

Chapter One

INTRODUCTION

The Usefulness of Bible Memorization

"I know of no other single practice in the Christian life more rewarding, practically speaking, than memorizing Scripture. That's right. No other single discipline is more useful and rewarding than this. No other single exercise pays greater spiritual dividends! Your *prayer life* will be strengthened. Your *witnessing* will be sharper and much more effective. Your *counseling* will be in demand. Your *attitudes* and *outlook* will begin to change. Your *mind* will become alert and observant. Your *confidence* and *assurance* will be enhanced. Your *faith* will be solidified" (Chuck Swindoll, quoted in *Christianity in Crisis*)

I would have to agree with Chuck Swindoll that Scripture memorization, if not the most important spiritual discipline, is certainly *one* of the most. I have spent many hours memorizing over the years and have found it more useful than any other spiritual discipline. It burns Bible

truths into my mind which would otherwise tend to fade. It's powerful to be able to quote directly from the Bible when witnessing or instructing. These verses provide also quick weaponry when my mind comes under spiritual siege. In an age when our minds are bombarded with spiritual distortions we need them well-stocked with ready biblical truths. And, more than just conscious remembering, Scripture stored in our minds actually helps to shape our unconscious attitudes and perspectives.

The Need to Motivate Christians to Memorize

For all of the benefits, however, it has been my experience that few Christians commit God's Word to memory in any sort of consistent or extensive way. The subject, when mentioned, tends to bring guilty looks and quick assertions that "I am no good at memorization." Nor do those speaking these words usually show any flicker of desire to rectify their mnemonic shortcomings. They've given it up as a lost cause. Thus, a tool which could be a distinct advantage in our spiritual lives frequently lies dusty and unused. The sword lies dusty in the hall closet. There once was a time, I'm told, when churches expected a much higher degree of memorization, especially with regard to catechetical classes. That current of expectation has weakened considerably. I'm not sure why this is so. There

are, of course, exceptions. Programs like "Awana", "Navigators," and the "Bible Memory Association" still emphasize the value of Bible memorization. Some of these programs have influenced me by reminding me of the importance of Scripture memorization. What I would like to add to their influence is to show a wider variety of memory techniques (to my knowledge, they mostly use simple repetition) and put a heavier emphasis on training in and practicing application. I see the latter as a significant motivation to continue memorizing.

My purpose in writing my project is to find a way to motivate and to enable my brothers and sisters in the practice of memorizing God's Word. Our times demand it. To do that we'll need to explore issues like: Why aren't people memorizing the Bible? What motivations would spur them on? What techniques and practical instructions will give them the tools that they need? What truths of memory research might make them more insightful in understanding how their memory functions

Chapter 2

THE BIBLICAL, JEWISH, MODERN EDUCATIONAL AND PSYCHOLOGICAL BACKGROUND ON MEMORIZATION.

The Biblical Use of Memorization

The word "memorize" is not in the Bible. Nor is there much, if any, explicit teaching on the practice of Scripture memorization. We do know, however, that our Lord Jesus was able to quote Scripture from memory. He used this ability to refute Satan during his temptation (Matthew 4). He quoted Scripture as he taught (Matthew 24:34-44).

Other biblical characters also appear to be speaking Scripture from memory. Peter does this during his discourse on the day of Pentecost (Acts 2). Stephen quotes freely in his final address to the Sanhedrin (Acts 7). In Pisidian Antioch Paul quotes from five separate passages (Acts 13). James quotes from Amos at the Jerusalem Council in Acts 15.

Furthermore, as I shall point out in the following section, Jewish education in that general time period included a large amount of Scripture memorization as a standard part of the curriculum.

And there are passages which, if they don't command Bible memorization, surely provide significant encouragement to do so. Consider Deuteronomy 6:6:

"And these words, which I am commanding you today, shall be on your heart; 7 and you shall teach them diligently to your sons and shall talk of them when you sit in your house and when you walk by the way and when you lie down and when you rise up. 8 "And you shall bind them as a sign on your hand and they shall be as frontals on your forehead. 9 "And you shall write them on the doorposts of your house and on your gates."

A similar passage is found in Psalm 1:2: "But his delight is in the law of the LORD, And in His law he meditates day and night."

In the same vein is Proverbs 7:1-3:

PR 7:1 "My son, keep my words

and store up my commands within you.

PR 7:2 Keep my commands and you will live;

guard my teachings as the apple of your eye.

PR 7:3 Bind them on your fingers;

write them on the tablet of your heart."

A final example, perhaps the most commonly quoted along this line is Psalm 119:11:

"I have hidden your word in my heart
that I might not sin against you."

While memorization is not required to follow these injunctions, it facilitates them considerably. How much easier it is to meditate on Scripture when its truths sit within reach of our conscious mind. We can savor its nuances and delight in the specificity of its promises. Ephesians 6 refers to "the sword of the Spirit, which is the word of God" as a critical part of our spiritual defense system. The clearer our remembrance is of the actual words of Scripture, the sharper our sword will be.

Another point, however, needs to be made. Scripture memorization, in itself, is not enough. The Bible has in it people who had indeed mastered biblical content but were not reaping the benefits of their knowledge. Jesus said in John 5:39: "You diligently study the Scriptures because you think that by them you possess eternal life. These are the Scriptures that testify about me,⁴⁰ yet you refuse to come to me to have life."

I may master Scripture, but unless it masters me it is of little use. In fact, as in the case of Satan, Scripture memorized may actually become a tool in the hands of the

enemy if its use is not guided by godliness. Jesus said in John 14:21:

"Whoever has my commands and obeys them, he is the one who loves me.

A precursor of this in the Old Testament lies in the use of the word "remember" (**rkz** in Hebrew). Numbers 15:39 You will have these tassels to look at and so you will remember all the commands of the LORD, that you may obey them and not prostitute yourselves by going after the lusts of your own hearts and eyes. ⁴⁰ Then you will remember to obey all my commands and will be consecrated to your God.

rkz can simply speak of an inward mental act such as "remembering" or "paying attention to," In other cases, however, it refers to inward mental acts accompanied by appropriate external acts (TWOT 551). This is the usage in the passage just cited. It highlights a very important truth. Remembering God's Word is meant to be more than just a mental exercise. It's recalling the truth so that the truth can be lived.

Jewish Use of Memorization

How did the Jews use memorization when it came to the "Torah", or, Scripture? Although, as we'll see,

memorization was a part of Jewish education, memory was viewed as having its limits. The Jews were so concerned about accurate transmission of the text, that the written text had to be passed on in writing(Birger Gerhardsson, p.43). In fact, although these scribes had sometimes committed great quantities of Scripture to memory, a capacity, that Gerhardsson notes was "nothing short of incredible" "Rabbinic Judaism had an emphatically repeated rule that the written Torah was not to be copied out from memory. . . According to R. Johanan, not a single letter might be copied without having the text before one's eyes!"(ibid. p 46, b Meg. 18b). I suspect that their recall of the text was aided by the fact that they not only viewed the text as the copied it, but also spoke it out loud(ibid. p. 47, M Meg. II.2.).

