Chapter 5 Synthesis and Conclusions

5.1 Reflective Discussion of Methodology

"The Efficacy of Holistic Learning Strategies in the Development of Church Leaders in Mozambique: an Action Research Approach" could have been designed within an "ethnographic research" framework because of the proximity to natural settings of the research population which was intended from the outset. However, as the lead researcher, I participated more actively than researchers normally do within ethnographic frameworks. Ethnographic researchers are typically less subjective, non-involved, almost "invisible" observers of the research process in order for the observations to be as objective and free from bias as possible. I needed to be an active learner-coordinator watching, listening, reflecting and acting alongside the other participants.

My research might have been a type of "evaluation research"; however, the learning system in which learning was going to be observed and researched did not exist yet when the data collections began in the year 2000, so that design would not work within the setting. Since there was no learning taking place, no resting base line was measured so quantitative comparisons were not possible either. Now, in 2006, "evaluation research" would fit well and would be beneficial to the parts of the learning system and the human components of it.

Participatory Action Research has been an excellent fit for the research study. Every characteristic of PAR is compatible with what has taken place in the study in Mozambique. Because I was a foreigner to Mozambique, living in an urban context, not the smaller villages of most of the learner population, it was extremely important for me to conduct the research within teams so that the data collected from round table discussions and analysed from other sources would not be interpreted by me alone but in team encounters which included long-resident missionary educators and Mozambican educators. The actions and reflections in the cycles which repeated several times during the phases of the research allowed the research to take place as the learning system grew and as the process of learning was taking place in the cooperative learning groups which were the settings for the reflections of the PAR team members. The other PAR team members have learned, with me, the practice of critical reflectivity, the importance of team-building and communication, and the potential of participatory expression.

Because of its holistic, relational style, sociological goals, and philosophical underpinnings, PAR research may not "seem like" research to positivists. It almost defies linearity, so positing "if 'x', then 'y'" argumentation promises only quase fit to PAR findings and presentation. The dynamic spirals of PAR inspire plausible explanations expressed in words of improved understandings not as hard facts.

Participatory Action Research conducted with all its style and goals within a conceptual framework of Arboric Research seemed to be an even better fit for my research. The Arboric framework is dynamic, even organic, and recognises that the system being researched is undergoing change such that the system at the beginning of the research is not the system at the end of the research. The parameters of the research setting itself change. In Arboric Research that change

is a "given", it is a known condition at the outset, and the action of the research is carried on within the ever-changing structures of the system by focusing on a "moving target" which, in the case of my study, was the learning in the minds of the developing leaders of the Church of the Nazarene in Mozambique. The learning was the life-giving sap within the semi-rigid but growing structures of the learning system. The structures affect the sap and the sap affects the structures, because the structure is a human structure, ever-changing.

5.2 Substantive Conclusions

From the outset, this study proposed to investigate "how holistic learning strategies facilitate learning" with learners from a specific context so it is called "The Efficacy of Holistic Learning Strategies in the Development of Church Leaders in Mozambique: an Action Research Approach". To define what "holistic" is, the broader constructs of holism and holistic personhood were explored, and a graphic model evolved which illustrates three sub-selves of a whole person, each one of the three sub-selves having aspects which impact the self.

In order to determine whether or not holistic learning strategies actually facilitate learning, a basic question was researched theoretically and empirically – ***"Do*** holistic learning strategies facilitate learning?" – and the concept itself "holistic learning strategies" was explored and well-defined. Models from other places of the world which used strategies which fit the definition of "holistic learning strategies" were explored theoretically and gave promise to the answer, "Yes, they do facilitate learning". The question "Do holistic learning strategies facilitate learning *in Mozambique*?" had to be answered empirically. Another preliminary question, "To what extent do holistic learning strategies advance the learning of leaders in development when used by minimally-prepared trainers?" was not answered in theory but several empirical findings contributed evidence to recognize, at least, some factors which limit the extent to which such strategies are effective.

The term "learning strategies" as opposed to "teaching strategies" focuses on the learning that is targeted to take place in the minds of the learners rather than the activities engaged in by the teachers. The "teachers", more appropriately called "facilitators of learning", contribute actively to the learning taking place within their learning setting by making multiple, tactical choices which affect aspects of the learning environment in which they are conducting learning encounters. Facilitators make decisions regarding aspects of the **physical setting** which are within their control, about their **relationships** to the learners and other **non-physical aspects** of the learning setting, about the **planning of series of "learning strategies"** which enhance the possibility of each learner to construct within her or his personhood and within the set of learners the knowledge, attitudes, skills and character traits defined and targeted as intended learning outcomes.

"Learning strategies" are considered "holistic" when they take into account that the learner who is benefiting by the "learning" is not considered only in terms of the cognitive increase but as a person who has spiritual dimensions and is learning within a social context. Holistic learning strategies, therefore, include social and spiritual learning as well as whole-brain learning. "Whole-brain learning" refers to

learning which activates the limbic brain as well as the cerebrum and the right hemisphere as well as the left hemisphere. Several holistic learning theories and "whole-brain" models were explored, Multiple Intelligences Theory (Gardner 1983), modular brain theory (Restack 1979, 1988, 1994, Gardner 1987, Pinker 1997, Harth 1982, 1993, Csikszentmihalyi 1993), several models of brain duality, the Triune Brain Theory (MacLean 1952 in Gross 1991) and the Four-Quadrant Brain Model (Herrmann 1994). Because it is so easy to understand and explain, I use the metaphoric four-quadrant model of Herrmann more often than the others, but all of the theories and models investigated in the literature contributed to the knowledge about holistic learning strategies which has been constructed during this study in Mozambique.

Within models of adult learning considered to be successful, "learning strategies" utilised which took into account spiritual and social learning were examined as potential candidates for use in the Mozambican context. Models screened in this way were those of Moses, the Synagogue, Jesus Christ, the Apostles, St. Augustine, Martin Luther, St. Ignatius of Loyola, the Wesleys, Freire, Laubach, and the educators who created and developed "Theological Education by Extension" (TEE). Within these models 31 learning strategies were identified as potentials to be used by the group of facilitators, called "monitors". Among those 31, seven seemed to fit the research definition of "holistic learning strategies" so these seven became the focus of the empirical research. The list below displays the 31 learning strategies including four kinds of discussions. The last six which are **in bold** plus "discussions of several kinds" constitute the "holistic learning strategies", i.e. those affecting all four quadrants of the brain, taking into account the social and spiritual sub-selves of the learner. The listing is organised by the brain quadrant of the four-quadrant model, with the main types of activity which Herrmann (1994) attributes to the quadrant:

Quadrant A: CODING / DECODING ACTIVITIES:

1. actively and independently assessing Bible content
2. hearing the Bible and text material read and explained
3. memorizing Bible content
4. reading the programmed Text Africa books
5. regular group discussions based on main ideas (informational)

Quadrant B: ORGANISING / ORDING ACTIVITIES:

6. taking of written exams
7. answering questions in writing in the Text Africa books
8. attending class at least 67% of the time
9. discussions based on reasoning questions

Quadrant C: REFLECTING / ORAL-SOCIAL ACTIVITIES

10. inviting God to intervene (prayer)
11. encouraging and helping colleagues
12. including peer tutoring in second-chance occasions
13. reflection using several applications
14. regular singing of songs
15. choral reciting of truths
16. working on projects together to buy books
17. discussions based on application questions

Quadrant D: SYNTHESISING / GRAPHIC INTERPRETING ACTIVITIES:

18. icon or visual clue interpretation

19. key words as tags, labels
20. pictures, maps, graphs
21. discussions based on key words
22. identifying heroes
23. appropriately applying Bible content to life scenarios

FOUR QUADRANT ACTIVITIES

24. rehearsing integrity: hero modelling / role-modelling /
25. role-taking/ self-sacrifice
26. team work: team building work projects /
27. pair or trio groupings /peer tutoring
28. classical spiritual disciplines
29. singing for learning
30. cooperative learning groups
31. praxis

The findings in the empirical study in Mozambique are inferential evidence, not the result of direct measurement. The findings consist of tabulating perceptions of the research population and reporting textual data gathered from many and varied sources, analysing discourse texts, coding themes and interpreting recurrent themes and disconforming evidence. By the end of the empirical study, the theoretical answers to the two preliminary questions and the empirical implications were those summarised in Table 5.1 below:

