphere (or biosphere) is the thin layer at the earth's surface which provides the conditions for life.

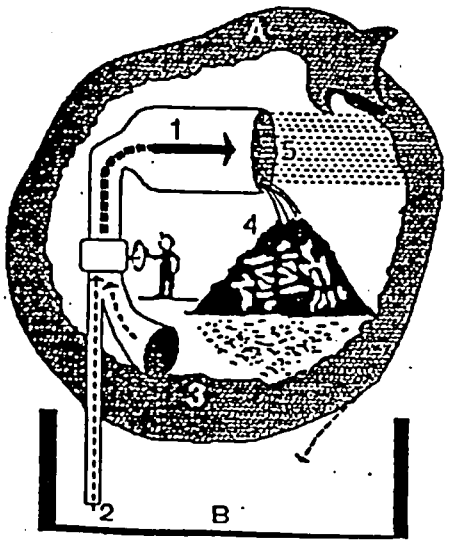
Natural resources have been built up by cyclic processes which use the sun's energy to convert increasing amounts of basic materials into ordered structures. Some of those resources are capable of being renewed in natural cycles

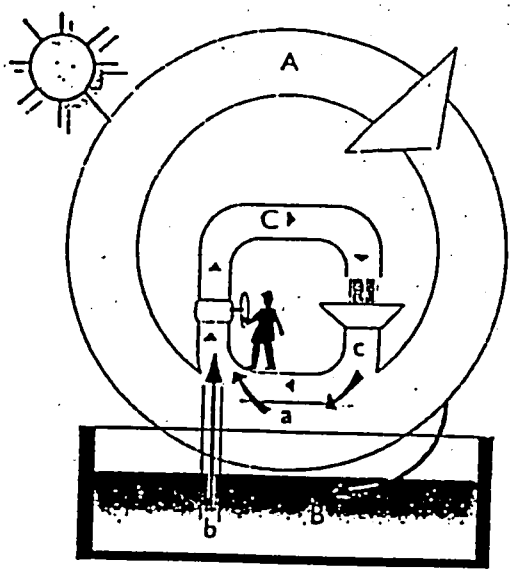
(A): these include all the plant and animal life from which humans extract the riches of farming, forestry, cattle ranching, hunting, fishing, hydropower etc. The other portion consists of resource deposits (B) which are not renewed, or for which the pace of renewal is so slow (from a human perspective) that it cannot keep up with the rate of extraction: examples include fossil fuels, uranium, industrial metals and phosphates.

Our future health and economic prosperity depend on whether we succeed in preserving natural resources, or degrade them to the stuff of garbage dumps and "molecular garbage".

Natural resources can only be preserved if we follow the laws which set the conditions for living cells, and thus for society as a whole.

Today's non-sustainable economies are based on the linear processing of materials (1). We draw off both limited deposits (2) and renewable resources (3). Primarily through the use of





energy derived from limited deposits of fossil and nuclear fuels, society produces and consumes large quantities of basic materials, which are then released in the form of visible garbage (4) or invisible molecular garbage (5).

The volume of garbage is so great that it exceeds nature's capacity to recycle it. Some non-natural substances, such as persistent chlorinated hydrocarbons, cannot be processed by nature at all.

The conditions of living cells are not met. The "profits" of nature are declining, and we are living off its "capital". We are headed toward a state of poverty on a toxic garbage dump, and can only avoid that fate by re-establishing economies based on natural cycles.

A sustainable economy is based on the cyclic processing of materials (C), and functions as an integral part of natural cycles (A). The benefits (a) extracted from renewable resources, along with measured withdrawals (b) from limited deposits (B) move in cycles driven by energy derived from the sun's steady stream of light (hydroelectric, wind and wave power, biomass, solar cells, etc.).

Limited non-renewable resources can be made to last longer through the use of resource-efficient technology, durable high-quality products and recycling: such improvements would also reduce the total amount of visible and molecular garbage. Materials that "leak" out of the system (c) can be broken down and converted into resources by natural cycles.

Over thousands of years, a certain portion (d) can find its way back into limited deposits. The total quantity of resources does not decline: We

What is The Natural Step?

The Natural Step is a consensual approach to environmental issues which is rapidly raising commitment to fundamental changes at all levels of Swedish society. Unlike campaigning, where people are under pressure to do what is being suggested, the Natural Step method presents the undisputed consensus information, in attractive and non-threatening ways, and then asks advice. This ensures that the responsibility for action remains with those in a position to act.

This package of information investigates the background of the approach and its potential for Britain.

In Context article	The philosophy and early experiences in Sweden are described in an article first published in the American journal "In Context". The article shows how quibbling about isolated environmental issues can be replaced by agreement on the basic conditions for sustaining health and economy. In Sweden, such an agreement amongst scientists has led to nation-wide activities for stimulating good examples.
Swedish update	The range of activities which use the Natural Step approach is illustrated with some examples of progress in Sweden. These include consensus reports, growing networks of professionals and training of business-people. There are now many Swedish exemplary projects resulting from Natural Step and a book is being prepared to publicise them.
Key ingredients	The key ingredients of the Natural Step method and the consensus about the environment are provided for reference. Over the next year a limited edition of a book presenting Natural Step from the Swedish point of view will be published in Britain. This will be followed by an edition with an international perspective and including case-studies of British Natural Step activities.
Plans for Britain	Plans for making use of Natural Step methods beyond Sweden are presented together with a guide to becoming involved. In Britain, a network of people who are very familiar with the method will add their expertise to developing networks, consensus processes and educational activities.