The Jews took the schooling of their children very seriously. "So long as there are children in the schools," says the Talmud, "Israel's enemies cannot prevail against her."(Barclay, p. 11, Ber. Rab. 65.) A boy's first day of school was celebrated with special clothing, a trip to the synagogue, a hug from his new teacher, and a slate with two texts of the law written on it. The teacher coated this slate with honey and had the boy lick it off(in memory of Ezekiel's experience as he ate the roll). His education

would be entirely religious with Scripture being his only text. (Barclay, pp. 12,13).

At the start of the Christian era there were two types of Jewish schools. The lower level, the bet sefer, normally for boys, began between the ages of five and seven. The purpose of this school was to teach the boys how to translate the Torah. This would enable them to read it aloud. The second school, the bet hamidrash, was for those who wanted to count themselves truly educated. Here they would learn matters of interpretation and exposition. (ibid. pp. 57-62)

Zollie Ward notes that when it came to learning Scriptures the teaching methods were "primarily mnemonic." (ZW p. 23) Similarly, Barclay adds: "The whole of Jewish education was based on patient repetition and diligent memorizing." (Barclay, p. 40). It's interesting that although both Greek children (learning Homer) and Jewish children (learning Torah) had to memorize, the approach was different for each. According to the rabbinic doctrine, learning the text of Torah could not be mastered by listening to the teacher repeatedly recite the text aloud (as with the Greeks). That approach, incidentally, was considered proper if what was being memorized was oral tradition. The written biblical text, however, was to be

learned by being read and copied. Gerhardsson notes that "The texts memorized in the bet sefer were to be kept as a lifelong attainment. Hieronymus stated that the Palestinian Jews of his day knew Moses and the Prophets off by heart: 7 (*Comm. In Is 58.2 (MPL XXIV, 561)*). Even the children demonstrated a remarkable capacity for memorizing.⁸ (*Comm. In Ep. Ad Tit. 3.9 (MPL XXVI, 594 ff.)*) And if we turn to the Rabbis, the Talmudic literature bears witness to their unequalled memory-knowledge of the written texts." (*ibid.*, pp. 63,64). Along the same lines, although the Targum was expected to be quoted from memory in service, the Torah must be read. (*ibid.* p. 68). There is a real reverence here for the sacred text and great pains to keep it from being gradually altered or defiled.

How did the Jewish teachers facilitate memorization? Zollie F Ward notes two principles practiced by the rabbis which related to the use of repetition in memorization. First, the instructors were required to re-teach the lesson at least four times, more if needed. Second, the students were to repeat the lesson, for "to learn and not repeat is like to sow and then not reap." (ZW p.14, footnote 24, Herman Gollancz, *Pedagogics of the Talmud and That of Modern Times* (New York: Oxford University Press, 1924), pp. 57-8). This speaking aloud was considered essential.

The Talmud speaks of a pupil who learned his tasks without repeating the words aloud, and who, because of this, had within three years forgotten all that he had learned. (Barclay, p. 41, Erubin 54a)

Assimilation was another technique used by Jewish rabbis. Understanding what is memorized and connecting it with other truth makes it easier to recall. Gollancz listed five principles. First, the level of teaching must match the age and learning capacity of the student. Second, if a student tries to grasp too much, he may retain nothing, but if he learns a smaller amount, then at least something can be remembered. Third, if a deep meaning is not comprehended by the student, the teacher should provide a simple one now and wait until later for the more profound meaning. Fourth, instruction should be interesting to create an eagerness to learn in the students. Fifth, the teaching should be in graduated steps--from the simple to the complex--the known to the unknown." (ZW p 16, footnote 28 Gollancz, Pedagogics of the Talmud, pp. 54-7).

Mnemonic devices were used which connected new information to old images, along with audible recitation, which used voice inflections and body rhythm to aid memorization (ZW, p. 32, footnote 25, Gollancz, Pedagogics of the Talmud, pp. 58-9). Ward notes: "It was common to

observe a score of boys, sitting on the ground, repeating verse after verse in a high rhythmic voice. Daniel-Rops expands: ". . . above all, the learned men of Israel, wishing both to help the memory and to imprint the learning that it was to retain and transmit as deeply as possible, had devised a whole system of rhythms, melodies, alterations, repetitions of words, and antithesis which made the recollection of the verbal elements easier; and this system was all the more important since the learner would not have either a notebook in his pocket nor a dictionary upon his desk." (ZW p. 35, footnote 34, Daniel-Rops, *Times of Jesus*, pp. 310-311—Daniel-Rops, Henri. *Daily Life in the Time of Jesus*. Translated by Patrick O'Brian. New York: Hawthorn Books, 1962)) In fact, Daniel-Rops and others "think it exceedingly likely that the great majority of the Old Testament was purposely composed using definite rhythms." (ZW, pt. 37, footnote 47 Daniel-Rops, *Times of Jesus*, p. 311)). The Old Testament comes with some mnemonic helps incorporated in the actual text. The most obvious one of these is Psalm 119, which is built off of an acrostic based on the Hebrew alphabet. Another, more generic memory aid is the use of vivid concrete imagery which is characteristic of the Hebrew mindset and the Hebrew language. The Old Testament

sparkles with phrases such as: "Your word is a lamp to my feet and a light for my path" (Psalm 119:105) or "They hatch the eggs of vipers and spin a spider's web . . ." (Isaiah 59:5a). Still another device aiding memory is the use of repeated thought in couplets. Isaiah 58:1, for example, does this twice: "Shout it aloud, do not hold back. Raise your voice like a trumpet. Declare to my people their rebellion and to the house of Jacob their sin." One of the most helpful memory devices is one which did not transmit to us along with the phrases of the text. That device was music. We have no idea what the original tunes sounded like in the psalms or in other Scriptural songs such as the song of Miriam. We can be sure that these tunes greatly facilitated the remembrance of these passages of the Bible. Lastly, sometimes the text is organized into memorable chunks. Psalm 1 says: "Blessed is the man who does not *walk* in the counsel of the wicked or *stand* in the way of sinners or *sit* in the seat of the scornful."