Do these holistic learning strategies facilitate learning?			
		THEORETICALLY	EMPIRICALLY
1	**Discussions** – of several different kinds	Yes, as per models: Freire, Laubach, Wesley, theological ed by extension (TEE), and theories of several adult learning theorists	Yes, as per multiple voices captured in round table discussions in multiple settings which crystalised and comparative analysis of video clips.
To what extent?		Learning from group discussions is definitely enhanced by having facilitators who speak the maternal languages even when written texts are in Portuguese and is optimal when materials to be discussed are written in the maternal languages of the learners.	
2	**Cooperative learning groups**	The same models as for discussions	Yes, as per the same research instruments as “discussions”.
To what extent?		The fit of this strategy to the population was excellent, an extension of natural learning patterns in the collectivistic culture. When rated by 598 respondents, 96% found discussions “normal, very good or excellent”.	
3	**Praxis:** action / dialogue / reflection	Yes, as per Jesus and the Apostles, Freire; TEE and Hasbrook (2002).	Yes, as per “how my life changed” statements from learners with >4 year of learning.
To what extent?		Success of praxis in “active learning” is manifested weekly in face-to-face sessions throughout 97 centres; of learners with >4 yrs of experience with holistic learning strategies, 89% of them perceive the change in their lives from learning has been “very great”.	
4	**Teamwork**	Yes, as per theorists	Yes, as per data collections in many site visits across the country

To what extent?		Completion of any one course of IBNAL requires "teamwork" in many ways; support from leaders of church district, hours volunteered by the monitor, *cooperation* within learning group to discuss each unit of learning, to memorise in group the verses required working for book money. From 09/ 2000 to 09/2005, the number of courses completed via *bona fida* teamwork was 16 per monitor as per survey in 2005. Perception of "task" seems to be modulated by collectivism.	
5	**Rehearsing integrity**	Yes, as per theorists and models of Moses, the Synagogues, Jesus and each Christian model cited.	Crystalised findings in qualitative phases; ratings in hybrid survey.
To what extent?		Involving hero-identification, hero-modelling, role-taking & self-sacrifice, rehearsing integrity is not limited by circumstance. Goal of Christlikeness rated 96.5% "normal to excellent" of 598 respondents; high ranking of verse memorisation, too.	
6	**Singing for learning**	Yes, as per models of Martin Luther, John and Charles Wesley, African traditions	Occasionally yes, based on several trials, in several contexts, related to several content themes.
To what extent?		"Singing for learning" was generally unsuccessful in the research, probably because the singing was not being done in maternal languages or music in native rhythms and melodies; exceptions seem to indicate the need for learners to very thoroughly appreciate the words and/or to be emotionally linked to the song being sung.	
7	**Classical spiritual disciplines**	Yes, as per models: Jesus Christ, the Apostles, St. Augustine,Martin Luther, St. Ignatius of Loyola	Yes, based on introspective evaluations of course which includes them.
To what extent?		Though commonly practiced as habits in research population, use of classical spiritual disciplines as learning strategies produced glowing statements of value.	

Table 5.1 Summary of Empirical Findings Applied to Preliminary Research Questions

Discussion: Tables pack extensive data into brief words which occupy small spaces. My research report has many tables but probably none more important than Table 5.1 which displays the essence of about 250 pages of theory and empirical enquiry which constitute Chapters Two and Four of this report, so there is nothing in it that is not described in far more detail in previous discussions.

Theoretical research toward answering the major research question, "How do holistic learning strategies facilitate learning?" sought answers among several disciplines: cognitive science and cognitive psychology, neurology, brain-based education, and model describers and model builders. Expecting other findings to surface from the empirical study which proceeded in the manner described above, I formulated a tentative answer to the question at the end of the theoretical research: holistic learning strategies seem to facilitate learning by assisting the learner to make the sub-selves of his or her personhood "congruent" and "integral". The basic brain operations to produce congruency and integrity are patterning, categorizing, relating and connecting. By the end of the empirical study, some evidence had surfaced to support this explanation and that among basic brain operations were eight overlapping activities: the six already identified –

making congruent, whole-making, patterning, categorizing, relating, connecting – plus ordering and integrating.

One rationale for my Participatory Action Research project was to construct knowledge from Mozambique to add to five of the areas of adult learning which Brookfield identified in 1995 (7-8):

- Other cultural perspectives to break the Eurocentric and North American dominance in research in adult learning
- Solidify qualitative studies by means of survey questionnaires or experimental designs
- Work on spiritual and significant personal learning
- Understanding adult learning as a socially embedded and socially constructed phenomenon (as per Jarvis, 1987)
- Attention to the interaction between emotion and cognition

He urged "**inclusion of other cultural perspectives to break the Eurocentric and North American dominance in research in adult learning"** and as well as **"solidifying qualitative studies by means of survey questionnaires or experimental designs".** The whole project was carried out in Mozambique, led by an outsider but researched in broad and authentic teamwork for five years. As such it is an authentically Mozambican study in adult learning. The language used in the meetings of the teams of PAR was usually Portuguese, occasionally English. The languages used in the interface with the learner population in the field were the maternal languages of the learners (which number 33) or Portuguese. As Brookfield recommended, the statistics are derived from a hybrid survey, administered to adult learners and leaders scattered across the country. In the spirit of PAR which ascribes to participation as full as possible, the publishing of this research validates the "voice" given to Mozambican learners and church leaders who genuinely participated and actively benefit from the knowledge generated throughout the five years of this study.

The size of the whole population of Nazarenes involved either as learners or facilitators in the Nazarene educational system which are those targeted in these surveys is approximately 1,800 people made up of about 300 diploma-level graduates from the residential Bible School in Maputo and about 1,500 people who have been students of IBNAL, the decentralized delivery system of education through extension centres. The size of the population of respondents on the biographical data sheets is 952 approximately 52.9% of the estimated target population. There are 678 respondents who are students in the extension education system, 71.2% of the whole population. There are 588 "Adult Learners" by definition of their circumstances (they are students who are already 25-years old or more or they are younger students but already serving as church leaders, i.e. in "adult capacities".) The difference between 678 and 588 = 90 are learners who are not by age or position "adult learners". The stereotypical learner in this research, according to the descriptive findings gathered, is **male, 37 years old, speaks Changaan, Chewa, Lomwe, Makhua, Portuguese or Masena as his first language but prefers reading in Portuguese and already is serving in a position of leadership in the Church of the Nazarene of Mozambique in one of the five geographic areas of the country while he is a learner in the extension system called Instituto Bíblico Nazareno na África Lusófona**

(IBNAL). He has 6.3 years of formal public schooling and has completed 7 courses of IBNAL with a monitor who has completed 7.7 years of formal public schooling and who has facilitated 16 courses of IBNAL since September 2000. The statistics also show that the percentage of learners who would not qualify to be students in the programme of preparation in the residential Bible School (which has a seven year minimum of public schooling) is 61.5%. This means that **just over 60% of the IBNAL students (those learning in the cooperative learning groups of the extension centres) would be unable to come to the resident Bible School because of their insufficient level of their formal education.**

Among the research findings from Mozambique are themes Brookfield frequently discusses in the literature. Findings on three of these are briefly cited below"

- Sitting in a circle and open dialogue. These were very new strategies for learning settings in Mozambique, but the participants responded positively to them across the country. There was no dissenting voice among the many groups who gave spontaneous written responses individually to oral questions addressed to the group (Delphi technique). The ascent to "sitting in a circle and open dialogue" became a consistent and well-accepted strategy in learning sessions and in PAR sessions within the learning system across the country.

- Group discussions. Discussions are a natural "good fit" for the learning population in Mozambique. According to the model of Theological Education by Extension, TEE, the discussions are based on the uniquely designed student texts which standardise the knowledge base for all who participate in the discussions. They are conducted by the minimally-trained monitors who are at least bi-lingual, (several speak more than two languages), and so they can facilitate discussions in Portuguese and in one or more of the maternal languages. A high 75% of the research population is highly satisfied with the "skills of the monitors" even though the monitors only have, on the average. 7.3 years of formal schooling and the learners 6.6 years. The overall position of the research sample is that group discussions more satisfactorily facilitate learning when the group discussions themselves are conducted in the maternal languages and the textual material on which the discussions are based is also in the maternal languages.

- Critical reflection. I consistently consider critical reflection as a part of "**praxis**", as "dialogue-reflection-action" and it is a well-succeeded holistic learning strategy in this empirical study both in the lives of the learners and the monitors. The extent of the success of the learning strategy seems to be linked with the personal control the learner has over the *action* after specific dialogue and reflection have taken place in the cooperative group setting. The adults in Mozambique can become "more spiritual" as a result of "mini-praxis" utilized in extension education classes because nothing from their context, prevents them from "growing spiritually". However, forces beyond the personal control of the learners to transform, like economic ability, books in a second language that they understand imperfectly or district leadership which does not favour the establishment of

holistic learning settings in their district affect the extent to which "praxis" can be fully implemented, hence diminish the experiential aspect of the learning.