Educating a Nation: The Natural Step

A remarkable nation-wide program unites Sweden in moving from linear to cyclic processes - the hallmark of sustainability

by Karl-Henrik Robèrt

Imagine the following: The scientists of an entire nation come to consensus on the roots of our environmental problems and the most critical avenues for action. The nation's head of state then gives his endorsement to their consensus report. An educational packet based on that report is prepared and sent to every household and school, so that citizens and students can learn the basics of sustainability. Then a roster of famous artists and celebrities goes on television to promote and celebrate the birth of this remarkable national project - a project that, in the long run, promises to completely reorganise the nation's way of life to bring it into alignment with the laws of nature.

While this scenario may read like a fairytale, it is already an historical fact. The name of this project is The Natural Step, the country is Sweden – and the catalyst behind this remarkable effort is Karl-Henrik Robèrt.

Karl-Henrik Robèrt, M.D., PhD., is one of Sweden's leading cancer researchers (as well as a former national karate champion). It was his desire to get beneath the details of the debate on the state of the environment – and to take action based on agreed-upon facts – that started a snowball that has grown to such impressively hopeful proportions.

This article is adapted from a piece he wrote to help get The Natural Step started in the Netherlands. It is followed by excerpts from a lengthy interview with Karl-Henrik conducted jointly by IC (In Context) founding editor Robert Gilman and Nikolaus Wyss, a Swiss journalist. This story is one of the most inspiring we've ever heard, and it raises the question: How long before every nation on Earth takes The Natural Step?

Up to now, much of the debate over the environment has had the character of monkey chatter amongst the withering leaves of a dying tree – the leaves representing specific, isolated problems. We are confronted with a series of seemingly unrelated questions: is the greenhouse effect really a threat, or will it actually prevent another ice age? Do catalytic converters on cars filter out toxic emissions, or do they cause even more damage to the ozone layer than freon? Are forests dying from pollution, or from natural phenomena? Is economic growth harmful, or does it provide resources for healing the environment? Will the costs of phasing out non-renewable energy sources outweigh the benefits? Should we clean up our own backyards, or concentrate our efforts on countries that are even more polluted? Can isolated countries accomplish anything useful on their own, or must they wait for international agreements?

In the very midst of all this chatter about the leaves, very few of us have been paying attention to the environment's trunk and branches. They are deteriorating as a result of processes about which there is little or no controversy; and the thousands of individual problems that are the subject of so much debate are, in fact, manifestations of systemic errors that are undermining the foundations of society.

There has been a basic scientific agreement about the causes of that deterioration for nearly half a century, and it should be possible to anchor key decisions affecting society in that scientific consensus. We must learn to deal with environmental problems at the systemic level; if we heal the trunk and the branches, the benefits for the leaves will follow naturally.

Focusing on the cell

Let us begin by focusing on the cell. We cannot discuss politics or ideologies with the cell; it is only concerned with the conditions necessary for sustaining and propagating life. It also reminds us that we are inescapably a part of nature. There is much less difference between the cell of a human and that of a plant than is commonly understood. And if we compare our cells with those of other animals, we must go to the molecular level in order to perceive the differences that do exist. The basic structures and functions of our bodies are nearly identical to those of eagles and seals, all the way down to the molecular level. It is very clear that, from a biological standpoint, we are not the masters of nature, nor even its caretakers. We are part of nature.

It also happens that nearly all of our natural resources have been created by cells. Over billions of years a toxic stew of inorganic compounds has been transformed by cells into mineral deposits, forests, fish, soil, breathable air and water – the foundation of our economy and of our healthy existence. With sunlight as the sole energy supply those natural resources have been created in growing, self-sustaining cycles – the "waste" from one species providing nutrition for another. The only processes that we can rely on indefinitely are cyclical; all linear processes must eventually come to an end.

Cyclical vs. Linear Processes

For roughly the past hundred years, humans have been disrupting the cyclical processes of nature at an accelerating pace. All human societies are, in varying degrees, now processing natural resources in a linear direction. Our resources are being rapidly transformed into useless garbage, some of which is obvious to the naked eye, but most of which escapes awareness. The smaller portion can be seen in garbage dumps and other visible waste. By far the larger portion can be thought of as "molecular garbage" – consisting of the vast quantities of tiny particles that are daily spewed out into the earth's air, water and soil.

With few exceptions, none of this garbage finds its way back into the cycles of society or nature; it is not taken up for repeated use by industry, nor is it put back into the soil. As a result of poor or non-existent planning, the volume of garbage is too large for nature to reassimilate, and some of it – toxic metals and stable unnatural compounds – cannot be processed by the cells at all.

The ultimate consequences of all this are impossible to foretell. The complexity of ecosystems is so great that we do not know the tolerance levels for any of the thousands of kinds of molecular garbage; it is even more difficult to anticipate how they will interact with each other. In addition, it often takes a long time for the consequences to appear: the effects of today's pollution will not become evident until tomorrow. It is from that perspective we must respond to questions like, "Is the greenhouse effect really a threat, or will it actually prevent another ice age?"

Reverse Evolution

We have lost control, and are moving backwards in evolution. The extinction of species, deforestation, the greenhouse effect, acid rain, and all the other assaults on nature are but different aspects of the same mistake – increased reliance on linear processes. As we busy ourselves with tearing down more than we rebuild, we are racing toward world-wide poverty in a monstrous, poisonous garbage dump. No temporary trade balances, illusory bank accounts, or pseudo-scientific disputes can save us from the consequences: the only thing that can is the restoration of cyclical processes.