Other principles facilitated memory, such as: beginning at any early age, teaching done in the morning when the student was fresh and the light was available, and relearning was stressed to counteract the tendency to forget information. (ZW p. 33)

Memory Theory

Just before a concert was to begin a clarinet player sadly approached the great conductor Arturo Toscanini and informed him that he would be unable to perform since his instrument was broken and he couldn't play E-natural. Toscanini meditated deeply for a long moment, running through the thousands of notes which would be played that evening. Finally, he announced "It's all right. You don't have an E-natural tonight." (Home Remedies, p. 1, Mary Kittel)

What is "memory?" Kittel says: "In simple terms, a memory is a recording. The neurons are the tape that memory is recorded on, and a region of the brain called the hippocampus is what turns the mind's tape recorder on and off. Most of the time, the recorder is turned off.." (Home, Kittel, p. 2) Michael Fidlow defines it thus: "all means by which one can recall or make available to tongue-tip any information or knowledge one feels like using." (Fidlow, p. 14). He goes on to distinguish between *natural* memory, "or your own mind's function of remembering," and *artificial* memory-"devices for retaining information outside the framework of your mind." (Fidlow, *ibid.*). While this distinction can be useful, Herold dislikes it because the

word "artificial" has negative connotations. He notes: "The thought of memory techniques as being in some way unnatural is ridiculous. . . Memory techniques do not replace these natural processes; instead they use them and enhance their effectiveness through deliberate, conscious application." (Herold, p. 231) Zollie F. Ward notes that: "The terms memory, memorize, and memorization can be and often are used interchangeably. This is so because the capacity is best understood in terms of its functioning. Therefore, in this study, these three terms will be used together; memory will refer primarily to capacity and all three will refer to its functioning." (Ward, p. 5)

Most memory, apparently, takes place in a certain part of the brain. "The hind brain, situated furthest back, focuses on the past and is where memory is processed. . . . This part of the brain collects and retrieves information." (Robert Fogarty, p. 10), (It's in the back of my mind-some truth here)

"This process is further described by suggesting that memory is linked to three things: attention, meaning, relevance. First, the brain must be aroused and then pay attention to the sensory input to capture it. Wolfe (1996b) states that in terms of attention and focus, the input must hook in within eighteen seconds or the brain

loses the experience-the efficient normal brain acts as a sieve to sift out all extraneous information. Then, after the brain has paid attention to the idea, the learner tries to make sense or meaning of the input and attach personal relevance to it. In this way, the learner finds a pattern or another way of 'chunking' the input so it can be connected through the neural pathways to other ideas in the brain. That is how the new input becomes part of the long-term memory system"(Fogarty, p. 36)

Trudeau believes that: "When information is in long-term memory-I call it the knowledge bank-that information cannot be forgotten."(Trudeau, p. 41)

How does memory work? Is there more than one kind of memory? Alan Baddely comments: "The realization that memory can be fragmented into subcomponents is not a new one: it was proposed in the 1890's by the great American psychologist William James and again by Donald Hebb in 1949. . .Until the 1960's many psychologists felt that it was unnecessary to assume more than one kind of memory, but by the early 1970's some form of distinction between long- and short-term memory systems had been subdivided further."(Baddely, p. 16)

During the 1960's a range of models was proposed which shared significant similarities. They tended to assume

three sorts of memory—sensory memory, short-term memory and long term memory. This model was nicknamed the *modal model*. The model assumed that information enters in from the environment through a parallel series of brief memory stores and goes into a common short-term store. This is supposed to act as a working memory, capable of manipulating information and relating it to long-term storage." (Baddely, pp. 17,18). Let's examine each type of memory in more detail.

Sensory memory is what allows our senses to be of use to us. For example, when we see a moving picture in a movie theatre, what we are witnessing is not really there. A movie is a series of still pictures interspersed with periods of darkness flowing by in sequence at a very high rate of speed. They create the illusion of motion. What is seen is held in the memory for a short period of time. This is why a sparkler twirled in the darkness appears to be a continuous circle of light. (Baddely, p.18). This sort of memory would come in handy, for instance, in judging and catching a football pass. The same is true of hearing. We use sensory memory to judge where a sound is coming from. The noise hits one ear first and then the other. The brain, remembering the difference between the intervals figures out where the sound is coming from.

(Baddely, p. 19).

Short term memory is a sort of mental workbench where facts can be consciously held for a time as needed for a task. Herold says: "Short-term memory can best be defined as your conscious mind. Whatever you are consciously aware of at any given moment is in your short-term memory." (Herold, p. 117) Even to understand this sentence one needs to still remember the beginning of the sentence when the end has been reached. When we do a math problem in our heads we have to hold the various numbers there until we are finished. (Baddely, p. 21). Another example is the need to hold onto a telephone number we've read in the phone book until we have time to dial the phone. After the task is done, the data held in short term memory often fades away and can no longer be recalled after a short time.

Long term memory, of course, involves data which is stored in such a way that it can be retrieved days or years after its initial placement. Again, Herold notes: "In the same way that you think of your short-term or working memory as your conscious mind, think of your *long-term memory* as your *subconscious mind*." (Herold, p. 117) Kittel explains it physiologically: "But if your brain considers something worth remembering, the hippocampus starts the

recording process, and neurons begin forming connections that will permanently store the information in various locations in your brain. It can take millions of neurons to form a single memory." (Home, Kittel, p. 2)

One of the questions which was seriously debated in the 1960's was the issue of whether or not short-term and long-term memory systems are separate systems. Before 1960 this was seldom discussed because the short-term and long term researchers were each focused on their own areas and not dialoguing with each other. (Baddely, p. 39).

By 1970, opinion favored the perspective that long- and short-term memory involved two quite separate systems. The dominant presentation of this point of view came from two American psychologists, Richard Atkinson and Richard Shiffrin. They saw the long-term memory system as being fed by a short-term memory which acted as a controller, feeding in new information and selecting particular processes for drawing information out of long-term memory. The sort-term system was itself fed by a series of *sensory registers* which were basically micro-memories associated with perception. These registers acted as a system for choosing and collating sensory information and could be seen as an essential component of perception. (Baddely, p. 43).

There were some problems with this approach. It assumed, for example, that all long-term memory first had to pass through the short-term memory portal. For instance, it was shown that some brain-damaged patients, with very poor short-term memory nevertheless continued with their long-term memory unimpaired. Fergus Craik and Robert Lockhart came up with a new variation called the *levels of processing* approach. The rationale here is that the short-term memory processes incoming data in various ways. While all of these processes will lead to some long-term learning, the amount of learning depends on the type of processing, with 'deep' processing in terms of meaning leading to much better retention than 'shallow' processing. The specifics of this processing are left unspecified. (Baddely, p. 45). Baddely notes that he believes that the data are too complex to fit into a single unitary theory, on the one hand, but on the other hand there are probably *more* than two memory systems. "Short-term memory is not a single unitary system; rather it is an amalgam or alliance of several temporary memory systems working together." (Baddely, p 39).