Brookfield recommended (1995:7-8) that more work be done among adult learners **"on spiritual and significant personal learning".** The PAR study in Mozambique consistently fits into this category of learning research**.** From the outset, the research takes several aspects of "spiritual" into account. Different views of "spirituality" as a theoretical construct were explored. A fundamental difference in these views is the source of "spirituality" which can be 1) within the self, 2) outside of the in some indefinite cosmic sense or 3) in God with a capital *G,* the Supreme Being, the position taken to define the locus of "spirituality" for the purposes of this research project.

Tri-dimensional personhood, the model of "self" used in this research includes the "spiritual self", "social self" and "whole-brained self" as the three principle and sub-selves, with "God" and "memory" always present and influencing the "whole person". The three sub-selves of the whole person can also be called "dimensions" of personhood, hence the term "tri-dimensional personhood". All three dimensions have points of entry and attachment, of input and output which are explored and illustrated in greater detail in graphics which follow.

Taking a number of learning strategies from historic models of "spiritual learning environments", "holistic learning strategies" was defined in this research as "whole-brained learning strategies" which also take into account God and the social self of the learner. Empirically, personal value is given to "spirituality" by the Mozambicans on the five different Participatory Action Research teams population by virtue of their life vocation. The population of leaders and learners in the PAR study in Mozambique are all actively involved in serving as or preparing to serve as leaders in the Church of the Nazarene, a Christian denomination. Overall, this research fits the recommendation of Brookfield to study "spiritual and personal learning".

"Spiritual learning" is evidenced empirically in findings which become crystalised by multiple voices in agreement from multiple contexts in the country during the qualitative phases of research and then from the choices indicated and quantitatively displayed as findings from the large hybrid survey administered. Finally, the introspective reports from the 53 learners with the broadest base of experience in the learning system (at least four years) express spirituality in repeated ways in the wording they choose to describe changes in their lives.

Several empirical findings corroborate the value the population attributes to environments which are "spiritual", among the findings:

- During phases of qualitative research (2000-2004), a recurrent theme was that "starting and ending learning sessions with prayer and brief attention to the Bible" was a pattern repeatedly affirmed by groups of participants all over the country. The results from the broad survey conducted in 2005 show that 503 learners or 76.6% rate the practice of "praying together" in the learning environment as "very good" or "excellent".

- The rating given by the learners concerning the overall goal of the learning system to "be like Christ", a spiritual goal, was highly rated by 67.7% of the learners and 69.4% of the whole population. Only 2.7% of the population rated the practice of "memorization of Bible verses for exams" as "low or poor", meaning that 97.3% of the population rated it as normal-to-excellent.

- The most frequently chosen area of impact of the learning system on their lives was "spiritual growth" (60%).

Gardner (1997) and Brookfield (1998) both write reflectively on people they call "moral exemplars" who are considered to be outstanding because of the lives they live poured out for the good of others. Gardner notes that these moral exemplars harness "knowledge…interests….skills" to a concern broader than self. I expected to find in the empirical study, that the research population would show that the people of the population regularly and consistently harness their "knowledge …interests…and skills" to concerns broader than their personal ones. The fact that the monitors who utilise holistic learning strategies to facilitate learning all are volunteering their time week after week, month after month and now have done this for over four years speaks highly of their lives poured out for the benefit of their learners and other wider concerns. The findings show that each leader who responded in survey had facilitated 16 courses of IBNAL; each one takes about three months to teach, 2-3 hours a week so these leaders have volunteered 400 hours of meeting time to benefit others by this particular ministry of service.

Brookfield ponders the lack of critical reflectivity of the moral exemplars observing that they seem to take pleasure in behaving in ways usually considered highly moral. Findings from three of the multiple variable questions of the broad hybrid survey show choices which reflect the pleasure the population finds in being "spiritual" which usually is considered within "high morality". Table 5.2 displays these findings:

Three Items Below are Multiple Variable Survey Questions

			Value to Whole Population		
	Rating of structured aspects of IBNAL (1-4)	Mean of number of respondents 598	**REGULAR ASPECT**	**RANK ORDER**	**PERCENTAGE**
			Pray together	1	76.9%
			Be together	2	75.9%
			Skills of monitors	3	75.3%
			Sing together	4	70.1%
			Goal	5	69.4%
			Verse memorization	6	67.6%
			Group Discussions	8	64.4%
			Life Applications	7	64.0%
			Books	9	56.7%

			Whole Population	**Learners** %	**Leaders** %
`	**Choice of two aspects of GREATEST IMPACT of IBNAL** -	873 of 1031 total 158 missing	Relations 8.1%	07.6	09.6
			Skills 36.0%	36.2	35.3
			Knowledge 38.0%	38.0	37.2
			Appetite 50.7%	52.0	44.9
			Spiritual Growth ……..59.8%	57.9	70.5

	Four spiritual activities which most help to draw close to God	**Whole population (793)**	**Learners (575)**	**Leaders (134)**
		Attending church 64.7%	Church 66.1%	Church 53.7%
		Studying Bible 45.9%	Study Bible 46.8%	Studying Bible 50.0%
		Fasting 32.8%	Fasting 31.8%	Fasting 42.5%
		Reading Bible 30.5%	Sunday School31.8%	Praying alone 38.1%
			Reading Bible 29.2%	Reading Bible 38.1%

Table 5.2 Quantitative Response Summary from Large Hybrid Survey of 2005

Discussion: The 598 respondents rating 1 to 4 (1 = poor, 4 = excellent) the nine regular aspects of the learning system called IBNAL rate ”praying together” highest among the nine regular aspects. Aspects more typical of learning settings like “group discussions” at 64.4% “very good or excellent” and the student books at 56.7% “very good or excellent” are lower than the ratings of “praying together” = 76.9%. “Praying together“, “singing together” and “verse memorisation" are consistent patterns or habits of the population *in their weekly sessions of the learning groups*. These are not “church activities” but rather habits of their learning groups.

The research sample was asked to choose the “spiritual activities” they most preferred (implying the use outside of the cooperative learning group settings). They chose “attending church”, “studying the Bible”, “fasting” and “reading the Bible” as the practices most esteemed by the population. Gardner (1997:132) notes about the moral exemplars that they “established habits that led them to devote their lives to serving their fellow human beings. And, inspiringly, they saw service to others as part of their own personal growth”. Within the research population in Mozambique findings in Table 5.2 show that habits of devoted service to God and to others are consistently practiced by the research population in Mozambique. These findings seem to show that actions, habits, interests and service in the population in Mozambique show patterns similar to those noted by Gardner and Brookfield in the lives of moral exemplars.

The fourth of the five areas mentioned by Brookfield for further work in adult learning and cited previously is **“understanding adult learning as a socially embedded and socially constructed phenomenon** (as per Jarvis, 1987)”. Jarvis was not an author of literature I reviewed, however, several of the African writers I reviewed spoke of the need to understand well the social realities which relate to learning in Africa. These writers described perspectives that were very pertinent for me, particularly, to take into account as I was new to Africa and I worked, researched and lived alongside Africans in various settings. The perspectives were like coloured threads of a new tapestry of meaning which was taking shape before my eyes, so I colour the quotes brightly:

- African learners should be given much more opportunity to work together in the classroom and on projects outside school. Grading of learners should be based on the ability to work together and facilitate the potential of others….most African people were required to adjust to the solitary nature of Western education, people used to the Western system can be expected to adjust to the co-operative system. Ideally, both systems need to be explored and, if possible, be made mutually inclusive (Mkabela & Luthuli 1997:8).
- In traditional African life a person depends on others just as much as others depend on him/her. The task of African philosophy is therefore to speculate about the communality of the individual in the African setting. It should provide conceptual frameworks for interpreting and analysing the humanness that *botho* and *ubuntu* capture. It should provide rational tools for critical reflections on personal wellbeing or human flourishing, on communal ethics and how these ought to impact on human conduct (Letseka 2000:182).