To argue about the cost of that restoration borders on the absurd. The question is not how much it will cost, but rather how much it will cost to hide in ignorance and wait for the problem to become even bigger. It may have been possible to postpone payment for a few decades, but now the bills are starting to pile up: it is already more expensive to harvest declining fish stocks over wider and wider areas; it is already more expensive to make water fit to drink; and we haven't even started to pay for the clean-up of toxic metals, radioactive and otherwise, that we are constantly injecting into our world.

A Step Toward Consensus

The Natural Step is a network of experts from various fields who are attempting to find out how

much can be accomplished by using scientific consensus as the basis for decision-making in human society. The network includes scientists, economists, teachers, environmental activists, politicians, business leaders, artists, and others who are all contributing to a mutual effort for a future based on respect for natural laws.

Central to that effort are consensus reports of the Natural Step on the current condition of the environment's "trunk and branches", and on the strategies needed to reverse their deterioration. The reports are distributed through a variety of media: illustrated booklets and audio cassettes to all of Sweden's schools and households; seminars for members of Parliament; study circles; television programs; establishment of an "Environment Youth Parliament"; a journal targeted at readers in the business, etc.

The ultimate purpose is to find the common ground where all sorts of people – right- and left-wingers, employers and employees, atheists and believers, etc. – can meet. When they can all agree on a set of scientific facts, and on the logical implications of those facts, the way is cleared for concrete action.

The Necessity of an Overview

If a politician were to ask a random selection of scientists whether or not the reproductive organs of seals are destroyed by the chemical PCB, it is very unlikely that he would get the kinds of answers that would be helpful in arriving at a decision. He might hear, for instance: "That has not been definitely established yet." "Yes, *that* has been definitely established." "Our laboratory has identified a toxin that plays a far more destructive role," and so on.

That's the sort of thing that happens with questions about the leaves of the environment tree. But, if one begins with the trunk and branches, the answers become clearer and more consistent. For example:

Is PCB a naturally occurring substance? No, it is artificially manufactured by man. All scientists agree on that.

Is it chemically stable, or does it quickly degrade into harmless substances? It is stable and persistent. On that they agree as well.

Does it accumulate in organisms? Yes it does.

Is it possible to predict the tolerance limits of such a stable, unnatural substance? No, since the complexity of ecosystems is essentially limitless. Nevertheless, it is known that all such substances have limits, often very low, which cannot be exceeded.

Can we continue to introduce such substances into the ecosystem? Not if we want we to survive.

The final answer is what the politician actually wanted to know from the beginning, since he is probably not interested in the reproductive organs of seals. Yet, most public environmental debate is preoccupied with such relatively minor details. This happens whenever we fail to proceed from a basic frame of reference, or overview, which makes it possible to focus on the fundamental issues without getting lost in a confusion of isolated details.

Model Countries and the World

To greater or lesser degrees, all countries have introduced the same kinds of *systemic* errors into their societies, and population growth means that more and more people are expanding on the same mistakes. Natural resources are wasted in linear processes, and molecular garbage is exported across international boundaries. However, there is not much point in waiting for international agreements to restore cyclical processes. The first steps must be taken by dedicated individuals, business and governments who are ready and willing to take the initiative.

What the earth needs most is a variety of useful models - model homes, buildings, companies, communities, and countries, all demonstrating how to make the transition from linear to cyclical processes. Positive examples are an extremely powerful force for change, and it takes only a small proportion of a population – perhaps as little as 15% – to stimulate dramatic improvements. With the right leadership, Berlin Walls can fall, and bleached paper products can be replaced by less harmful alternatives.

Fortunately, it appears that there is now a growing core of thoughtful decision-makers who understand that the time to act is now. Whether we want to help others, to conduct our affairs ethically or compete in tomorrow's markets, the possibility of success rides on the shoulders of

well-informed business and political leaders who are supported in their efforts to base the foundations of society on natural laws. A strategy for achieving that goal can be derived from a multi-disciplinary scientific consensus. Above all, it is necessary to cure our addiction to the false, short-sighted economies of linear processes, and to restore the health of nature and society by investing every available resource in cyclical processes.

Despite all the quibbling over peripheral issues, there is already enough of a scientific consensus to get on with the necessary work. In most cases, it is simply not true that "more research is needed". In order to predict that you will die if you jump off the Eiffel Tower, it is not necessary to calculate that it is 345.23 metres high at 20 degrees centigrade. Since environmentally-sound technology is already available, the pace of transition to cyclical processes is limited only by our spirit of sacrifice and our will to act. The longer we delay, the more painful the sacrifices we will have to make.

Since few countries have the capacity to provide positive examples, the responsibility of those who do is particularly great. It is also in their long-term self-interest to conserve natural resources, reduce pollution control costs, and develop the technology that the entire world will demand, sooner or later. Of course, some technologies and industries lend themselves to the necessary transformation better than others; we can begin with them, and let the others benefit from their example.

Among nations, which will take the leading role – Sweden? The Netherlands? The Natural Step has now been taken in both countries, and we in Sweden are even so fortunate as to have received the King's blessing and support. I wish The Natural Step of the Netherlands all the best for the future, and I hope that they – as well as others – will be even more successful than we have been. In that competition, we have nothing to lose and everything to gain.

"That Was When I Became a Slave"

Excerpts from an interview with Karl-Henrik Robèrt

I am a scientist, and I'm also an active physician and the head of a cancer unit. When you treat patients with cancer using modern methods, it means that during your career – even if you are reasonably young, as I am at 43 years of age – you have experienced how a lot of patients who can be cured now would have been dead within months at the time when I started my career! It's a tremendous change, generally implemented by very hard work in big teams.

But at the same time, pollution is increasing outside the wards of the hospital at a rate which is incredible. Most scientific groups who have analysed these problems agree that we have one or two decades [to turn things around]. But we are arguing over the details. We are running around looking for knowledge, but we are drowning in information. This is the problem.