From another angle, Jensen spoke of four kinds of memory: episodic, procedural, conditional, and emotional. Fogarty explains: "Episodic is memory that is location

driven; it is the memory that is linked to a particular occurrence. . .Procedural memory is the memory that is at work when people find themselves retracing their steps into the room they just left to try and capture the thought that has escaped them. On the other hand, conditional memory is the automatic memory that reminds people, for example, that the stove is hot.

Emotional memory is memory stimulated by feelings."(Fogarty, p. 36 1997b)

Another classification is useful.

"Wolfe(996a)Sylwester(1995) and Jensen(1996) discuss memory in terms of declarative(explicit) and procedural(implicit). Declarative memories are factual, label, and location memories. They define categories and are verbal and conscious. Some examples are names of things, classifications, and groupings.

Procedural memories are automatic skill sequences. They are difficult to make but also difficult to forget! Some examples are riding a bike, typing, grooming, and skating."(Fogarty, p.37)

There's another sort of distinction which is particularly relevant to my project. Vigotsky describes what he calls "natural" memory and what he labels "sign operations." The first sort of memory, "dominating in the

behavior of non-literate peoples is characterized by the nonmediated impression of materials, by the retention of actual experiences as the basis of mnemonic (memory) traces." (Vygotsky, p. 38) It is "very close to perception, because it arises out of the direct influence of external stimuli upon human beings. From the point of view of structure, the entire process is characterized by a quality of immediacy." (Vygotsky, p. 39) This natural memory seems to be the standard equipment, the innate, undeveloped ability to remember.

Even in the case of nonliterate people, however, there is another sort of memory. Vygotsky notes: "The use of notched sticks and knots, the beginnings of writing and simple memory aids all demonstrate that even at early stages of historical development humans went beyond the limits of the psychological functions given to them by nature and proceeded to a new culturally-elaborated organization of their behavior . . . They extend the operation of memory beyond the biological dimensions of the human nervous system and permit it to incorporate artificial, or self-generated, stimuli, which we call SIGNS." (Vygotsky, p. 39). This second type of memory, that which is enhanced by deliberate effort, by artificial structures, will be the main area of interest in my

project. We want to teach people how to enhance their natural abilities to achieve a new, higher level of recall.

Vygotsky makes another interesting distinction. He believes that the way in which we use memory changes as a child advances developmentally. Investigations show that toward the end of childhood "the interfunctional relations involving memory reverse their direction. *For the young child, to think means to recall; but for the adolescent, to recall means to think.* her memory is so 'logicalized" that remembering is reduced to establishing and finding logical relations; recognizing consists in discovering that element which the task indicates has to be found.. .At the transitional age all ideas and concepts, all mental structures, cease to be organized according to family types and become organized as abstract concepts." (Vygotsky, p. 51)

Another consideration that comes when considering memory is the difference between oral and literate cultures. Although we in literate cultures tend to consider ourselves more advanced, Egan notes that orality "is not a condition of deficit-to be defined simply as the lack of literacy. Regarding orality only in terms of literacy is (in Ong's<1982>neat simile)like regarding horses as automobiles without wheels(p. 12). Orality

entails a set of powerful and effective mental strategies, some of which, to our cost, have become attenuated and undervalued in many aspects of Western cultures and educational systems." (Egan-Clockwork, p. 7)

On the one hand, in oral cultures, so much energy is expended on remembering basic concepts that there may often be little energy left for actually REFLECTING on those concepts. (Egan p. 12) On the other hand, in oral cultures young people learn, not just facts for a school test, but "the foundations of his or her cultural institutions." (Egan p. 3). What is worth teaching and committing to memory is substantive and character forming.

Egan also notes that memorization in literate cultures that memory techniques are "typically impoverished, involving largely repetition, some mnemonics perhaps, or saying words aloud with our eyes closed and so on. In an oral culture, learning proceeds more somatically, with the whole body used to support the memorizing process. The Homeric singers, and singers throughout the world, usually use a simple stringed instrument, sometimes a drum, whose beat reinforces the rhythm of the telling and draws the hearer into the enchantment of the song. The audience does not so much listen to it, as we might listen to a play, as they are invited to live it." This leads to the rapt

attention of a semi-hypnotized state.(Egan, p. 13).

Although memory skills can be sharpened and developed not all people have an equal natural talent. Some researchers have explored what they call "working memory capacity." This concerns how much data we can consciously juggle at one time. Can we read the end of a paragraph, for example, and weigh it against what we read at the beginning sentence? Or have we already forgotten the beginning sentence? Some children, for example, are described as "barking at print" because while they may read aloud in a competent manner, their comprehension of what they read is low. This can be because they have a low working memory span which caused them to miss crucial links between two pieces of information in the text. One researcher found that working memory performance correlated very highly with reasoning skill.(Baddely, p. 69)

One assumption that I'm making is that the mind takes into memory far more information than it can always deliberately recall. Canadian psychologist Endel Tulving did an experiment where subjects were presented with a list of words and then given three successive opportunities to recall them. What's interesting is that while the number of words recalled each time was about the same the actual words recalled varied. Only about half of the words were

recalled consistently on all three trials. Tulving's subjects were obviously not revealing on any given recall trial all that they knew. (Baddely, pp. 161,162).

The memory, however, is not just a tape recorder. In "A Spielberg in Your Own Mind" Jessica Snyder Sachs notes that "Our memories are, to some degree, like a final-cut videotape: Research confirms that each of us continually edits and splices recollections, replacing one 'picture' with another, sometimes with a little outside assistance." (Popular Science, July 2003, p. 33) What this means, in practical terms, is that people often fill in the gaps in their memory with material which their mind has fabricated. According to memory-reconstruction expert Charles Weaver at Baylor University we have a tendency to alter a few details of memory with every early replay. Furthermore, the retouch job of a vivid imagination can come across as distinctly more compelling than the washed out 'first take' of our physical senses. "Eventually, people seem to get their personal story together and stick by it," says Weaver. "But in essence, they've created a memory after the fact." His studies reveal that people tend to become more confident each time they repeat their story. (ibid.)

In some measure, however, the video analogy can be dangerously inaccurate since it suggests a library of

retrievable, real footage. In actuality, we assemble our memories by patching together broken pieces of stored information and then *filling in the blanks*. Most sensory information never actually moves into storage at all. Like shapes drawn with a flashlight in the dark the great mass of input from our eyes and ears fades almost immediately. Language appears to play a crucial role in moving memory into long-term storage. Without the 'translation' of language, bits and fragments of input may make it into storage, but drawing those bits together for, say, testimony at a trial may prove problematic. When the brain can't find an intact memory, it does the next best thing-it creates one. (Ibid. p.34)

What improvement can be made to our memory? Baddely explains: "In one sense we cannot change our memory. By this I mean that I know of no way in which the neural systems underlying memory can be systematically enhanced. What we can do, however, is use the system we have more effectively.

