

The Fourth International Conference

“Directions for Catholic Educational Leadership in the 21st Century.”

Sydney

29th. July – 1st August, 2007

**“Designing Our School Buildings for the Community of Learners
in the Knowledge Age.”**

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Designing Our School Buildings for the Community of Learners in the Knowledge Age.

Introduction

The design and construction of public buildings responds within a given time frame to user needs and to the values, beliefs, and aspirations of society. In respect of user needs, this concept gives rise to the architectural maxim, 'form follows function'.¹ Lackney et al², prepared a matrix which links societal changes with educational reforms and education facility responses. This matrix is based on broad categories of time as described by social commentators. However, due to the fact that most buildings are designed and constructed to last for forty years at least (and often a lot longer), there can arise a miss-match between changing societal expectations, user needs and the form of buildings, thus giving rise to building obsolescence.

The Challenge of Change

A consideration of school buildings in the educational context of place, space and time for the knowledge age comprises a significant part of the present challenge of change. Consistent with the rationale for all community buildings, schools exist for people to meet for a common reason at a common place and at a common time. Does this rationale still hold? One of the aspects of modernity is the separation of place from space; as Giddens would call it 'empty space'.³ Mobile telephone and electronic communication are technological developments which are examples of this separation.⁴ Furthermore, the separation of time from both place and space adds another dimension to the justification for a consideration of place/space architecture. Recording and replay technology provides the flexibility for allocating time to listening, watching and talking. It gives the individual management over this resource and so time can be prioritized and valued.⁵

Developments in information and communication technology have provided for global and real time interaction. As a result, at one level, our concept of the community has extended beyond the village/city/country to the world. However, concurrently, there is a basic human need to belong to a physical and proximate community. For some, this is still the village or town, for others it is the suburbs and the city. Today, people can inhabit both communities at once. The virtual community of the internet and email can be experienced whilst sitting with friends at the internet café.

Table 1: Timeline Summary of Changing Educational Patterns
Source: (Lackney, 1998)

<p>PRIVATE WAVE (North American Cultural Experience)</p> <p>OVERARCHING PATTERNS</p>	<p>AGRICULTURAL SOCIETY First Wave (1650-1849)</p> <p>"THE VILLAGE"</p>	<p>INDUSTRIAL SOCIETY Second Wave (1850-1949)</p> <p>"THE FACTORY"</p>	<p>INFORMATION SOCIETY Third Wave (1950-1999)</p> <p>"THE COMPUTER"</p>	<p>KNOWLEDGE SOCIETY The Next Wave? (2000-2025)</p> <p>"THE AGE OF IMAGINATION"? "THE NEURAL NET"?</p>
<p>SOCIETAL PATTERNS</p>	<p>Homogeneity Holistic Decentralized Informal Autonomy Egalitarian/Autocratic</p>	<p>Institutionalization Centralization Standardization Bureaucratic Hierarchy Conformity Mechanization Specialization</p>	<p>Decentralization De-Institutionalization Pluralism Customization Personalization Heterogeneity Networks & Connections</p>	<p>Coalitions Global Socialization Polarization Sustainability Instant Communication Virtual Community Networks</p>
<p>EDUCATIONAL APPROACHES THAT RESPOND TO SOCIETAL PATTERNS</p>	<p>Natural multi-age groupings</p>	<p>Horace Mann & Common School Movement Maria Montessori Waldorf Dewey/Progressive Movement Carnegie Units</p>	<p>Individually-based learning (60s) Middle School Philosophy (60s) Inclusion (70s-80s) Back to Basics (80s) Standards-based Education Movement (90s)</p>	<p>Interdisciplinary Instruction Integrated curriculum Community of learners Self-directed, project-based, problem-based learning Studio learning model</p>
<p>EDUCATIONAL FACILITY RESPONSES TO CHANGING EDUCATIONAL APPROACHES</p>	<p>Home Schooling Church as learning environment One-room Schoolhouse</p>	<p>Lancastrian School Common School Factory Model/Egg Crate Schools</p>	<p>Open Schools Community Learning Centers Magnet Schools Alternative Learning Centers House Plans Self-directed Learning Environments</p>	<p>Virtual schools and Distance Learning Centers Networks of learning settings Learning communities Life-long learning facilities Home-schooling</p>

Does all this matter? It does, according to Mitchell as:

...the emerging civic structures and spatial arrangements of the digital era will profoundly affect our access to economic opportunities and public services, the character and content of public discourse, the forms of cultural activity, the enactment of power, and the experiences that give shape and texture to our daily routines.⁶ .