On Consensus-Building

To me it's just obvious that there must be some truth about our environmental problems that is true for *everyone*, whether they are left- or right-wingers. There must be some truth that we could define together based on knowledge, and I wanted know where this knowledge was. How much could we agree upon from the facts?

But all I saw was this arguing going on – it was like watching a house burn down while the fire brigade was arguing about how the fire brigade should get organised. I felt, "God! Couldn't we agree upon something, and see how much we could start *doing* on that basis?"

That was when I became a slave to what became The Natural Step. I started to write the consensus report – which was only a consensus in my own brain, but I tried to foresee the problems that people had when they wanted to reach consensus. For example, if I wanted to get rid of nuclear power, I tried to understand how intelligent people who want nuclear power would argue. I did my best, then sent this report to the best scientists in Sweden – communists as well as conservatives. I asked them, "Could you please find the errors in this for me?"

If there is anything that unites professors, it's that they can't help finding errors in what others have done, so they helped me very well. I got the document back, solved the problems they had pointed out to me, and sent out a second

version.
I did this 21 times.
The final report is the 22nd version of the first consensus report. This was very challenging to industry and to a lot of organisations, because at last someone had gathered a consensus about what we should do. I managed to raise money to distribute this report to every Swedish household and every school – 4.3 million copies. The package comes with an endorsement from the King, and it employs a very simple pedagogical method: an audio cassette talks along with the pictures and explains what is wrong – the systemic errors that make up the trunk and the branches of the pollution tree – and finishes by explaining what we must do if we want both to survive and to keep our wealth, which really amounts to the same thing.
Wealth is based on structure, and we are tearing down structure. I explain this in a way that it very easy to understand, and I explain the tests that have been done. And now, together with the Green movement and the adult education network, we have started study circles all over Sweden with this report as a basis.

On Building the Network

When I travel to Hungary, Poland and Switzerland, I tell them the same thing: you must identify the slave who doesn't want to have power in any respect except to be the glue between powerful and intelligent people. If you can identify him and make him work, there is tremendous power in this idea, because almost everyone who can think would like consensus to appear when it's about survival and natural resources.
This is not a new organisation. This is a *network of people*. We have a lot of good people involved from Greenpeace, the Swedish Federation for the Preservation of Nature, the World Wildlife Fund, and so forth, we are not getting any money from membership as those organisations do. Just the opposite – we are begging for money from industry, and finding other sources, and our message is, "Please join Greenpeace or the World Wildlife Fund." And that has had a very big effect on their membership.
So I built networks wherever I went. I phoned one of our best-loved artists, Lillian Fosch, and said that I and all these scientists were going to educate the whole country, would she please help us celebrate it on TV if we succeeded? And she said "Of course! And who else would you like?" So she helped build the network too.
I phoned other people up and said that I and Lillian Fosch would like them to take part, and they said "Certainly, if you have already succeeded at doing all that, I will take part!" Then I went to the department that governs national education issues and said that I and all these artists and scientists from the Swedish universities would like to put on this educational campaign, and would they like to have it distributed free to the schools and take part when it hit the whole nation? And they said, "Well, that's very exciting! Certainly we would like to take part in it."
So then I went to Swedish TV and said that I and all those artists and scientists and this big government office wanted to educate the whole Swedish people, and we would like to have a party on TV celebrating it. And they said, "Certainly. How could we refuse if you succeed with all these other things? What would be the best date?" The schools wanted the campaign in March, and I said the last day of April [1989] would be nice.
So, I had a date. From there I went to the King, and asked him if he would like to endorse the project. He agreed. You can understand that I slept worse and worse the longer I did this, because I was building a tremendous program without any money at all. I was really nervous by the time I approached the sponsors. But on the other hand, by the time they saw it, it was like a parcel with a ribbon on it. It was so concrete, with dates and everything, that they understood that if they didn't buy this now, this crazy chap would take it to someone else!

On Enemies

As soon as we see an enemy, we ask him for advice. We say, "Would you please help us to sort out this problem?" When you get the answer, very rarely is it a threat to what you want to do. And when you ask for advice, you learn the true background for his attack – it is generally that you have simply forgotten his cousin! Very rarely does he want to stop you from bringing about good powers to fight for the future.

But while it may not be what he wants, this is what you feel. In the beginning you feel, "This damn idiot. I'm going to punch his teeth in!" But by asking him for advice instead, you learn that he was not a threat at all! And by following his advice, two things happen: first, he has part of the responsibility for it now, because it's his advice you are following; and secondly, the project generally improves – because most people have rather good ideas!

On Development and Industry

What the Third World needs is what we need: cyclic technology. But that can only be developed by a handful of countries: Switzerland, Germany, Sweden, Japan, the US and so forth. This is the main task of those countries and their industries. If they only clean up their own exhausts, we will all die together for sure, because then the Third-Worlders will do the damage for us – the Chinese and the Indians will start to pollute as we do, the rainforests will be destroyed, and that will knock out our possibility to survive.

So industries must move from defending themselves to being heroes, ahead of everyone else, fighting for tomorrow's market and tomorrow's technology. In ten years the market will be about nothing else but sustainability. Whether you are a commercialist or a Florence Nightingale, the answer is the same: close the cycles, and you will be the winner tomorrow.

This is what we are teaching industry, and they buy it. We give them a crystal ball by talking about thermodynamics, the building up of structure, how the structure is the basis for economy, and how the tearing down of structure is deteriorating the economy. We also tell them in practical terms how the costs appear, and they agree – they have seen all those costs already.