First of all, it is important to accept that your memory is not a system, like your heart and lungs, for which simple 'fitness' exercises can be prescribed. This particular fallacy used to be common among nineteenth-century educationists and is still sneakily believed

today."(Baddely, p. 270). He cites a study in which schoolgirls were split into groups, some of which practiced memorizing specific types of knowledge such as poetry or scientific formulas. When the final results were in, the control group, which had no training at all, performed just as well as the other groups. Similar negative results have come out of other studies.(Baddely, p. 271) Simply practicing memorizing does not strengthen the mind's 'muscle." On the other hand, in another study, three groups were used. The first simply practiced memorizing, as in the above example, the middle group spent the time learning memorization techniques and the third group was the control and was given no memory training. At the end of four weeks, as shown earlier, the first and third groups were the same, but the second group did consistently better than the other two.(Baddely, p. 271, 272). So although the memory isn't strengthened like a muscle, can become more efficient through learning memory technique. Mort Herold, similarly notes: "Your memory is not a thing to be improved, as though it were an appliance in need of repair. Barring brain damage or severe psychological problems there is nothing wrong with your present memory. . .The secret in memory performance is not in your memory itself, but in how you use it."(Herold, pp. 2,3)

Baddely sums it up: "Will the informal application of such principles help you? The answer is that they, and other principles like them, will help you to help yourself provided you are prepared to tackle the task of improving your memory with initiative and persistence. You will have to develop new habits, and these cannot be acquired without a fair amount of effort, so the first question to ask is whether you have a serious need to improve your memory and, if so, which aspect of it.

If you are worried about your memory, keep a diary and jot down your memory lapses. This has two advantages: first it usually reveals that your memory problem is not nearly as drastic as you imagine, and second it pinpoints those situations which are giving most trouble."(Baddely, p. 273)

How good or bad is our own memory? This is not always easy to assess. Baddely tells of testing a woman with serious memory lapses due to chronic alcoholism. After each list she would comment with surprise on her inability to remember, saying: "I pride myself on my memory" Apparently, she kept forgetting just how bad her memory actually was. He adds: "One of the main problems in trying to evaluate one's own memory is that in doing so one is implicitly comparing it with the memories of other

people. Typically we do not really know how good or bad other people's memories are, so it is very easy to have a distorted view of our own."(Baddely, p. 259)

A complicating factor when we evaluate people's estimates of their own memory power stems from the fact that people lead very different lives. One person might lead an extremely structured and sheltered life, which makes few demands on their memory while another may live a very active and stressful existence. The former may be true, for example, for elderly people who often report fewer memory lapses than the young.(Baddely, p. 260)

One of the key issues in memorization is that of forgetting. I remember noticing, as a student, that the large portions of Scripture (books) which I memorized needed quite a lot of work to be maintained. Much of the rote memorization which I did in those days has faded. Some of it, however, remains to this day. And I can still recall some Bible verses which I learned in the King James Version. How does forgetting work?

Ebbinghaus did a study which showed that the rate of forgetting is more logarithmic than it is linear. Forgetting is rapid at first, but gradually slows. Jost's law, named after a nineteenth century psychologist, states that if two memory traces are equally strong at a given

time, then the older of the two will be more durable and forgotten less rapidly. It's as though memory traces become tougher as they age, resisting further decay. (Baddely, p.105). Another factor in forgetting is the amount of rehearsal. Marigold Linton did a study on herself which showed that items tested once yielded far less long range recall than items tested four times. (Baddely, p. 114,115). Practicing a Scripture verse on a periodic basis refreshes and deepens its grip on long-range memory.

Why do we forget? There are two traditional theories. One argues that the memory trace simply *fades* or decays away much like a poster which is exposed to the sun and the weather. The second suggests that forgetting occurs because memory traces are disrupted or obscured by subsequent learning, or interference. (Baddely, p. 115). Both theories seem to have some validity.

Fidlow, addressing interference, posits alternate situations. In the first, you memorize Revolutionary War facts at one in the afternoon and at 3:30, comfortable with the material, go off to see movies on the Alamo and the Civil War. When you attempt to remember your Revolutionary War facts, your mind is jumbled. It now takes two hours to relearn the original data. Better, he says, to study the

Revolutionary War and then go play baseball. A twenty minute review will then probably suffice. He sums it up this way: "*Interference by material which is in any way similar to the things you've memorized, confuses your memories.* After a session with the roster of your customers, visit old friends rather than going to a party full of strangers. After memorizing your speech for the PTA, bake a cake instead of reading that book you've been saving. This principle is an important one to keep in mind when you read about *spaced learning*-combining study with 'strategic' rest periods." (Fidlow, p. 37) Arthur Kramer adds: "One reason people think they have such poor memories is that they are trying to do too much too quickly. We know that if you try to memorize something and you try to do something else simultaneously, it doesn't work very well. And I think we're always trying to do that." (Home, Kittel, p. 3)

Interference may also involve the particular environment we're in at the moment we're trying to learn. "Background speech can really disrupt memory-no matter if the sound is delivered at the level of a whisper or a shout," says Wolfgang Ellermeier. He recommends a white noise machine which is often successful in drowning out speech and music. He adds that the reduction of aural

distractions might help you seal the information you want in your memory. (Kittel, p. 26) Francis Pirozzolo, going a different direction, encourages us to practice tuning out distractions. We should read a book while the radio blares full-blast in the background or watch one television program while simultaneously ignoring another. After about ten minutes, stop and see how much can be remembered. The next time, try to pay attention to both sources at the same time. He claims that if we do each of these exercises two or three times a week that our ability to block out distractions should gradually improve. (Kittel, p. 47)

How does aging affect memory? Herold believes that while the problems of aging are many, these do not necessarily include aging in and of itself. He notes that "According to current findings, learning and memory do not begin to 'decline' at any particular age at all." In fact, he adds that the more you know, the more associations you have to connect memory data to. (Herold, p. 232) This is echoed by Mary Kittel: Significant memory loss is *not* an inevitable part of aging. In fact, all it may take to keep your memory in peak condition is plenty of mental stimulation, regular exercise, some dietary adjustments, patience, and perhaps a few memorization tricks to tweak your mind at key moments." (Home Remedies, p. 1)

On the other hand, Kittel also notes: "But beginning at about age 45, it does take longer to recall things. As we age, we also need more time and effort to process new information. By age 64, many people develop what is known as tip-of-the-tongue phenomenon-diffuculty remembering a common, once-familiar world. . . .No one is certain why these changes occur, but some researchers suspect that changes in hearing, vision, and other senses impair the brain's ability to collect and store memories." (Home, Kittel, p. 3)

Memory loss can be triggered by more than 70 conditions. Many are treatable and even reversible. So people should check with the doctor is any of the following apply:

- frequently getting lost while driving a familiar route
- often forgetting important appointments
- telling the same story over and over to the same person in a single conversation
- finding yourself unable to handle simple problems-like balancing a checkbook-which you have always done with ease in the past
- experiencing a personality change
- periods of confusion when you can't remember the time of day or who you are

--a sudden change in artistic or musical abilities (Home, Kittel, p. 6)

Practical Tips for Memorizing

"Memories may escape the action of will, may sleep a long time, but when stirred by the right influence, though that influence be light as a shadow, they flash into full stature and life with everything in place." John Muir

While it's not easy for researchers to get to the "why" of memory, the "how" is more straightforward. Many helpful observations have been made on how to aid long-term retention and recall.