21st. Century Societal and Economic Changes

The architecture of schools can only be understood in terms of the societal, economic and educational contexts. Lackney's matrix of broad societal patterns indicates that developed countries have recently passed through the Information Age and are now within the Knowledge Age. Whilst these categories are not chronologically definitive they are, nevertheless, useful in describing broad socio-economic time-frames. Current economic growth within developed economies is in the service and knowledge sectors. These sectors have been fuelled by the increasing supply of information generated over the past fifty years supported by the growing sophistication of technology to store and disseminate this information.

Although this shift is evident, it is necessary to acknowledge the on-going contribution of the agricultural and industrial sectors to the Knowledge Age. New waves of development do not wholly replace the old. Primary production in developed countries is now more efficient with trends towards larger properties managed by corporate entities. Likewise production and consumption in the industrial sector continues, although the nature of goods produced and consumed has changed over time. Both of these sectors retain influence over our education systems.

Knowledge industries form part of the service sector. Beare and Slaughter distinguish between various types of work in the service sector as tertiary, quaternary and quinary.⁷ They make the point that there is a huge difference between the levels of education required for each. Furthermore, specializations for each of these sectors 'must be acquired through tertiary education.'⁸

The Knowledge Age is one where knowledge is created, traded, shared and used for the benefit of all in the community. Knowledge can be defined as,

The cumulated stock of cognitive skills and information held by each individual, family, and community (including firms) related to the individual that can be applied to work,

personal, and social situations. Information is the flow of usable knowledge available to individuals, families, and communities, including work places.⁹

In his recent book, Hargreaves uses the term 'Knowledge Society' although he makes the point that he would prefer to describe our time as the 'Learning Society.' In essence, we are not knowledgeable in the sense of being at an 'arrived state'! It is a process of becoming and a vision we are always pursuing. The 'Learning Society' is one of constant change.¹⁰

There are three major points of difference between the Knowledge Age and the previous Industrial Age. Firstly, knowledge is intangible. It is not a product to be manufactured or transported in the traditional sense. Secondly, the rate of change in many aspects of the Knowledge Age is increasing. By comparison, change in former times was constant and slow. Consequently, the Knowledge Age is subject to disruption, uncertainty and obsolescence of previous knowledge, methodologies and design. Thirdly, the Knowledge Age operates within a global network. Whilst nations have traded physical goods for centuries, now they are able to trade ideas and knowledge instantly in order to create worth and value. The power of computerization and telecommunications which is behind this phenomenon is increasing at the same time as its cost is decreasing. The deregulation of many industries has meant that capital is able to flow more freely and services are able to be provided on-line between countries.

Transitions from one society to another are not smooth. Discontinuities are created in social institutions, business structures, lifestyles, the pace of change and the scope of change.¹¹ The above developments have led to structural social and economic changes. In traditional, industrialised economies, this has caused long term unemployment problems and new classes of 'haves' and 'have-nots.' Consequently industries are encouraged to promote professional development and re-training to protect and give continuity to their workforce. At the same time higher academic standards are being set for first time entrants to the workforce.

In the Knowledge Age, education is vital to economic growth. '[Education's] particular relation to knowledge makes the profession [of teaching] pivotal to economic prosperity and social cohesion.'¹² . An educated workforce, well trained in the various sectors but with particular emphasis on the creation and distribution of knowledge, is a basic necessity.¹³ . Much of this training will fall to the tertiary sector. The task of secondary

schools is to provide students with a strong general foundation.¹⁴ New paradigms are being formed from the deconstruction of the modernist beliefs and norms. These extend beyond work-skills to life-skills and values.¹⁵ As Mackay contends, we need to educate our children for uncertainty and change.¹⁶ Beare, citing Mackay, noted that there have been a series of upheavals or revolutions occurring and colliding at the same time. He listed these as:

The Technology Revolution

This revolution has questioned the definition of knowledge, given us instantaneous communication, eliminated geographic distance and given us North American ideologies and values.

The Gender Revolution

This revolution has allowed women to participate in the workforce on equal terms with men. It has also afforded them the choice of when and if to have children.