Since this is non-negotiable, there are only two alternatives: either we choose to close the material cycles in society with high heads and in pride, we do it crawling on our knees later on. But we will still have to do it. My life will be worth something if I can speed the process up a little, so that we can do more of it standing up than crawling. If I can speed the process up a few minutes, that's all that is necessary for me.

On Networks and Democracy

This [networking] will probably be the future solution of how to work. It will probably develop into something much better than we have been able to do, because we have all this experience now, and somebody will improve on it.

Democracy is the best political form have because it hinders idiots from coming up [and taking over]. We need it to protect ourselves. We don't have anything better. But there are serious limitations in the traditional democracy, so people with skills and knowledge must join and help democracy. If they don't – if they ask the decision-makers to do the job for them – it will die. We have serious problems – AIDS, criminality, drugs – and people will realise sooner or later that democracy can't solve these problems if we don't support democracy. So I think network structures will be like flowers on the field very soon.

On Making Change Happen

I don't believe that the solutions in society will come from the left or the right or the north or the south. They will come from islands within these organisations, islands of people with integrity who want to do something. They will expand and they will become more and more powerful. It's like the Trojan horse – in a big oil company, for example, I *know* that there are people with integrity who think about the future, who want to protect kids, who would like to do something. We can use their skills to do something within the company. We educate them, when we find them.

This is what a network should do – identify the people who would like to do something good. And they are *everywhere*. This is how the change will appear – you won't notice the difference. It won't be anyone winning over anyone. It will just spread. One day you won't need any more signs saying "Don't spit on the floor," or "Don't put substances in the lake which can't be processed." It will be so natural. It will be something that the intelligent people do, and nobody will say that it was due to The Natural Step or your magazine. It will just appear.

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The Natural Step
Swedish Update, 1989-1993.

Networks.

There are now 15 fast-growing networks of professionals linked with Natural Step in Sweden, comprising around 10 000 people. All the networks are independent and pay no subscriptions for the support of the Natural Step office.

- Scientists
- Entertainers
- Business leaders
- Doctors
- Municipalities
- Engineers
- Psychologists
- Food (agriculture and restaurants)
- Students (the "Youth Parliament")
- Teachers
- Nurses
- Lawyers
- Economists
- Architects
- Communicators (PR and advertising)

Consensus papers

The scientists and a few of the other professional environmental networks are pursuing a consensus process which maps out what can be agreed in the particular areas studied. Each of the papers is anchored in the original consensus on the basic conditions for a cyclic society. The papers are crafted by a small editorial team of experts and then circulated widely throughout the profession for comments and endorsement. The result is used as a strategy to guide decision-making and often also as relevant information for the public and for other professions. Consensus papers on the following issues have been completed.

- Energy (including the core scientific consensus)
- Metal flows
- Medical care
- Transport
- Political and economic measures (not yet translated)
- Agriculture (not yet translated)

Presentations

Consensus information is presented throughout Sweden to encourage wider participation in measures leading to a more sustainable society. Unlike campaigning, where people are under pressure to do what is being suggested, the Natural Step method presents the undisputed consensus information, in attractive and non-threatening ways, and then asks advice. This ensures that the responsibility for action remains with those in a position to act. Some of the many presentations of Natural Step material are listed below.

- Mass mailing. A colour booklet and audio cassette was mailed to every home and school in Sweden as a public launch of the scientists' consensus on the cyclic society.

Key Ingredients of The Natural Step

The core consensus of Natural Step offers common ground where all kinds of people can discuss environmental issues without drowning in detail. The Natural Step method can be used to build the movement towards a cyclic sustainable society by attracting more people to take personal responsibility. It has been found particularly relevant and effective for businesses.

The method

1. Withdraw from the peripheral details.
Linear processing of resources causes a multitude of environmental problems which cannot be solved in isolation. It is also impossible to agree on all the peripheral details.

2. Gain consensus.
Using scientifically undisputed knowledge we can build agreement on the requirements for continued health and prosperity. This consensus can be presented in attractive ways.

3. Ask advice.
We don't tell people what they should do with the consensus information but instead ask their advice. Then the responsibility for action stays with those in a position to act.

4. Stimulate good examples.
We encourage and support practical steps toward an attractive cyclic society. Those who do what they can are becoming the role models of tomorrow.

The core consensus

Presentations of the consensus knowledge can start with the living cell, which is our common link to each other and to the rest of nature. Plant cells are also the engines of production in the biosphere and the foundation of our economic activities.