One distinction that has been already made is the difference between "natural" memory and "artificial." These words make it sound as though these are two completely different sorts of recalling. The truth is, however, that they are both on the same continuum and that there is quite a bit of overlap. "Artificial" memory, that based on conscious use of mnemonic devices, is really an attempt to deliberately ape what the brain often does subconsciously. Herold, speaking of people with so-called "photographic" memories, believes: ". . .if you ever went to the trouble of figuring out what enables such people remember things so well, I think you

would find that such people do indeed use a system. . .Such people may not deliberately convert, connect, and review with a formal procedure, but what they actually do amount to the same thing and produces the same results." (Herold, p. 122) So although some of the mnemonic devices mentioned below seem contrived, chances are that that's only because we're not taking full advantage of our mind's ability in this area.

One way in which to strengthen memory is to improve the physiological component upon which memory depends; the brain. Although the brain is not a "muscle," per se, and memory "pushups" don't actually increase memory power (as mentioned earlier above), one can do activities which allow brain function to operate closer to its potential. The goal here is to go into underutilized parts of the brain and to develop new neural pathways. Lawrence C. Katz encourages doing some activities normally done with the dominant hand with the other hand. So, if right-handed, brush your teeth with the left. He says: "By struggling through an activity that normally comes very easily to you, you are activating underused pathways in your brain that are just waiting to be tapped. . .Opposing brain hemispheres, normally unchallenged when doing this task, are activated. . .which means major gains in brain circuit

development.”(Kittel, p. 14)

Along this line, Katz also recommends changing our routines, “moving away from relying on a set of well-worn mental paths. We might rearrange our furniture, drive a new route to work or wear our watch on the opposite wrist. “Varying routines allows you to have a larger repertoire of possible avenues for information to flow through your brain. You’ll have a larger network to rely on for greater powers of association, greater creativity, and more flexibility in the way you think.”(Kittel, p. 27)

Douglas Herman recommends that we stake out our peaks. “If you have creative or mental work you need to do, or memory tasks you have to perform, you’ll have an easier time doing them when your energy reserves are at their highest,” he says.(Kittel, p. 36)

Ann Bruner mentions the need for sufficient iron levels. Iron is crucial for chemical messengers in the brain. Studies have revealed that people who are deficient in iron don’t perform optimally on tests involving memory.(Kittel, p. 61) Charles DeCarli fingers high blood pressure as a culprit. Especially if it begins in your forties and fifties high blood pressure can lead to the accelerated loss of brain cells. He mentions a low-fat diet rich in fruits, vegetables and dairy products which

controlled high blood pressure just as effectively as medication. (Kittel, p. 62) Caffeine is a double-edged sword when it comes to memory. Caffeine affects chemical messengers in our brains such as serotonin, which may aid short-term memory. Scott Terry notes that if you're feeling sluggish caffeine may help, but if you're alert already it can overstimulate you and hurt your memory. He says: "Your best bet is to use caffeine only if you really need it to get going, like first thing in the morning." (Kittel, pp. 67,68) For more dietetic suggestions read *The Doctor's Book of Home Remedies* (Mary S. Kittel, ed., published by Prevention).

Besides food, drugs can also hamper brain activity with their side-effects. These include antihistamines, medications containing alcohol, anti-anxiety medicines such as Xanax, Elavel, or Darvocet, and prescription tranquilizers such as Halcion. Drug interaction can also hinder memory. (Kittel, p. 91)

Another brain booster is reading. "It increases the number of active cells in your brain," notes Cr. Charles Weaver III, and the more active cells you have, the more connections you have between neurons, the active cells of the nervous system." When we read we make use of parts of the brain that we don't rely upon for other activities.

(Kittel, p. 89)

Regular exercise seems to boost the production and functioning of neurotransmitters. Barry Gordon notes that even sedentary people who start exercising for the first time can improve their mental abilities, and consequently their memory by 20 to 30 percent. (Kittel, p. 94)

The process of storing memories moves quickly along when our brains are in their deepest dream state, known as REM sleep. Charles Weaver says that if this is disrupted for any reason the information that our brain was storing will be permanently and irreversibly damaged. For most of us, sufficient REM sleep requires at least 6 to 8 hours a night. (Kittel, p. 99)

Stress is another issue when it comes to optimal brain function. High levels may actually shrink the part of the brain that governs learning and memory. "You may find that you forget all kinds of things, notes Alan S. Brown, "even where you're going and what you're doing." So it's important to find ways of processing stress to make it manageable. (Kittel, p. 93)

Another way to aid memory is to limit unnecessary memory taxation upon the brain by use of better organization. Assign a fixed location to items such as

medications, important phone numbers, valuable papers, tools, keys, and so on. Jordan Grafman notes that every time we put an item in a random spot our brain has to find a place to store that random bit of information. "The idea is to get rid of clutter in; your mind, so you can remember the things that are really important," comments Grafman. (Kittel, p. 92)

Along that line James Swan notes that one issue with memory is divided attention. He recommends finding a spot in nature where we can spend at least a half-hour once a week. There we let our senses deliver messages to us by using "soft eyes," not focusing too intently on any one element. Our perceptions sharpen as we spend more time in our spot. "Emotional 'old business' will fade away and you will become more focused and alert, says Swan, "Memory is tied into being grounded and centered and living in your body. Immersion in nature helps to create a prodound sense of balance and physical awareness." (Kittel, pp. 17,18)

Rote memorization

Strictly speaking, the dictionary defines rote thus: "by memory alone, without understanding or thought." (Webster's New World Dictionary) A common example of this definition would be a class of young children repeating the latest Sunday School verse with accuracy but

little comprehension. This does often occur, especially in the earlier stages of Christian instruction and education. My younger sister, for example, recited whole psalms when she could barely talk. Incidentally, I don't regard this as necessarily bad. If a child can have their mind filled with Scripture at a young age it is a benefit. The memories of little children seem especially retentive. The goal, of course, is to explain what they can understand at the moment and follow up with a fuller explanation later. I've begun to do this with my children, asking them to explain the verses we rehearse.