- Effective learning and teaching depend upon a learner's ability to comprehend what is communicated. At the same time language plays a major role in maintaining the culture and the identity of people (Mkabela & Luthuli 1997:55).
- If someone becomes arrogant or disrespectful of others on account of being rich, Africans have ways of cautioning against this sort of behaviour. The Sotho expression 'monomo ke moholi ke mmuoane' warns that worldly riches are like mist, which evaporates when the sun rises and begins to heat our surroundings....you might not be rich forever, but family and friends will always be there for you, through thick and thin (Letseka 2000:183).
- The holistic frame of reference for Africans therefore calls for a holistic approach in education to accommodate the African perspective (Mkabela & Luthuli 1997:39).
- The need in Africa is for an affordable model of theological training capable of helping the churches to reach as many Christians as possible in order to equip them to meet the challenges they encounter in their environment…as it [residential theological education] becomes more and more expensive, fewer and fewer people find their ways to residential theological institutions while the demands for more Church workers increase (Gatimu *et al* 1997:3).
- There is ample evidence to show that myths, folk tales, proverbs, songs and drums have always played an important educational role in traditional African life (Letseka 2000:189).
- Emphasis on an African language will create a consistent African value system which serves as a major carrier of culture (Mkabela & Luthuli 1997:56).
- When theological poverty has found its way into the pastorate, the result can only be a deterioration of the Christian ministries and loss of vision as to what the Church is all about (Gatimu *et al* 1997:3).
- Language has played a primary role in hampering African education and has contributed to the injustice and inequality experienced at African schools (Mkabela & Luthuli 1997:54).
- Nazarene leaders in Mozambique should be bilingual or "tri-lingual" (maternal language, Portuguese and English) (Mucavele 2002).
- The position of the African kings also reveals the African democratic traits. They are said to have been subjected to very specific authoritative orders from their people. Although being a leader was based on good qualities, being older in a group would not command respect if one was lazy, a troublemaker or a fool (Mkabela & Luthuli 1997:60).

I will not attempt to improve the clarity of what these African writers are saying. I quoted them in previous chapters and the above statements are strong in themselves. The intention for their inclusion in this summary is for non-African readers to revisit the perspectives on life in general which are different in Africa than in some other parts of the world. I hold that these differences are, as Thomas (2004:178) says "valid contributions to the process of education in the global village" not only the global village of the Church of the Nazarene to whom he was writing but also in the global village of reflective educators throughout other world contexts:

> It is time that we as African begin to contribute [resources of all kinds to other world areas]. I am not contending that we have never contributed; I am suggesting that we work proactively and together with our US, English, Australian, Philippine, Korean and European counterparts. Every group, irrespective of their origin in the world, must make use of every opportunity to make valid contributions to the process of education in the global village of the Church of the Nazarene (Thomas 2004:178).

Gleaning from these and other African writers regarding Africanisation and from Hofstede (1997) regarding the issue of *collectivism vs. individualism* in societal structure, I determined to keep two issues ever before me as a backdrop to the action of research which was taking place in Mozambique under my leadership: 1) the influence *of societal* organisation, i.e. collectivism vs. individualism plus that of *instruction in maternal languages*. During the empirical phases of the study both the issues surfaced too many times for them to be authentically considered as "backdrop"; both definitely affect "*how* holistic learning strategies facilitate adult learning". Both grew in importance during the study so they became substance as they have been woven throughout the study…and on to "recommendations for further study".

The PAR research population in Mozambique has the multiple social contexts which influence the individuals who constitute it. These were identified and explored linguistically, academically, historically and categorically in the distribution of the ecclesiastical categories within the population. Figure 5.1 illustrates the kind of groups to which they belong:

Figure 5.1 The Social Contexts of the Research Population in Mozambique

The research population in Mozambique is

- "tribal", by birth into one of the 33 distinct ethnos identified by SIL
- "multi-lingual", by experience within the ethnic group and schooling and other public communication normally conducted in Portuguese

- "learner", by choice, part of a cooperative learning group
- "Mozambican", by birth
- "African", by birth
- "Christian", by choice
- "leader", by choice of those who are their followers
- "Nazarene", by choice or by influence of birth family

According to sociological theories, *in-group bias*, i.e. favouring those who belong to the same group, influences behavioural and attitudinal choices. Conflict arises within an individual when favour to one of the groups to which he or she belongs may be prejudicial to another group of his or her attachment.

The learning on which this study focused was learning constructed within "cooperative learning groups" which met and continue to meet weekly in the collectivistically-organised country of Mozambique for the several years of preparation it takes to become duly qualified and certified as ministerial leaders in the Church of the Nazarene. Although Portuguese is the official language the surveyed population numbering 952 speak 33 different maternal languages of which six languages accounting for 79% of the research population answering this question: Changaan, Chewa, Lomwe, Makhua, Portuguese and Masena. The other 27 languages account for 21% of the respondents. They are almost 80% male, 20% female and have an age spread from 14 to 79 years old, and average age of 37.3 years. This population chose "praying together" as the highest rated aspect of the learning system and "being together" as the 2nd highest rated. The second indicates individual satisfaction in the belonging to a "group of learners", one of the groups of attachment indicated above in Figure 5.1. The first rating indicates satisfaction with the group acting on the value they attribute to God by praying to Him *in the learning setting.*

The embedding of this population in a highly collectivistic societal structure provided continual challenge for me, the "outsider" (to collectivism) who grew up in an individualistic society, to be able to interpret with understanding some of the behaviour which was affected by dynamics of collectivism which I had read about but have not learned to predict with accuracy. This cultural and experiential limitation on my part constituted a significant reason for conducting the research in participatory teams with Mozambicans. Certainly the collectivistic dynamic 'relationship prevails over task' clearly surfaces in the empirical evidence. In the establishment of centres of holistic learning in the ecclesiastical districts, this dynamic is at work. In relation to "teamwork" as a holistic learning strategy, this dynamic influences. The importance of a task is affected by relationships. In teamwork, then the importance of the task to be jointly undertaken by those in the group is influenced by multiple relationships. Overall, for a task to become important to a learner it must be important to *someone* who is important to the learner. The issue of *collectivism vs. individualism* during the empirical study in Mozambique surfaced many times so that I have become convinced that is very important in the study of any human system. Sometimes it is loosely interpreted as "cultural differences" but that I consider to be too broad and uncritical a category. The issue of *collectivism vs. individualism* affects learning systems.

I end up agreeing very strongly with Brookfield that further work in adult learning include "understanding adult learning as a socially embedded and socially

constructed phenomenon". The PAR study in Mozambique offers a little insight into the truly interwoven ways that adult learning is socially embedded in collectivistic societies; but more accurate insight will be offered by the Mozambican(s) who will pick up the research and continue to interpret the study that has been jointly investigated so far. To this end I agree with another African, Vilakazi in Goduka (2000:80) who challenges Africans to "become anthropologists doing fieldwork on [our] people and on ourselves, as part of a great cultural revolution aimed at reconstructing Africa". At the end of my reporting, I keenly feel the need for Africans to do anthropological fieldwork on their own people, rigorously and academically to accurately describe to the rest of us African diversity, African transformation and African learners.

The final of the five areas recommended by Brookfield for further work in regards to adult learning which are addressed in my research is "attention to the interaction between emotion and cognition". In terms of models of the whole brain and the language which underpin them, this area could be restated as "attention to the interaction between right and left hemispheres of the brain" or "attention to both limbic and cerebral function in adult learning". The whole focus on "holistic learning strategies" throughout this study is attention to holistic learning, learning which includes *interaction between* and brain activity within both the domain of emotions and that of cognition. The next section posits a hypothesis which relates to this emotional/cognitive interaction.

5.3 Research Findings

Action research typically is concerned with social practice. One aspect of social practice scrutinised in this study is that of the facilitation of learning practiced by minimally-trained facilitators, called *monitors*, with learners, most of whom are adult learners already in positions of leadership in the Church of the Nazarene in Mozambique. Another is the interface of these learners with the several social groups to which they belong. A third aspect of social practice inherent in this research is the wide participation of several groups in the research which requires sensitive and consistent social ethics. The research teams which I led had to be sensitive to the diversity in some of the participating groups, homogeneity of others, in terms of language, economics, age, maturity, health and academic level of instruction, and we also had to be consistent throughout all phases and all encounters. Such rigor has produced a reliable set of empirical data which relates to adult learning. Action research, through consistent and scrupulous social practice, employs systematic enquiry which results in contributions to theorising.

The most significant contribution of my research is that, according to the empirical findings, **holistic learning strategies enhance the quality of adult learning, at least in settings like those in which learning was facilitated in Mozambique**. The findings indicate that the learning is improved by narrowing several gaps, perceived or real – 1) the gap between theory and practice, 2) the gap between right-brain and left-brain learning, 3) the gap between cognitive and emotional learning. The narrowing of these gaps ultimately leads to narrowing the important gap in the lives of the learners, 4) the gap between their aspirations and their performance.

When the gap between aspirations and performance is narrowed, the learner is satisfied. The learner experiences intrinsic satisfaction. The filling of this ultimate gap is attested to by the response from one of the men who has been in the learning system (IBNAL) for four years. When asked how learning had changed his life, he said:

> *I had very little understanding. I was never well prepared for what I was doing. Now I am able to plan well a church service or lead the music or preach from the Bible on a number of topics. I feel well prepared. I didn't know that a pastor should be prepared, but now because of my training I can lead without difficulties.*

This learner is typical of many in the research sample; he received the title and responsibility of "pastor" before he was equipped to be one; he was tolerating a falsehood, he was called "pastor" but did not know what a pastor knows how to do, nor did he understand what a pastor needs to understand to preach. He now is able to put knowledge into action and he "feel[s] well prepared". After learning holistically, here is no longer discrepancy or gap in his life between "what is" and "what should be", particularly "who *he is"* and "who *he should be"*. He has become a trained pastor so now he *is* what he *is called.*

Throughout my research I have believed that holistic learning strategies will be of interest to many educators, ***if,*** it could show that they do enhance learning. The findings seem to give evidence that holistic learning strategies contribute to the achievement of complex outcomes like attitudes and character traits which are frequently-targeted outcomes in many learning settings. In order for the wording of the findings to be clearer, I briefly describe some of the terms I used in the research.