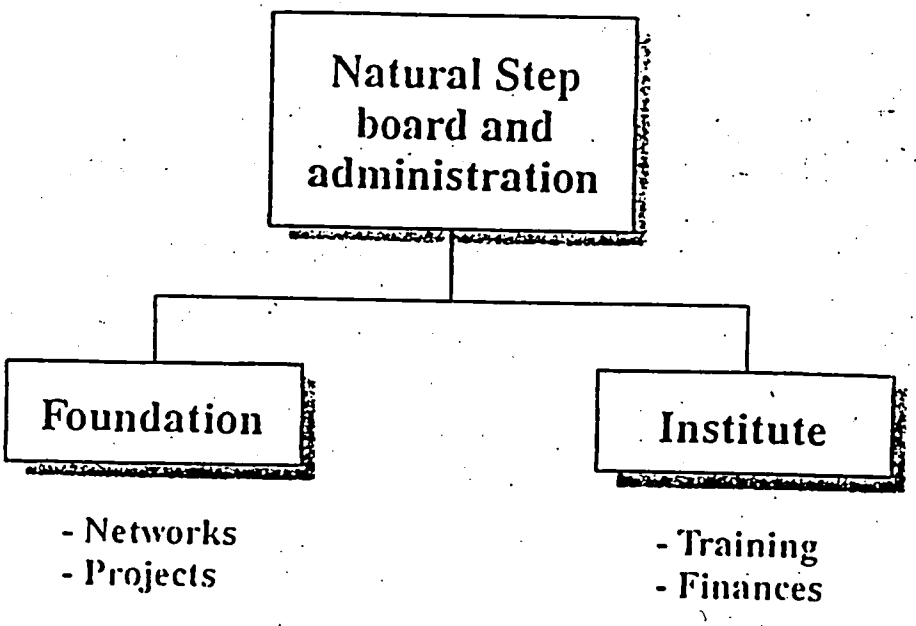
Material value is produced by concentrating and structuring matter into useful forms. Yet due to the law of nature that "everything disperses" (the 2nd law of thermodynamics) all productive activities will always cause greater dispersal and disruption elsewhere. Plant cells are the engine for creating value in the biosphere since only they can oppose the tide of constant decay by using energy from the sun. The other key law of nature, "nothing disappears" (the law of conservation of matter) shows how every atom has only two choices; it becomes either new resources or accumulating junk.

Over the past three and a half billion years living cells have processed matter in natural cycles, transforming the original toxic stew into a clean, diverse biosphere. However for the last hundred or so years human societies have been processing resources in a linear direction, into visible and molecular rubbish which is accumulating. This is evolution in reverse. Adapting our societies to cyclic processes is a non-negotiable requirement if we want to keep our health and prosperity.

In all areas of activity we need positive models showing practical steps toward a cyclic sustainable society. To provide an attractive role model these good examples should be economically and ecologically sound, and be capable of being further developed.

There are four ecological system conditions for a good example:
1. Stored deposits: less use of underground mineral deposits.
2. Alien compounds: less use of persistent, artificial substances.
3. Eco-systems: greater diversity and capacity.
4. Metabolism: reduced need for energy and materials.

The Natural Step structure



Natural Step in Britain will have a similar structure, with a limited company already established and a charitable trust yet to be registered. UK-based environmental charity currently has a special account for accepting Natural Step funds. The coordination of activities in Britain is expected to rely more on the network of Catalysts and less on a central office.

• Musical concerts and cabarets attended by thousands of people. Some televised. Many of the entertainers had taken the Natural Step training programme.

• Seminar on energy, for delegates from business and industry. Organised by Natural Step on behalf of the Swedish Minister for Environment.

• Youth parliaments. Annual day for environmental activities in schools, which has included satellite broadcasts of student interviews of national politicians and presentations to the Swedish parliament.

• Mobile exhibitions. Environmental displays at provincial museums. A green show (of exhibitions and performances) will tour by train to 20 Swedish cities in October this year.

• Environment Institute. Training for businesses and local authorities in ecological systems thinking. Around 200 managers and executives from 20 large Swedish companies have participated, along with members of 40 local governments. They are trained to develop strategies for achieving cyclic processes within their organisations.

• Swedish National Environmental Encyclopaedia. Written by the network of scientists.

• Seminar on the environmental role of business and industry. Staged in cooperation with the leading national weekly business journal, which is now planning a quarterly update on environmental good examples and positive news.

Stimulating good examples

Natural Step provides a framework which people involved in a specific, detailed area can use to create positive models for others to follow. Natural Step does not take the credit for such good examples, but rather finds ways to support them. A book of Swedish case-studies resulting from Natural Step involvement is being planned. Following are examples of results which have been publicly attributed to Natural Step.

• Environmental award. Annual presentation to companies for bold and visionary decisions.

• ICA supermarket chain plans to use biodegradable refrigerants rather than hard or soft CFCs.

• Environmental challenge to local authorities. A competition launched by King Carl Gustaf of Sweden, for which 47 local authorities presented their environmental record and strategies for the future.

• National battery hunt. 150 000 car batteries and 17 tonnes of small batteries collected for recycling over a holiday weekend.

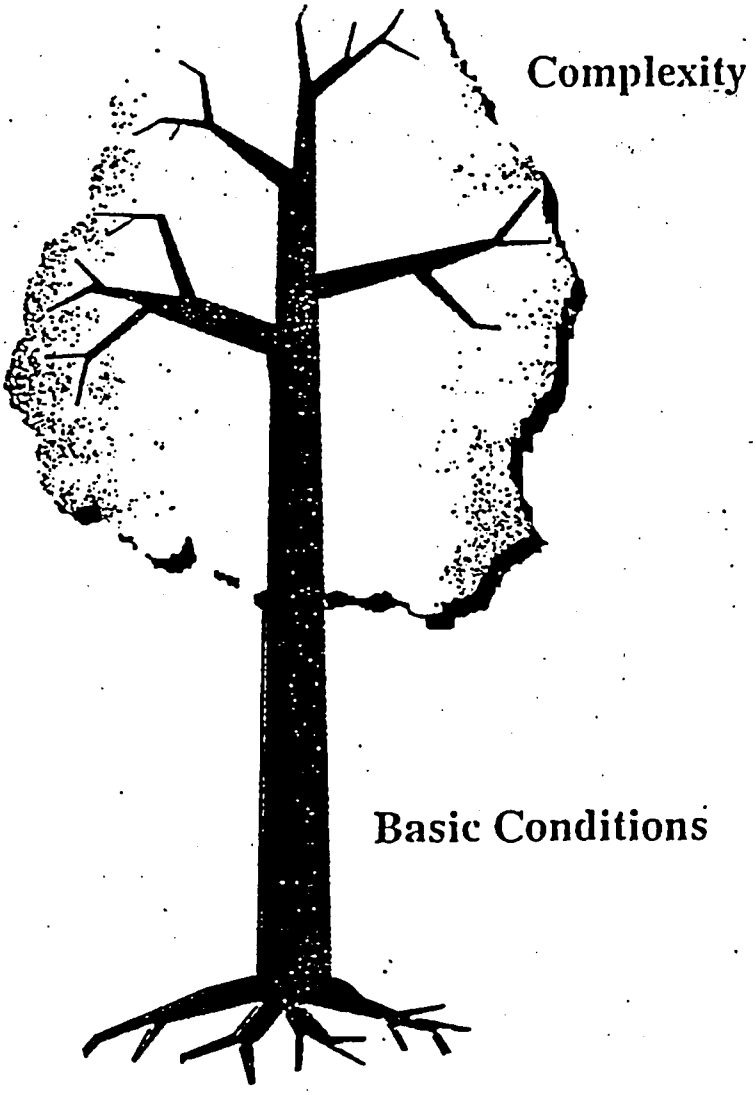
• Electrolux plans to develop tomorrow's totally "sustainable" refrigerators in cooperation with Natural Step.