When I use the word rote, however, I'm thinking more of a particular approach which is not necessarily mindless recitation. For me, and others, "rote" connotes a methodology which is fairly primitive. It involves learning through repetition by reciting, writing or reading the text over and over and over. There is little use of the more vivid memory techniques, relying instead mostly on the sound or image of the words on the page.

This is a frequent approach to Scripture memory. Furthermore, it works. I've memorized many verses in this manner. It is the simplest technique, requiring little use of imagination or preparation. Nevertheless, it has significant limitations. First, it is labor-intensive.

This is because the retrieval cues are minimal. The way a verse looks on a page or sounds when recited is not especially memorable for most people. The memories "hooks" are not large. Therefore, to keep the verse sufficiently vivid requires plenty of rehearsal. This is fine for a few verses, but becomes difficult if a person is ambitious enough to memorize hundreds of verses. I recall trying to keep the book of Romans sharp in my memory after memorizing it this way. I didn't have the discipline and much of it faded.

In addition, this approach can be boring. In contrast to some of the methods mentioned below there is little creative or imaginative about repeating the same words over and over. It's like the difference between playing football versus simply doing pushups. I suppose that this shouldn't matter, but it often does.

If this method is supplemented, though, it can be more fun and effective. For instance, do more than repeat the text. Study it. Meditate on it. Share it with others. Pray it. Outline it. Teach it.

Attention

Long ago Samuel Johnson said that the true art of memory is the art of attention. (Herold, p. 79)

One of the key components is the degree of attention we pay to what we are trying to remember. You'll recall that Sherlock Holmes always came away with more data than his sidekick Watson or the blokes at Scotland Yard. One reason for this was that he was paying more *attention*. They looked past the details which he took time to focus on. Epstein notes: "We are often so worried about what we are going to say or do next that the moment at hand never gets into our short-term memory" Susan Kavler-Addler adds: "You never know when a conversation or an experience is going to be important to reference later on, so make a habit out of being alert and interested in what is happening at the present moment. Do this by allowing yourself to fully hear, smell, see, and feel your surroundings." (Home, p. 9 Susan Kavalier-Adler)

Our degree of attention is directly connected with our level of interest. Regarding interest, Fidlow notes: "Now the interest that I'm talking about doesn't necessarily have to be that genuine desire to know more about whatever it is you're trying to concentrate on, for its own sake; but, speaking in broadest terms, it refers to your MOTIVATION-any reason you have for knowing or remembering." (Fidlow, p. 29).

Sometimes the level of interest comes naturally.

Recently I heard a man describe in detail the day he almost drowned. It was still a vivid picture in his mind. At other times we must choose to be interested because we consider it worthwhile to remember something; for example, the name of a stranger we just met or the information covered in a college exam. As Christians, our level of interest should be high. After all, we are seeking to learn and to recall the very words of God Himself given to us for our eternal benefit. As we shall discuss later, however, this is often the sticking point for Christians since too often we've lost our passion for the Bible. Alan Baddely makes an interesting side note, however. An experiment done by a Swedish researcher found that motivation, it itself, did not increase the level of retention. That motivation is only useful if it translates into effort. "The effect of motivation is indirect, however; it will determine the amount of time spent attending to the material to be learned, and this in turn will affect the amount of learning."(Baddely, p. 76)

Amount of time

This leads to another significant point. Research done by Herman Ebbinghaus revealed that the amount someone learns is directly connected to the amount of time invested

in that learning process. If the learning time is doubled, then so is the amount retained. In other words, to learn and to remember requires effort-the more the better.

(Baddely, p. 72)

There is, however, a helpful corollary to this rule. How the time is spent is also critical. Suppose that one invests two hours in memorization. Should one study for one two hour session? Or two one hour sessions? Or eight fifteen minute sessions? It turns out that the latter is significantly more effective. In a study done with British postmen, the group which practiced a new skill for one hour a day learned as much in 55 hours as those who practiced four hours a day learned in 80 hours (Baddely, pp. 73,74). Perhaps this is because intervals allow the mind time to process what has been learned; to reflect on it. Or it could be that our mind tends to wander when it's pressed for too long a period of time.(Fidlow, p. 38)

There is, however, another wrinkle here. It is also the case that if you succeed in remembering something for yourself this strengthens the memory more effectively than having it provided for you. The implications of this are exactly the opposite of those in the preceding paragraph. The sooner an item is tested, the higher the probability that it will be accurately recalled, and therefore the

greater the probability that recall will be strengthened. Baddely comments: "The solution to this dilemma is to use a flexible strategy in which a new item is initially tested after a short delay. Then, as the item becomes better learnt, the practice interval is gradually extended, the aim being to test each item at the longest interval at which it can reliably be recalled." (Baddely, p. 75)

Repetition

I've already implied that one of the keys to memorization is repetition. While there are some individuals who seem to remember easily in a one take, photographic sort of memory, most of us must repeat material more than once in order for it to gain a purchase in our minds. Repetition, by itself, however, is not necessarily effective. In Great Britain it was necessary for the BBC to reassign some radio wavelengths. In order to prepare the public, a saturation advertising campaign was mounted. Two researchers used this as an opportunity to test the effectiveness of repetition. The 50 volunteers, most of them Cambridge housewives, had heard these advertisements well over one thousand times. They were asked to write down the number of the new wavelengths and to mark a visual dial display. How well did they

remember? 84 percent remembered the exact date of the change, but only 25 percent even attempted to give numerical wavelengths. The researchers came to several conclusions. First, merely repeating something does not guarantee that it is retained. The manner in which the information is processed by the learner is crucial. Second, because the information was presented well in advance, people tended to ignore it. Messages which we ignore leave little impact on our memory. Last, in this situation, people didn't tend to remember even their old radio stations by their number allocations, so the numbers didn't serve well as memory prompts. (Baddely, p. 82).

Repetition isn't always connected with rehearsing lists in a systematic way. Herold comments: "However, not everything can be memorized through such a systematic approach, nor is a system always needed. With this in mind, it is very important to remember that the best way to keep any learned information accessible is to *use it* now and then so that it can remain both available and accessible." (Herold, p. 119). Along this line, I have found that if I am reading a useful book or studying Scripture that attempting to explain what I am learning to others tends to fasten it far more deeply into my long-term memory as well as refining my understanding of it.

Association/Assimilation

What allows ideas to gain a grip on our memory? One aid is association. Fidlow explains it this way: "When an impression reminds you of other past impressions, it hangs in your conscious observation for just a little tiny bit longer, and then becomes a stronger memory. . . Remember, your mind is elaborately cross-referenced. . ." (Fidlow, p. 32). One memory will often bring up another one, unsolicited, if they are in some way connected with each other. So if I want to remember something, the more connections that data has with other data, the more cross-references, the more likely it is that I can recall it.