Holistic learning strategies are a particular kind of learning strategies. I define *learning strategies* as deliberately chosen activities to engage a particular population of learners to facilitate their learning toward intended learning outcomes. The deliberate choices that the facilitators make of which learning strategy to utilise relates to the fit of the strategy in relation to several variables: the time, the learners and the other strategies being used in the learning encounter. The facilitators make in-process assessment of the appropriateness of a strategy and may switch strategies deliberately in order to better accommodate the dynamic evolving in the learning encounter. These activities are focused on a "mission" which is to build competencies into the life of the learner, thus they are *strategic* activities, i.e. "strategies" which focus on the learning in the lives of the learners. *Holistic* learning strategies are those which take into account that the learner is more than a brain-holder, that he/she is a person with social and spiritual aspects. *Holistic* learning strategies recognise the tri-dimensional nature of personhood of each learner, that he/she has a spiritual self to develop, a social self which needs to learn to relate to the several social groups to which he/she belongs as well as the mental self which is more frequently targeted in formal educational settings. So the focus on holistic learning strategies of this research naturally positions its content and findings in arenas of spiritual learning, personal learning and socially-embedded learning.

"IBNAL" is another term which merits definition at the outset of this discussion. IBNAL is the learning system in which the PAR study in Mozambique took place; it

is an acronym which in Portuguese stands for the "Nazarene Bible Institute of Lusophone Africa". Of relevance to understand concerning the research, IBNAL is a holistic system of learning in which pastors are trained to establish spiritual learning environments for groups of learners to learn cooperatively by the facilitators use of six other holistic learning strategies. Therefore, the seven holistic learning strategies which were researched in IBNAL were cooperative learning groups, praxis (dialogue, reflection, action), teamwork, singing for learning, rehearsing integrity, classical spiritual disciplines and group discussions of several kinds. When questions in the hybrid surveys of 2005 asked about aspects of "IBNAL", the respondents knew that IBNAL meant all of these aspects. Respondents knew that IBNAL included the seven holistic learning strategies specified above.

If holistic learning strategies enhance the quality of adult learning, then what about this empirical research qualifies it for contribution to "adult learning"? A large hybrid survey administered in 2005 as broadly as possible within the whole population of about 300 leaders of the Church of the Nazarene in Mozambique and 1,500 leaders-in-training in either the resident Bible School or the extension learning network (IBNAL), gathered responses from a self-selected sample of 952 people. The sample is geographically scattered throughout Mozambique, accessed by the monitors. Of the whole sample of 952 leaders and learners, there are 678 respondents who are IBNAL students, 71.2% of the whole sample. Students who were at least 25 years old or in a positions of church leadership normally occupied by an adult, were considered "adult learners" which includes 588 people or 68.8% of the whole sample. The other sub-group of the sample, i.e. the "leaders" who constitute the other 27.8% of the sample, would all be considered "adults", by virtue of their age or position, but not "adult learners". They are adults involved in the learning system.

My research starts with the exploration of the huge construct "holism" and proceeds through several other large theoretical constructs, like "holistic learning", "spiritual learning environments", "models of brain functioning" and "brain-based practice". However, the framework of Arboric Research helped me maintain the focus on the questions underlying the meta-theory:

- How do the parts impact the whole?
- How does the whole impact the parts?
- How does the germ impact the mature and vice versa?
- What are the elements the environment and the relation of it to the whole, and the relationship of the whole to the environment?

The "whole" of my study is the Nazarene system of education in Mozambique which has two main branches: the residential Bible School where the trainers (monitors) are trained and the extension education network called "Instituto Biblico Nazareno na Africa Lusófona" (IBNAL). The "parts" of my study are the people, the leaders and learners and the PAR team members, including me, all within the Nazarene system of education in Mozambique. **The "germ" of my study is the holistic learning occurring in the minds of the learners.** The "elements of the environment" are the varying contexts in which the leaders and learners of the Nazarene system of education in Mozambique live, work, minister and learn, not the least being the Church of the Nazarene.

Using the analogy of a tree, sometimes the bushy, overlapping branches of several sizes" i.e. the "messiness" of looking at the whole, would obscure for a time the "germ" of learning that was taking place in the minds of the learners. That is why their introspective statements which allow others to see into their own experiences allow me and others to zoom in like a microscope on the essence of the change occurring.

If holistic learning strategies *enhance the quality of adult learning*, then what kind of evidence would indicate "enhancement" of "quality"? Several descriptors of quality of adult learning surfaced in the theoretical sections of research: "better at reconciling thoughts and feelings" (Cohen 2006:83), "wisdom, practical intelligence…expertise…fluid intelligence" (Gravett 2005:6). Donovan and Wonder (1994:38-40) claim that "changing and learning are the keys to an exciting, fulfilling life". Hudson (1991) refers to mastering the "art of self-renewal". Taylor (in Marienau *et al* 2000:12) cites the reframing *life themes* which results in "a more complex, self-construction, and the possibility to be some other way". Evidence" of enhanced quality of learning would come from the learners' comments and choices about the learning taking place in their lives.

Descriptors from IBNAL students of the changes in their lives include the following (from Appendix K) who are among those in the learning system for over four years:

- I understand the value of marriage and living in harmony with my family. I not only understand the rules of preaching, but God has helped me with my pride, fear and self centeredness.

This IBNAL student mentions changes in his relationships, increased understanding of an ability (to preach) and different attitudes.

- Now that I am a part of IBNAL, I have learned much more of the scriptures and I am not embarrassed like before:

The self concept of this learner has shifted; since he has learned Scriptures he is no longer "embarrassed".

- I like to compare my past with the present, my present being such a better life. I console the sad and sick, hear the opinion of others and like the Bible.

This learner experiences pleasure when he thinks on what his life was compared to what it is not. This pleasure sounds like the "exciting, fulfilling life" that Donovan and Wonder describe above as a result of changing and learning.

- My whole life has changed, because I was so closed, and now I am open to learn. I know how to choose between good and evil.

This learner notes the "bottom line" – learning has changed his "whole life".

- From a 79-year old student: Before I started IBNAL, I had great difficulty understanding the Bible. Now I enjoy studying, I am getting better as a pastor.

This little old man bends and squints over his homework, but he "enjoy[s] studying" and he implies that this enjoyment is result of "understanding the Bible" and "getting better as a pastor".

The above quotes are from five of those who had been learners in IBNAL for more than four years. Another question on the survey asked them to choose how much

their lives have changed since they have been exposed to holistic learning strategies. Of the 53 of them 46 or 87% marked that their lives had changed "muito" (a lot). Their answers to open-ended questions for them to describe the changes in their lives, like the five examples above, were codified into six categories: abilities, biblical knowledge, more caring and loving, improved family relationships, increased dependability and increased spirituality. The results were then organised by the age of the learners in Table 4.71. The results show differences from one age group to another, the youngest learners noting increases in their abilities much more than those over 50 years old. Those over 50 noting progress in relationships. All 53 respondents noting increase in their spirituality.

In survey results from the large sample of 952 leaders and learners, increased biblical knowledge is only ranked third of five areas of impact of IBNAL. Bible knowledge would seem to have been an important outcome from their learning but "increased spiritual growth" was what those of the sample most esteemed. Spiritual growth seems to be fit the descriptor by Taylor (2000) of a "more complex, self-construction, and the possibility to be some other way".

If holistic learning strategies enhance the quality of adult learning, then what about this PAR study indicates *how* they enhance the quality? This question delves into the essence of learning and how holistic learning strategies relate to this essence. The answer to this question constitutes a synthesis which also relates to the narrowing of the four gaps specified above: 1) the gap between theory and practice, 2) the gap between right-brain and left-brain learning, 3) the gap between cognitive and emotional learning, and ultimately 4) the gap in the lives of the learners between their aspirations and their performance. The gap between learning theory and learning practice is the specific first gap. One of the holistic learning strategies researched, "praxis", specifically targets diminishing that gap but all seven of them help narrow this gap by dealing with the whole brain, so the first three gaps are narrowed by brain-based considerations.