The Cultural Revolution

This revolution has challenged traditional nationalisms, confronted religious certainties and domination, imposed internationalism on thinking and social practices and challenged countries that maintain ethnic purity. Such changes have contributed to a loss of a sense of identity.

The Economic Revolution

This revolution has achieved the almost complete victory of economic rationalism as a Western economic philosophy.¹⁷

Given that these revolutions are still playing themselves out, Beare maintained that the implications for schools are enormous and unavoidable. He asserted that schooling patterns must change in a revolutionary manner, rather than in an evolutionary way as the need is urgent. The children who will have to face the full consequences of these revolutions, and perhaps modify or change their present trends, are the ones who are in schools at the present time. The question is whether our present education system is preparing them for this task.¹⁸

Implications of Societal and Economic Changes for Schooling

The world within which schools exist is changing rapidly. Economic and technological changes are driving social changes and both of these, in turn, are impacting on the output from our education systems and schools. Not only is more being asked of our schools, but there are different societal and economic requirements - different skills and competencies for students as outputs from the system. At the same time, the backgrounds of the students entering school systems is changing. Traditional family units are breaking up and other institutions of community support, which have promoted values, such as churches, are diminishing.

The social context of the knowledge age is far removed from intimate community life of the village. Transportation and the provision of other services have given the opportunity for people to spread from cities to dormitory-type suburbs thus separating work from home. Globalisation has added further stress to the bond between people and their sense of place. Smaller cultures are threatened by the language, culture and entertainment of larger ones. The world has become a larger and faster place.

Economic changes, again driven by technological developments and globalisation, have transformed the workplace. The nature of employment opportunities, as well as the contractual patterns of employment, has changed significantly. Uncertainty and insecurity are new concepts associated with employment. These trends, in turn, influence patterns of society. For example, population mobility resulting from employment changes works against the long-term support of community.

Technological changes, particularly those of information and communication, are giving rise to different avenues for sourcing information and ways for people to communicate. Emails and mobile telephone technology have provided for instant world-wide communication. Asynchronous communication has supplemented, and sometimes replaced, synchronous communication. All technology extends human capabilities. The wheel, tools of leverage, motor vehicles and information and communication technology extend the power and reach of individuals.

Social, economic and technological changes have placed strong pressures on schools to change. Terms such as reform, restructuring and systemic change describe what needs to be done to align schools with the new world. But schools and education systems, as

social institutions, are slow to change. Unlike corporate organisations which can relocate and redeploy quickly, schools have a broader and more conservative stakeholder group which makes swift change too difficult. In this sense, schools are always trying to catch up with external changes. Is this undesirable or does this inability to change quickly give schools an important role as a stabilizer in turbulent times?

Changes as noted, particularly those to do with employment trends, give rise to the necessity for students to realise the importance of life-long learning. Secondary education gives the broad grounding in knowledge. Tertiary education takes this to more specialised avenues. Neither of these will sustain students through the rest of their working lives. Further training and re-skilling are necessary for this. Often this will be on a just-in-time basis. Short-term competency acquisitions will supplement and sometimes take precedence over longer term post-graduate qualifications.

The Knowledge Age is one which is characterised, in part, by the tension of individualism and the desire for community; the faster pace of change, the expectation of instant responses and the global–local conflict. It is also an age where the above attributes have given rise to different concepts of place, space and time. The Knowledge Age is a time when the world and local environments are less secure than they once were and where the natural environment is threatened. Much of what is threatened by the transition to the Knowledge Age are the societal values of the past. There is no doubt that schools must respond to these changes.

Schools have a role to ensure that students understand and value their own cultures, values and traditions. To operate effectively in a global world, students need a strong grounding in who they are and a knowledge of their core beliefs. Schools have a role to ensure students understand and question global changes and the gaps between the developed world and the developing world. They must understand the differences between world cultures and religions to effectively live and work towards minimising world conflicts.

Secondary schools have a role to prepare students for further education in various forms of tertiary structures. The Knowledge Age has rendered secondary schools obsolete as final places of learning and certification. Of increasing importance, however, is for secondary schools to instill in students a ‘love of learning.’ If students leave secondary

schools considering the experience to have been unpleasant, they are far less likely to return to places of learning for a further experience.