• Composting campaign. Launched by Anni-Frid Lyngstad (of ABBA) on national TV.

• IKEA is aligning its business strategy to the ecological system requirements and has started to educate 25 000 employees world-wide with the Natural Step course.

• Large haulage company, Bilspedition, carries out the Natural Step training programme.

Ecological System Overview



We can stimulate good examples amongst the leaves by first agreeing on the trunk and branches of the system.

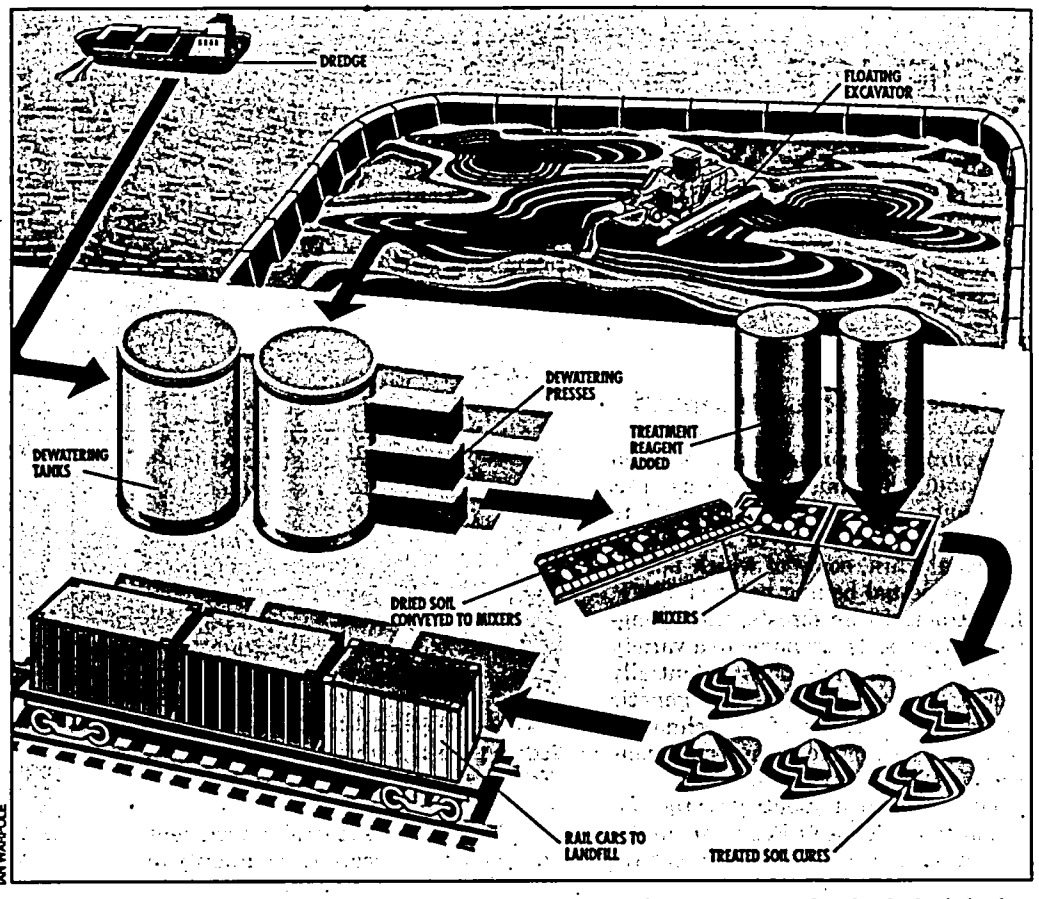
TOXIC WASTE

CADMIUM TAKES A POWDER

Just a stone's throw from the Hudson River, Marathon Battery dumped toxic cadmium into a Cold Spring, N.Y., marsh over two decades, turning it into a federal Superfund site. The concentration of cadmium in the tainted mud is more than 100 times higher than the natural level in soil. Cadmium, a heavy metal used in the manufacture of batteries, can cause kidney disease and other health problems.

As part of an estimated $109 million cleanup effort, Gould Electronics of Eastlake, Ohio—the company that is now responsible for the property—is dredging 48 acres to remove the cadmium. The excavated mud is drained of water in large settling tanks and presses. After treatment, the water is returned to the marsh. Instead of merely trucking the more than 100,000 tons of contaminated marsh soil to a landfill, however, Gould is first rendering the cadmium innocuous.