The scientists describing brain functioning, especially the theory of modularity enabled me to *begin* to grasp some of the complexities and infinities of connections within the brain. However, because the modularity model is so difficult to explain and the four-quadrant metaphoric model (Herrmann 1994) is so user-friendly, I most frequently use the four-quadrant terminology. I use the metaphor to imagine and to lead others to imagine approximate ways that varying learning strategies work within the brain, activating first one quadrant, and then another, imagining other learning strategies which simultaneously activate more than one quadrant, and whole-brain ones which activate all four. Brain-based practioners, like Sprenger (1999), Caine and Caine (1991), Jensen (1994, 1997, 1998), Hulme (1996), De Boer *et al* (2001), du Toit (2002), Linksman (1996) and Gravett (2005), urge facilitators of learning to deliberately use varying strategies of facilitating learning. One reason to do this is to condition the learning to the preferences of the learners so that they will have a greater interest in the experience. The other reason is to strengthen synapses and grow more dendrites in the brains of the learners. I use the four-quadrant model to illustrate the plausible explanations that I give for how holistic learning strategies work in a brain-based way which will end up contributing to the question as to how holistic learning strategies enhance learning.

The “A” and “D” quadrants of the Herrmann (1994) model 

or the left and right cerebral hemispheres are connected by the *corpus collosum* (which is spelled two different ways in the literature, *callosum* and *collosum*). This structure of fibres is sometimes surgically severed to relieve patients of epilepsy of affectation of seizures to the whole brain. Cohen (2006:86) interprets the HAROLD model (Cabeza 2002) to include the possibility that neurons expand along the *corpus collosum*, crossing the divide between A and D.

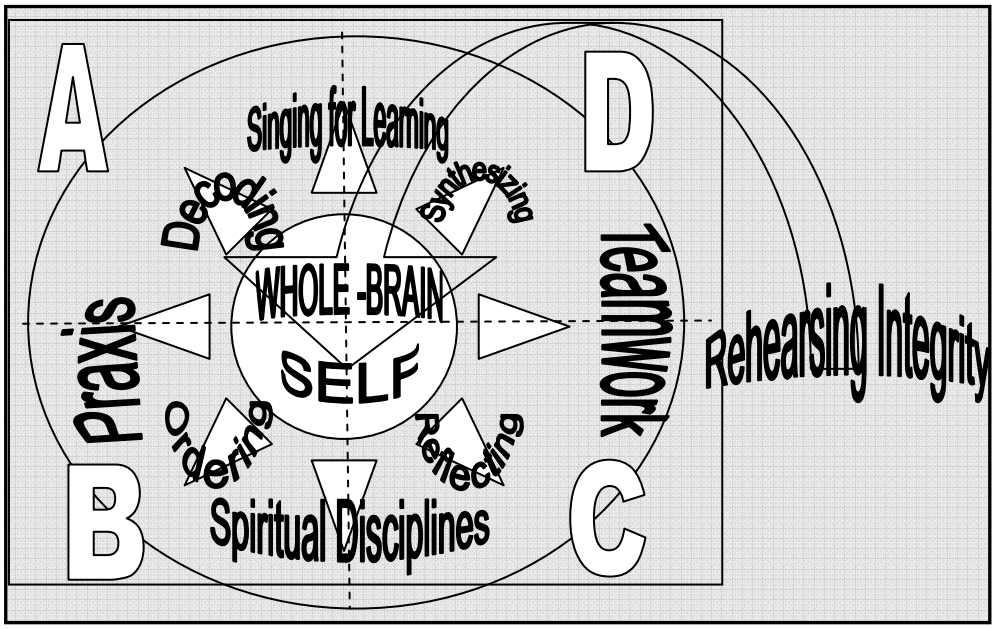

Figure 5.2 Holistic Learning Strategies Positioned on Four Quadrant Model

Figure 5.2, repeated from an earlier presentation, helps to visualise this: applying the ideas of movement of impulses generated by learning strategies across the *corpus collosum* by using the graphical representation of the four-quadrant brain model, switching from learning strategies which require the mental activity “decoding” of learners to a strategy requiring the brain activity “synthesising” would encourage the movement of impulses within the brains of the learners from quadrant A to quadrant D. Showing learners a photograph for them to observe critically, a quadrant D activity, then asking them to write about the photo, requiring quadrant A activity, would encourage movement of impulses from quadrant D to quadrant A, across the *corpus collosum.* The gap between right brain and left brain learning would be diminished by strategies which would stimulate both sides of the brain.

The limbic brain also has two hemispheres, the “B” and “C” quadrants of the four-quadrant brain model (Herrmann 1994) which are connected directly by the hippocampal commissure. Brain-based educators Sprenger (1999), Caine and Caine (1991), Jensen (1994, 1997, 1998), Hulme (1996), De Boer *et al* (2001), du Toit (2002), Linksman (1996) and Gravett (2005), and those who promote emotional intelligence (Goleman 1996, 1998), spiritual intelligence (Zohar & Marshall 2000) and spiritual learning Miller and Nakagawa (2003), O’Sullivan (1999), affective learning, Sonnier (1989), Wilson (2003) cognitive *and* emotional

Erickson (2001), Johnston (1996) all recognise the role of emotions in learning. The limbic brain functions in emotional learning and memory.

Learning strategies require the brain to sequence, reorganise and reorder are linked to quadrant B and those requiring reflection, discussion and tactile handling are C quadrant type activities so using them develop more dendrites and stronger connections in the limbic brain. To close the gap between cognitive and emotional would require movement from "A" (cognitive) to "B" or "C".

In the modularity theory of brain, the modules can be thought of as organised *vertically* in the brain. Applying this aspect to the four-quadrant model, impulses flashed instantaneously across vertically organized modules could travel from "A" to "B" or "A" to "C", crossing another "divide". This is how I imagine impulses using the theory of modularity imposed on the four-quadrant metaphor. For example, the encoding of language which activates quadrant "A" is vested with meaning by the reorganizing and sorting brain activities in "B" and rehearsed to speak aloud in "C" and represented recognized graphically in "D". For instance, while d-o-g is being encoded in quadrant "A", "B" gets busy sorting d-o-g into multiple categories "house pets", "furry" or "noisy mammals", "expensive" but impulses flashing over to "C" activate a connection between "d-o-g" and "fear" because of "a d-o-g that bit" a friend so the brain in "C" responds with a burst of impulse to "D" to put together the whole picture. "D" quadrant is not moved by the "fear" and sends the big picture back to "C" – "most d-o-g-s are harmless – relax".

The metaphor of brain modules being organized like "sprawling road kill" (Pinker 1997) can also be imagined on the four-quadrant model: a learning strategy starts activity in quadrant "D", a photo of Paul McCartney, for example and such knowledge (of who is in the photo) reminds the brain of knowledge in quadrant "C" of the tune "Yesterday" and when you begin to hum, and want to sing all the words, your brain searches here and there, in "A" for the proper encodings, and "B" for sentence sequences, back to "D" for the synthesis of words to melody and then the emotions flow, the emotions attached to the song from your past experiences with it. If the path of this processing could be drawn, it would not be a point to point, spiny geometric figure, but irregular bursts jumping multiple synapses to other neural clusters which also burst and scatter. The path of processing would look something like an egg splattered into hot oil or like road kill sprawled on the pavement.

> Cohen (2006:83) states that "magnified tremendously, the brain of a mentally active 50-year-old looks like a *dense forest of interlocking branches* [italics mine]". This image could also be combined with the four quadrant model. If the same sequence from "photo of Paul McCartney" to "the emotional flow from singing the words again to "Yesterday'" were imagined as "almost instant" growth of a grape vine, planted in one quadrant which quickly, like an image in a bad nightmare, grows, divides into branches that curl, twist and extend to each other. If this happened time and time again, the result would look like "a dense forest of interlocking branches". Perhaps the black squiggles lines on the four-quadrant figure below might help to imagine the idea of the "interlocking branches":