Schools also have a role to ensure that students have learnt skills to operate together in society and in the workplace to be responsible members of the community and solve various problems which may arise in life and work. They must encourage individual success at the same time as promoting the importance of responsible citizenship for the benefit of all.

Schools have a role to develop their individual purpose, vision and core values and to then work from these to build the organisation, facilities and culture of the school. They must examine their organisational structures in the light of societal trends in the Knowledge Age. Is greater flexibility with the organisation of the school day possible? Given advances with information and communication technology, are students required at school for the same length of time each day?

And Schools should consider the worth of offering a greater range of social services to students and the community in order to ensure that all students are able to readily access these and that there is a stronger integration between schools and their communities. At the same time, secondary schools have a role to be safe places for students, teachers and other visitors. Security measures must be in place alongside a welcoming atmosphere for schools to be seen as open places for members of the community.

Institutional Change

The Knowledge Age will call for different combination of place (location), space (internal environments), and time for the provision of education. There will be a need for greater flexibility in all these respects. However, changes to education systems in response to changes in society are slow.¹⁹ Systemic inertia accounts for much of this. Institutions, which are of no substance in themselves, are comprised of many individuals. They have layers of procedures and accountabilities. Unlike the private sector generally, public institutions are generally averse to risk. This has an impact on their response times. Moreover, when buildings and infrastructure are concerned, these responses may be more prolonged due to the degree of permanency of many school buildings. Beare claims that all non-profit institutions have trouble adapting to change. This is because of

their relationships to community as their *modus operandi*. They build up traditions and heritage which the community comes to value even though they are under-utilised by that community.²⁰ Starratt points out that much of what gets accomplished in society is done through institutions. Hence, the paradox of progress. Even creative individuals have to work through institutions.²¹ Although institutions may have restrictions on resource allocation and limitations with scope and risk adversity, the challenge remains to transform them.

Education systems are based on the organisational framework of a central office with a branch network. Similar models exist for banks, food chains and churches. The strength of some of these networks is derived from that fact that the product and service they offer is identical wherever it is purchased or experienced with quality controls in place to ensure this. Thus, banks have identical procedures; food chains have identical products and service procedures. Some churches have identical liturgies (for the mass) but vary in local interpretation. Likewise, schools within a system adhere to a similar curriculum framework but operate with local interpretation and within the local cultural environment. To this extent, schools are able respond to some local issues. This ability has been facilitated by the devolution of greater control to local schools through strategies such as self-managing schools.²²

Schools Responding to Societal Changes

It could be argued that there is a general loss of community life within society. Although the impact of globalisation provides a counterpoint to local community identification, many people do not seek community and instead withdraw to themselves. There is no doubt that many of the traditional community activities, based in the locales of the village or suburb, have been affected by transport infrastructure developments, information and communication technology and globalization.²³ People can now travel further, communicate at greater distances and replace the geographic community based on synchronous communication with distant, asynchronous communication.

A recent report commissioned by the Church of England looked into the question of alternative structures 'for fresh expressions of church in a changing context', given that local churches had declining numbers.²⁴ Citing social changes which include housing trends, employment trends, population mobility and family life changes, the authors

concluded that we are living in a fragmented society. Our society is best described as a 'networked society.' 'In a networked society, the importance of place is secondary to the importance of "flows"' ²⁵

Neighbourhoods still exist, but they have changed. The networks may include local connections but also national and inter-national links. People can be in several networks at the one time or they can be in none. 'To live in one place no longer means to live together, and living together no longer means living in the same place.' (Ulrich Beck as cited in Church of England, 2004).²⁶ Lacking connection to a network and geographic immobility are forms of poverty in the Knowledge Age. This increasing separation of life from place weakens social capital – friendships, trust and commitments which hold communities together. It is easier to avoid making commitments when activities are not linked to place and this is detrimental to community. Young people are especially adept at keeping their options open.²⁷

The authors of the report conclude that the church in the knowledge age must adopt an approach of 'go to them' rather than the traditional approach of 'come to us.' In their words:

...to be with people where they are, how they are. The word 'where' in that sentence suggests geography and territory – being in a particular place and location. In Britain today, it might help to say that we must be with people *how* they are. 'How' is a word that suggests connection beyond geography and locality – connecting with people's culture, lifestyle and networks, as well as with their location.²⁸

Although there are some parallels with the provision of religion and education, an important distinction between the two is the choice given to attend church as opposed to the compulsion to attend school, at least for most of the secondary school years. Nevertheless, the notion of connecting with people 'how' they are in contrast to the more restricting notion of 'where' they are is more suited to community in the Knowledge Age. But learning has, for the most part, been associated with community, in towns and villages. Learning is generally a social activity conducted in a social setting. Families, churches and community organisations all formed the settings for learning. The challenge is to redefine the relationship between learning – and the physical environment in the Knowledge Age.