Gould's contractor mixes a proprietary powder with the tainted soil, and the cadmium binds with the powder to form a crystal. The resulting compound is similar to the mineral apatite, which contains lead but is harmless. "What we're doing is changing the material," says Gould environmental project manager Charles Kizina. The process also neutralizes lead and other heavy metals.



Cadmium-contaminated mud is dredged, dried, and mixed with a powder that binds the heavy metal into crystals.

The treated soil cures within hours, helping to cut the project duration from five years to 18 months. The cleanup will be completed by summer's end.—*Mariette DiChristina*

PLANTS

COMMON ROOTS

Solving a century-old mystery, botanists from the Missouri Botanical Garden in St. Louis have linked a newly discovered tree in Costa Rica to a long-known—but until now enigmatic—tree in Africa. In the process, they have provided some of the strongest botanical evidence to date that Africa and the Americas were once joined.

Barry Hammel, the Garden's associate curator, chanced upon the new tree while exploring Costa Rica's Osa peninsula in 1989. From its unusual red-green fruits and oddly-patterned flowers, Hammel knew it was a new species. Two years of searching reference materials and consulting specialists, however, turned up no clues to the tree's identity.

Then one day Hammel picked up a book describing tropical African trees. One species, *Lepidobotrys staudtii*, stood out. Discovered a century ago, it had no known relatives—and it looked almost exactly like the Costa Rican tree, *Ruptiliocarpon caracolito*. Hammel and his colleagues became excited. If the two trees were related, then the scientists had just accomplished the botanical equivalent of "finding a new species of African elephant living in America," says Hammel. Detailed research proved that the trees did share a common ancestor.

Enough anatomical details distinguish the two trees, however, that their ancestor must have existed on both sides of the Atlantic Ocean about 100 million years ago, when—according to geological theory—the continents were still close together. The trees, in fact, represent "a particularly clear case" of botanical evidence for continental drift, says Hammel. Unlike many other American plants with African relatives, the seeds of both trees are large and short-lived, and therefore couldn't have blown or floated across the Atlantic in modern times.—*Robert Langreth*

POPULATION

TWO BILLION OR BUST

Earth's resources can comfortably sustain a maximum human population of only two billion people, according to ecologists at Cornell University in Ithaca, N.Y. The world's current population is 5.6 billion.

A team led by David Pimentel considered the natural resources required for human life, including fertile croplands, forests, fresh water, and energy. The team then calculated the population size "that will ensure the possibility of individual prosperity for everyone, while maintaining a quality environment."

To reach a sustainable level by the year 2100, the population of the United States would have to drop from 260 million to about 200 million, says Pimentel. Americans would also have to reduce their water consumption.

PEGGY LYNCH

(503) 646-4580
(503) 646-6286 fax

3840 SW 102nd Avenue
Beaverton, OR 97005-3244

May 23, 1994

Ethan Seltzer, PSU

Re: Future Vision Commission (comments related to May 16th document)

Line 146: We will achieve this vision by.....

-Supporting Oregon's Educational Act for the 21st Century and like legislation in the State of Washington which
-lengthens the school day and year
-transforms the relationship between teacher and student so that teachers become professional managers of student's effort to learn and students become problem solvers, not passive receivers of information
- strengthen interdisciplinary and problem solving curriculum
-increae the use of technololgy
-offer a variety of day care and other social services within the school setting.
-offering specialized training in high school, community colleges and in the business community, including both applied academic study and training for specific jobs, that matches the needs of an advanced workplace.
-establishing high standards of mastery in communication, foreign languages, math, and sciences in all our educational institutions.
-investing in continuing education through greater employer contributions and through enhancement of community colleges and university programs to meet the continuing education needs of employers.

(From "Human Investment Partnership", Oregon Progress Board, November 1991)

Line 147: We will keep track of how we're doing by monitoring.....

-35% of high school students enrolled in professional-technical education programs by the year 2000; 55% by the year 2010; continual increases thereafter.

-x% of young adults (21-25) with intermediate prose literacy (understands text information) (Starting point: 38% in 1990)
-x% of all adults with intermediate prose literacy (starting point: 41.1% in 1990)
-x% of young adults with intermediate quantitative literacy (can understand math and apply it) (Starting point: 27.4% in 1990)
-x% of all adults with intermediate quantitative literacy (Starting point: 39% in 1990)

-20% of all adults proficient in more than one language by the year 2000; 28% in the year 2010; continual increases thereafter.

2.5% of employer payroll dedicated to training and education by the year 2000; 3% by the year 2010; continual increases thereafter.

_x% of displaced workers reemployed within 24 months and earning at least 90% of previous income.

Line 191: We will achieve this vision by....

-passing state legislation which reforms the way we currently finance political campaigns (Get Keisling's reform proposals)

Line 192: We will keep track of how we're doing by monitoring.....

-the diversity of our political leaders relative to the diversity of our general population: in jobs, gender, economic status,

Line 211: We will achieve this vision by.....

-Encouraging all levels of government to work together to solve problems, rather than dividing governments' responsibilities for portions of the same problem. ("client-centered services that are geared to achieving results" - "Human Investment Partnership")

Line 219: We will achieve this vision by.....

-Preserving designated historical sites/structures, using public incentives or investments as necessary to preserve our history.

-Exposing our children to historical sites/structures, so that they continue to value our heritage.

Line 339: We will achieve this vision by.....

-Passing a statewide laws on concurrency.

-Developing a fair and equitable funding mechanism for all publ infrastructure needed to support growth.

Line 349: We will achieve this vision by.....

-Convening a sub-committee of the Future Vision Commission annually to review the status of the indicators listed under each vision statement in this document.

-Surveying this large community to measure people's perception about the achievement of this vision.