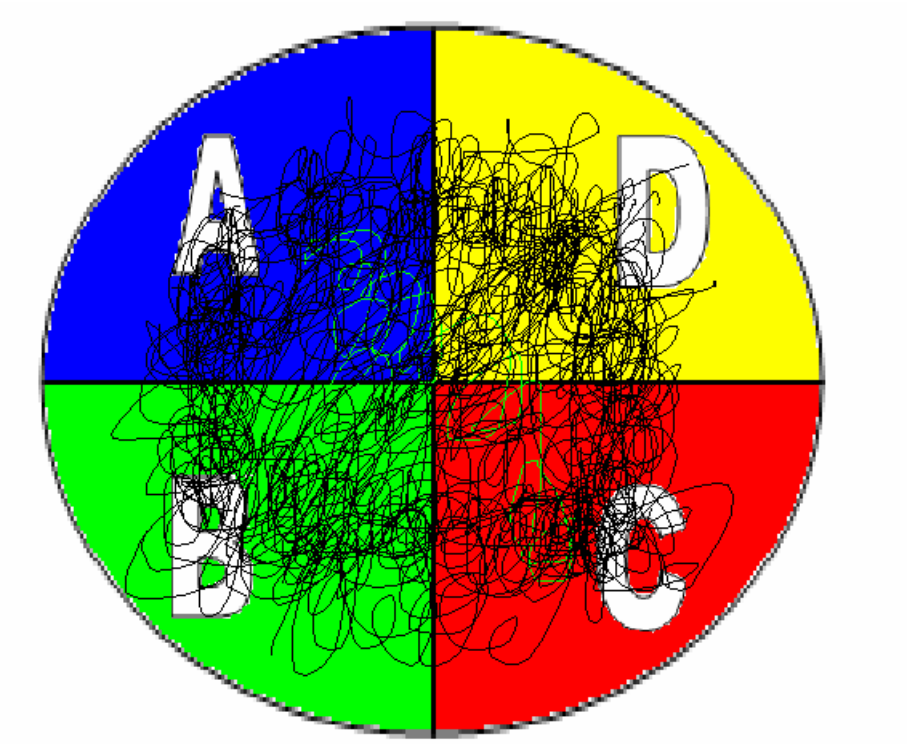

Figure 5.3 Four-quadrants of Brain with "Interlocking Neural Net" Sketched

Cabeza also refers specifically to the difficulty in determining "the cognitive processes engaged" by those undergoing neuro-imaging "since cognitive tasks can be performed in many different ways and *introspective reports* [italics mine] provide very limited information about the actual cognitive operations recruited by human subjects" (2002:92). Introspective reports are part of the empirical findings of my PAR study. As per Cabeza in the reference above, these reports provide "very limited information about the actual cognitive operations recruited", but they do provide *some* information. Cabeza does not call such information *invalid*; he calls it *very limited*. The technology of neuro-imaging that Cabeza uses will not soon get to Mozambique, not to Maputo in the South and much less to Mooma or to small centres in Tete Province, so the introspective reports in hand from these remote parts of the world do count as some, very limited information about the cognitive operations of these adult learners in Mozambique. From their introspective reporting of the learning which has taken place in their lives through the holistic learning strategies used with them over the period 2001-2005, findings surface that eight mental activities which I named patterning, ordering, categorizing, making congruent, making whole, relating, connecting and integrating have been evidenced by statements taken from two sets of introspective reports from the learner population of this PAR study in Mozambique.

In 1986 (148-49) adult learning expert Brookfield wrote, "We have had our attention as trainers and educators forced back onto the phenomenon of adult learning – how, when, and where adults learn". He indicated a return to a "bottom line basic" of education and training – is learning taking place? Can it be described? Can it be explained? Then in 1995 (1) Brookfield disputed the idea of constructing an "exclusive theory of adult learning – one that is distinguished wholly by its standing in contradiction to what we know about learning at other stages in the lifespan" and proposed that variables other than chronological age

may be more significant in explaining how learning occurs, like "culture, ethnicity, personality and political ethos" as potential variables of significance, but he said there may be others". This statement opens the distinct possibility that significant variables involved in learning may be:

- The use of the maternal tongue rather than a second or third language
- The issue of collectivism / individualism in the society of the learners
- The health of the brain of an individual
- The use of learning strategies which encourage whole-brain activity within a safe social context which respects diversity, in-group loyalties and spiritual preferences of the tri-dimensional learners
- Attention to developing the neural networking of the brain, specifically cross-hemispheric connections.
- The learner's sense of their own mortality.

Cohen, referring to his empirical work among older adults, says "a growing awareness of our own mortality" precipitates in adults in their 40s and 50s a re-evaluation of their lives which give "new perspectives on who we are and what we really care about...a new sense of quest and personal discovery (2006:83)". From the empirical study in Mozambique, I note that the proximity of death cannot be overlooked in the learning setting. Mozambicans deal with death very frequently. Since the proximity of death may create in learners in Mozambique a state-of-mind similar to the adults that Cohen studies who are in their 40s and 50s, i.e. their "awareness of [their] own mortality", then perhaps in Mozambique a more persistent or precocious "awareness of their own mortality" might contribute to them similar "new perspectives" on who they are and what they really care about and "new sense of quest and personal discovery" in their lives. Cskiszentmihalyi (1994:106) notes that "the early lives of successful men and women are often filled with an unusual amount of trauma and hardship (Cskiszentmihalyi & Cskiszentmihalyi 1993; Goerzel & Goerzel 1962)". Similarly Campolo (1994:215) joins with an observation from Frankl which is pertinent:

> While trapped in that nightmarish Nazi concentration camp, [Victor Frankl, the great Jewish psychotherapist] carefully studied and kept notes on the others around him…the difference between those who survived and those who died was not in their physical health or strength. Instead it was primarily dependent upon their ability to imagine a future that would express the joys of Shalom...the peace and joy of God…to see beyond the present.

The trauma and hardship of frequent deaths around them in Mozambique are aspects which are part of their reality. I expect this reality reinforces to the values of collectivism – the tremendous importance on relationships. In the hybrid survey, the least mentioned aspect of five selected as having the "greatest impact" of the holistic learning system, IBNAL, by far was "relationships". I interpret that their learning affects relationships very little because their relationships are already so well in tact. This finding from Mozambique, although not age-related but circumstance-related, would be consistent with the findings of Cohen that the awareness of mortality sharpens the sense of whom and what is really cared about. In general, the Mozambicans have reason to live prepared to die, facing

their own mortality, because they might die soon – their social context constantly tells them that.

The empirical section of this study ended with identifying eight types of actions I called "mental activities". I resonate with Gardner (1987:383) when he makes a plea for "cognitive science…to agree upon a language for talking about a range of representational phenomena – even if that language turns out to harbour various dialects". By now, 20 years hence, such language may exist. Perhaps the term "cognitive strategies" which Cabeza uses refer to the same thing as the term "mental activities" which I am using.

Gardner also (1987:394) describes the "parallel distributed processing" approach which helps me interpret my "mental activities". I break his description into parts in order to clarify the reference of my interpretations.

> ….there has been a shift to a different 'modal view' of cognition – a view in which psychological, computational, and neurological considerations are far more intricately linked…

The shift is towards holism, towards integrating knowledge from the three disciplines which he names: psychology, information processing, and neurology.

> Within the last few years, the principal claims and the broad ambitions of this the 'parallel distributed processing' …PDP approach…typically posits thousands of connections among hundreds of units (in principle, the approach can be extended to millions or even billions of connections).

Although the term "parallel" is used in this description it seems important to not get stuck on the idea of *two* parallel entities because the quantitative aspects of the processing he is describing are huge – thousands or millions or even billions of connections among hundreds of units. Few people deal normally with such numbers so, it requires reflection on vastness to capture the implication of this operation of "connecting" among millions or billions, "everything to everything" as Pinker (1997) put it.

> The resulting networks feature the signalling of excitations or inhibitions from one unit to another.

This "signalling of excitations or inhibitions" could apply to "patterning", "ordering" and "categorizing". It seems to me to be pertinent. I would like to explain this by means of the following anecdote: I am imagining an infinitesimally small signal (compared to the complexity of billions) from an "Impulse X" at the end of one dendrite close to the end of another dendrite. "Recognise me?" signals "Impulse X" to the end of the near-by "Dendrite A". "Remember a pattern like me?" "Oh, yes, you are like "Impulse R" who jumped the synapse to me five minutes ago. Come on across [the synapse]. "Impulse X" jumps across. "Excitation" occurs along the neighbouring dendrite as "Impulse X" proceeds to another potential synapse jump, another potential connection. The signal is repeated "Impulse X" asks again, "Do I fit a pattern you have met?" "NO!" says neighbouring "Dendrite B, "Go away. You are not welcome to my territory". "Inhibition" has taken place. "Impulse X" scurries elsewhere among the other billion pathways open to her. She

will find a synaptic "door" more open to her because she will fit a "patterning" or an "ordering" or a "categorizing" found in other dendrites.

> 'Perception,' 'action,' or 'thought' occur as a consequence of the altering of the strengths (or weights) of connections among these units.

When more impulses jump the synapses, the connection is strengthened. I picture the paths in Mozambique through knee-high grasses; at first pass, there is little change in the grasses; when a line of people walk the same path in file, the path is more easily seen to those who follow. "Weighting" of the connections can be influenced by frequency of passage across the synapses and also strength of individual impulses which pass. A child minimally affects the way the grass lies but heavy men wearing boots quickly bare the path to the soil, leaving clear marks of passage. Strong signals are sent by impulses which carry emotional loads with them and by impulses vested with importance and significance. Irrelevant and unimportant impulses make "light-weight" connections, if any at all.