Belonging to a community involves responsibilities. Individual rights and freedoms must be sublimated to the values and benefits of the group. There is a tension here. Although we all seek the benefits of belonging, increasingly, in the Knowledge Age, there is a high value placed on individual rights, freedoms and flexibilities. The old avenues which gave some balance to these desires are no longer as effective. The disintegration of traditional families and the loss of outdoor neighbourhood play are examples of this.²⁹ Rivkin views this trend as part of the on-going march of capitalism.³⁰ He acknowledged the loss of traditional communities but notes that people still have the need to belong. He sees that more and more of this is satisfied by purchasing short term communal experiences which do not have great depth of meaning or satisfaction. They 'access' community as and when they need it.

At the local level, the re-integration of school and community can mean the school having a greater presence in the community or the community having a greater involvement in the school, or both. At another level, schools can form part of several virtual communities, some at a global level.

The introduction of mass education in the 19th Century created schools as separate institutions in the community. What occurred within these institutions was quite separate from what happened in the outside world. The school as a physical entity was also quite separate from other public and community buildings. More recently, fences, alarms and locked gates were installed to protect school facilities from unwanted strangers who could cause damage to property. Sophisticated security systems are now installed to ensure safe environments for staff and students. This has made schools unwelcoming environments.

Some have seen this mass 'outsourcing of education' from the family as a false environment. Shelton likens schools to 'islands' linked to the 'mainland of life' by drawbridges. In the morning all the students cross the drawbridge to go to school to learn about life and cross back again in the afternoon to be in 'real life'. His point is – why cross in the first place? Learning should happen 'in life' as an authentic experience.³¹ Dewey saw no distinction between school and life.

There is an increasing number of programmes whereby secondary school students undertake some of their learning outside the traditional school precincts. These may be

school sponsored country environments or schools in the city operated by the school community themselves. There may also be student placements in industry or other places where undertake authentic projects relevant to their study. Such programmes are operated by the Science and Maths School in South Australia.³² Some are linked to vocational education programmes. Students are also involved in community projects as part of learning about their environment and citizenship.

Three possibilities exist for a greater involvement by schools in the community. They are:

- 'Creating more 'educational centres' in the community than physically independent schools'
- 'Making greater use of unconventional buildings for educational use – shopping malls, empty offices, etc'
- 'Creating a greater number of dispersed buildings throughout the community'

The existing limited interaction between schools and the community is partly a result of the deliberate isolation of schools. Too often schools are seen as separate institutions behind their cyclone fences with some having signs indicating that 'Trespasses will be Prosecuted.' From a geographic perspective, schools are rarely at the heart of the community and for natural inter-action they should be. Observations of where students congregate when they are not in formal school give an indication as to where their natural community is located. This may be in a shopping centre. One tertiary college on the Gold Coast of Australia located itself in such an environment. The school administration and learning spaces were in flexible partitioned areas on the first floor above the retail precinct. All other services were located at ground level as part of the retail precinct. The services provided included parking, toilets, food courts and library.

In the Knowledge Age, therefore, the question is whether the community comes to the school or whether the school goes to the community or whether there is a separation of school and community. With new community developments, it may be possible to plan for alternative concepts of secondary schooling in the initial design. Indeed, involving the community in the early design consultations would be important to give community

ownership of any facilities.³³ For existing schools, it is necessary to consider the possibilities of combining education provision with other community services. This may lead to new concepts such as learning centres.³⁴ Learning centres are multi-functional, multi-age educational precincts which also incorporate other community facilities.

The importance of the school as a community resource is sometimes more evident in rural districts where the school facility is a more significant resource than it would be considered in the city. The former Mechanics Institutes in Australia attest to this phenomenon. Particularly in remote areas, schools can take on a symbol and aura of community. For example, in most communities in rural Alaska, schools are the only public facility. A school may be the only location with an electric generator, showers with hot water, sewer facilities, and laundry facilities.