> A task is completed or an input processed when the system ultimately 'settles' or 'relaxes' (at least tentatively) on a satisfactory set of values or 'stable states' in short, upon a 'solution'.

This settled, stable state could relate to "making congruent", "integrating" and "whole-making". As such, "making congruent" would be the stablising of a pattern, "integrating" would be combining sets of impulses satisfactorily, and "whole-making" would result in the most settled state, the most complete "solution". The "settled, stable state of solution" is the brain state of intrinsic satisfaction.

Now at the end of my research report, I am still seeking a more perfect metaphor or model for brain functioning. The four-quadrant metaphor is very user-friendly but it is static, it stands still, it doesn't move or relate, it is not organic, moving and dynamic like learning really is; it is not relational. I keep on using the several metaphors – dense thickets, holograms, road-kill, the "Y" – and usually opt to use the most user friendly, the four-quadrant to describe brain function but I have a hunch the 3-point "Y" is more accurate and that parallel processing theory within modularity to be more comprehensive.

This study continues to be cyclical and reflective, genuinely action research to the end. Reflecting over all the cycles I acknowledge that "whole making" produces intrinsic satisfaction in many human experiences:

- Listening to favourite music, thrilling to the patterns of the rhythms, and rising with the variations in the crescendos
- Solving puzzles, mysteries with "good endings"
- Watching a great movie which tells an "epic story in a moving way", "ends with a happy-ever-after relationship", "ties up the bad guys", vindicating the effort of "the good guys", "ends with provocative questions
- Intimate sexual encounters; climax
- The solution to a math problem an engineering problem, a relationship problem – the solution that works

- Wonderful worship in community, re-encountering the Saviour
- Saviour-encountering, be the saviour a cause, a person, or Christ Himself

Holistic learning strategies encourage the brain activity in both left and right hemispheres, in both cerebral and limbic regions in all four quadrants. This active learning narrows the gaps by deepening connections all over the brain. When educators encourage only cognition, they do not lead learners to their full learning potential When educators ignore the social self and/or the spiritual self of the learner, the learning does not reach its full potential. When full potential is not developed, gaps are created in what the learner knows, what she can do, who she is. As holistic learning strategies deliberately include aiming for social, spiritual and mental development, they enhance the quality of the learning by their whole-making; they fill in the holes and bridge the gaps.

At this point in joining theory and empirical findings, I feel I have not yet found the whole answer. After six years of enquiry in Mozambique and reading thousands of pages of literature produced by learned experts, I find this point in time to be only a pause…the end of the first course of a long meal; it is a foretaste, an appetizer with the real meal yet to come. At the end of six years of participatory action learning, I have more questions, perhaps better, more-informed questions than when I started.

- What are the components of “critical reflection”? Are the eight “mental activities” which I have identified part of critical reflection? If so, which of them are components of it?
- Do Mozambicans or Africans have more developed right-brain modalities of thought than Westerners? If so, is this linked with the collectivistic organisation of their society? If so, is it linked to their early life relational learning experiences liked being held close to the bodies of their principle care-givers during the early years of life?
- Do words people use reflect the way their brains are functioning? Are expressions like “tie it up”, “connect the dots”, “I got it together”, something is “penetrating”, “probing”, “we connected”, “we’re ‘on the same wavelength’” metaphoric descriptions of basic activities going on inside their brains?
- As Wesleyan theologians frequently say about the Christian sacraments – they are “outward signs of inward grace” – behaviour is outward sign of inward workings. Is this true about the relationship of outward human behaviour to brain workings?
- What happens when we spend time intensely thinking on something, deliberately analyzing what happened, or why, how, when or where it happened or should happen and do not find the answer then we “sleep on it” or “take a break” and the answer “appears” out of “no where”? Is that a relaxation of the left brain so that the right brain can synthesis the thinking and create an answer?
- Is “vertical thinking” (De Bono 1973) basically left-brain thinking and “lateral thinking” basically right-brain thinking?
- People who are left-brain dominant seem to take great pleasure in coding, ordering, sequencing, using simple and complex mathematical

operations: they seemed turned on by left-brain cerebral functions. Is this not emotional, hence limbic? If this observation is true, is it not consistent with the "Y" (MacKay cited by Harth 1993) metaphor of brain functioning?

I have a little understanding but I long to understand better. So, I end up sounding like so many of the writers I have quoted, "I know something…but the whole understanding of how learning is facilitated is still beyond me".

5.2 Recommendations for further research

As discussed previously the "seed" of this Arboric Research framework would be recommendations for further research like those described below.

- Other phases of this same project within the same population, continuing it as Participatory Action Research, continuing analysis of the data already collected as well as collection of further data toward improved understanding.

- Based on the findings of this PAR study in Mozambique, a PAR study in Angola could be conducted with similar research tools within the small, but developing network of IBNAL centres there. The population of Nazarene learners in Mozambique and that in Angola share several sub-groups so comparison of results from the two populations might substantiate or negate the findings of the study in Mozambique.

- During this study several questions concerning learning in a second or third language arose in respect to sub-selves of personhood. The questions were the following: What is the impact on learning in a second or third language? The perception of and expression of reality is altered, so is the reality itself altered? Is one social self the one that speaks the maternal tongue and another social self the one that speaks the colonial tongue? Can those two selves meld? What melds them? Exploration of these topics could be conducted using a series of short questionnaires and/or interviews of learners participating in the research which would end up being comparative case studies. Resting base lines on specific competencies could be established by the learners doing performance trials at the outset of the research.

- Institute a longitudinal study on a sample of the population measuring development of moral reasoning/judgment using Kitchener & King. (1994). *Developing Reflective Judgment.* (San Francisco: Jossey-Bass).

- What are the components of "critical reflection"? Are the eight "mental activities" (categorising, ordering, patterning, making congruent, connecting, integrating, relating, making whole) which I have identified part of critical reflection? If so, which of them are components of it? Research to answer these questions would be evaluative, using multiple reflective assessment tools in series.

- Table 4.49 shows that the third ranking aspect of satisfaction is the "skills of the monitors" and the eighth ranked aspect is the "value of group discussion". These data seem to present contradictions because one of the "skills" that monitors use certainly is that of conducting the group discussions. If the

population is highly satisfied (75.3%) with the skills, in general, of the monitors but not as satisfied (64.4%) with group discussions, the implication is that there are other skills of the monitor which are taken into consideration with the satisfaction indicated in their assessment of the monitor skills. Another implication is that the value of the group discussions is somewhat diminished by factors other than the skill of the monitors, like the academic diversity of the groups, for example. Data already collected can be used in other research projects to calculate further relationships and correlations within the surveyed population, including evidence as to what about the books renders them less satisfactory. After inferential analysis of the data collected, other exploratory surveying could be used to clarify and verify the findings.

- Do Africans, at least Mozambicans, regularly utilise more right-brain modalities of thought than Westerners? If so, is this linked with the collectivistic organisation of their society? Answers to these questions would require careful formulation of research tools probably within a design of ethnological research or comparative case studies, probably longitudinal.

- Research recommended for a student in theology: Is there any correlation between Wesley's quadrilateral of theology and brain functioning, particularly with the 4-quadrant model of brain functioning and personhood? If so, how is it linked, and how does such linkage relate to effectiveness in the practice of pastoral ministry?

- The last recommendation for further research would be very complex, requiring careful structuring and planning of the research design. It is a response which puts together positions from two writers previously referenced, Goduka and Bruner. Goduka (2000:80) rallies Africans to "'decolonize the academy' by reclaiming/affirming our indigenous story, cultural identity and voice' and by finding 'a synthesis between the [values of 'old'] Africa and the influences which have come with colonialism and 'modernity´'. Bruner critically analyses "agentive and patientive forms of grammar" which may relate to the responsibility and/or obligation of the self in the various cultural/linguistic sub-selves of an individual. As Goduka observes, Mozambican would need to do this research. The population of my PAR study offers possibility for such probes since the learners in it are multi-ethnic and are already learning to be reflective. The stability of their current educational settings offers a semi-controlled space for careful linguistic analysis. The substance of the linguistic research would be result of the questions posed to the learner population, spoken and answered in both their maternal language and in Portuguese, the answers would be recorded and the texts critically compared. According to the substance of the questions, the research could have more than one application -- ethics, theology, sociology, learning or other.

Again, in this very last paragraph, I express the hope that the Mozambicans themselves, those participating with me in this PAR project and others will respond to the challenge to reclaim/affirm their indigenous story. They are equipped to accurately identify, give voice and share the vision for the depth of understanding concerning learning and identity in their maternal cultures and their maternal languages that could be brought to the fore by continuing to probe, to research and to write for the rest of the world to appreciate.