...it provides the only library, gym, or meeting place. But the school really becomes much more than that. It helps preserve the culture and restore native pride. The villages start to see the building going up and they know their dream is being realized. It changes their community in a very dynamic way. It gives them hope (Jim Shepherd as cited in Taylor).³⁵

Futurists predicted in 1992 that in the coming century, education systems would become the focal point of communities and would work with business to provide life long development and learning.³⁶ Certainly as Western societies have moved into the Knowledge Age, education has been recognised as an important resource and there has been a commensurate increase in the provision of all forms of education. Much of this has occurred in the tertiary sector with the impact on secondary schools being an increasing retention rate of students. There is little sense in which our schools are the focal point of community.

One of the constraints to the greater integration schooling with community is the concept of equality of provision. In the conventional understanding, this means equality of resource provision of service and facilities. There has never been equality of provision in either sense. The quality of teaching staff varies from school to school as does the quality and extent of school facilities. However, if as Hattie and others argue, the teaching staff is more important than the school facilities to student outcomes, then equality of opportunity should manifest itself more in teacher quality than building provision.³⁷

Student security is another impediment to the integration of schooling into community. There is a prevailing expectation in modern societies that schools and teachers owe a duty of care to students when they are at school. In our litigious environment, schools suffer the legal consequences when this is breached. This concept does not apply to students who integrate within the community on weekends and after hours, nor does it apply in the tertiary environment. Although schools take security seriously, it could be argued that the independent school is a less secure place than if it were constructed to be a part of a more active community precinct.

The re-integration of school and community can occur in two ways. One is to further integrate some schooling within community facilities and the other is to bring more community activities into the traditional school. Establishing more permanent facilities for students in community precincts for all or much of their learning has been considered for some time. There are many opportunities where this can happen. Certainly in cities there are office buildings which have space available for use. Stand-alone schools can also be constructed in cities so that the students can use the city facilities. The 'Down Town' school in Minneapolis is one such school. This school does not have a library, performing arts facilities or sporting facilities. Students use the facilities in the town for these purposes. In Holland a primary school has been located above a retail precinct in the town of Deventer. 'To solve the problem of a shortage of development land, and to make the project financially viable, the new school has been integrated with commercial shops...There is a gymnasium and an open play area on roof of the shops.'³⁸ At the tertiary level, learning has taken place in university towns such as Oxford and Cambridge for centuries. Here, education forms part of the community precinct.

The alternative approach of re-integrating school with community is to bring more community and commercial activities into school precincts. Greater provision of social services in schools gives rise to the concept of the 'full-service school.' This is one response to social change whereby traditional family units are in decline and many of the new family arrangements are in need of additional social support. These services could be available to students and their families. There are other services that could be included. Some private schools have taken the opportunity to provide busy parents with some of the traditional family services for their students. These include extra-curricula activities, various forms of counselling, transport and dining facilities for before and after school meals.³⁹ Additional funding can be provided to schools for enhanced sporting

facilities (indoor and outdoor) as well as performing and creative arts facilities. Along with such provision there could be appropriate catering for all age ranges and some entertainment areas and facilities. In general, the approach is to de-institutionalise the school by making it a place which invites others in the community to integrate with the precinct. This model is particularly appropriate to new facilities in new communities. Re-conceptualising schools as learning centres is often canvassed in the literature.⁴⁰ Some of these learning centres could be former schools or tertiary institutions.

Schools must become places where people 'want to be' if they are to be successful in the Knowledge Age. People only gather in places for two reasons. Either they go for a purpose or they go because they like being there. At present, most people (students) go to schools because they have to – certainly those in the compulsory years. It is questionable how many students attend school because they enjoy being in the physical environment. This is why people gather in other places which have a greater standard of amenity and interest.

Conclusion

We live in a paradigm of educational provision which was essentially formed in another time. Socioeconomic changes have created a different world as a context for learning. New understandings of the learning process have led to a variety of pedagogies which are inhibited by traditional learning environments. Important questions need to be asked along the lines posed by Drucker: 'If we did not do this already, would we, knowing what we now know, go into it?'⁴¹ If the answer is 'No', then Drucker suggests abandonment, even if what exists is working as originally intended.

ENDNOTES:

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