Herold calls these "retrieval cues" and says: "*The basis memory unit in Memory Control training is the retrieval cue.*" (Herold, p. 13)

Some of this happens spontaneously and naturally. For example, I still remember where I was when news came of the demise of Elvis Presley (at Audrey Johnston's Bible study). I've never made any effort to retain that connection; nevertheless, it remains. Association can also be strengthened by making a deliberate effort to think about what we are memorizing; to understand it and to hold it up against other relevant facts or truths which we already

know. A well-educated mind is an asset in this regard.

Fidlow notes: "*The more you know the easier it becomes to remember.*" (p. 33, Fidlow). William James concluded from his research that: ". . .the art of remembering is the art of thinking. . .our conscious effort should not be so much to *impress* and *retain* it as *connect* it with something else already there. The connecting *is* the thinking." (Zollie Ward, p. 10, footnote 13, William James, *Talks to Teachers*, intro. By Paul Woodring (New York: W.W. Norton and Co., 1958), p. 101). In a classroom setting, Hight recommends two methods for fixing mental impressions. The first is to have students ask questions on a given topic. This causes them to analyze the information. The second is for the teacher to describe major problems about the topic which may not have yet been covered. This will provoke questions and a search for answers in the mind of the learners. (Zollie Ward, pt. 16, footnote 27, Hight, *Art of Teaching*, p. 167, Hight, Gilbert. *The Art of Teaching*. New York: Alfred A. Knopf, 1950). Gollanc lists five assimilation principles used by Jewish rabbis. First, the level of teaching must be matched with the age and learning capacity of the student. Second, if one tries to grasp too much, he may retain little, but if a smaller amount is learned, then at least something can be retained. Third,

if a deep meaning is not grasped by the student the teacher should provide a simple one now and wait until later for the more complex meaning. Fourth, instruction should be interesting so students are eager to learn. Fifth, instruction should be in graduated steps--from the simple to the complex--the known to the unknown. (Zollie Ward, p. 16, footnote 28, Gollancz, *Pedagogics of the Talmud*, pp. 54-7) Incidentally, assimilation not only increases recall, it also makes the information more useful since it can be connected and applied more widely.

The usefulness of assimilation explains why the cramming approach to learning information is not ultimately that useful to real long-term retention. William James notes that cramming is ". . . a poor mode of study. Cramming seeks to stamp things in by intense application immediately before the ordeal. But a thing thus learned can form but few associations. On the other hand, the same thing, recurring on different days, in different contexts, read, recited on, referred to again and again, related to other things and reviewed, gets well wrought into the mental structure." (Zollie Ward, p. 19, footnote 32, (James, *Talks to Teachers*, pp. 93-5).

Highet uses a great metaphor to describe assimilation. "Many of the facts (pupils memorize) merely drop into their

minds like blocks of metal, and lie there. At examination they take out the blocks, polish them, and show them to us. Then they put them back, or sometimes throw them away. If the facts simply remain on deposit, however, neatly packed and highly polished, their possessors are not educated. The business of the teacher is to pass currents of interest and energy through the facts, while they are being learned and afterwards, so that they melt, fuse, become interconnected, acquire life and grow into vital parts of the minds which hold them. (Zollie Ward, p. 20, footnote 36, Hight, Art of Teaching, p. 65)) Baddely refers to this concept as "richness" or "breadth" of processing. (Baddely, p. 167)

A more artificial, but highly effective use of association is typically used in mnemonic techniques. For example, for remembering numbered lists of information, a picture is memorized for each number (like a three-legged stool for the number three). Then the third item to be remembered is deliberately linked to the three-legged stool. Back in A.D. 35-65 the foremost teacher of rhetoric in Rome, Quintillian, would use the association technique by linking oratory to be memorized with the rooms and furniture in a familiar building. (Zollie Ward, p. 12, footnote 18, Wittrock, Brain, pp. 154-5, Wittrock, Merlin

C., et. Al. The Human Brain. Englewood Cliffs, N.J.: Prentice-Hall, 1977)). Simonides first developed this approach in 500 B.C. He spoke at a banquet one day given in honor of a Greek wrestling champion. He was called away early, fortunately for him, for the banquet hall collapsed and killed a number of people. How could they identify the victims? Simonides, visualizing the room, was able to identify the victims. He realized the effectiveness of this sort of visualization and used it to develop a memory system. (Baddely, p. 262). This sort of approach creates big memory hooks upon which to hang information.

A key to skillful association is recognizing how the mind works. Kevin Trudeau comments: "Your mind thinks in pictures. Pictures are its vocabulary, what it understands best. It's like an instant camera, clicking away, taking pictures and reproducing them in all sorts of combinations." (Trudeau, p. 18)

John Harris did a survey to discover what sort of mnemonic aids people most frequently used. He found while virtually everyone used these aids, they were overwhelmingly external aids, such as diaries, calendars, lists, and times. Very few internal mnemonics of the sort advocated by memory training courses were reported by Harris's subjects. (Baddely, pp. 260, 262)

Patterns

Another aid in remembering is the ability to organize data into meaningful, memorable patterns. Adrian de Groot studied the memory of chess masters and compared their performance with that of average chess players. Each was allowed to take a five-second glance at the pieces on the board and then were asked to recall the placement of each piece. The masters were able, after one five-second glance, to correctly recall 90 percent of the pieces. The weaker players only recalled 40 percent and needed eight glimpses to reach the initial 90 percent of the master players. He argued from this, and a number of other experiments, that the superior ability of the chess masters came from their ability to perceive the chess board as an organized whole rather than as a collection of individual pieces (Baddely, p. 96).

This is the ability of the mind to put groups of facts into memorable patterns. Some of this comes naturally. Fidlow notes: "Your mind tends to organize the impressions it receives, and to reduce them to simple formulas wherever possible. This saves it, and you, a lot of trouble, because the knowledge that something fits into a certain pattern gives you a head-start in trying to remember it."

(Fidlow, p. 33)

"The brain creates patterns, or neural pathways, that are linked and connected in larger patterns (sets and subsets) of related information. This is referred to as a pattern-seeking device in the brain and is exemplified in the use of thematic teaching, in which a big idea provides an overall pattern for the brain to perceive. The brain is always seeking the big picture-the pattern of thought that is created by repeated use of familiar neural pathways." (Fogarty, pp. 37-39)

"Chunking (Sylwester 1995) is a phenomenon that is achieved when a coherent group of informational items are rapidly combined and are remembered as a single item. One example of this is the chunk of letters called a word. In a more complex example, the difference between a novice and an expert in a field appears to be that the experts tend to organize information into much larger chunks, while novices work with isolated bits of information (Bloom and Lazerson 1988). An example of this is the chess master who conceptualizes the whole process, versus the novice who plots the game play by play." (Fogarty, p. 39) Francis Pirozzolo notes that long lists generally have a short shelf life in your memory. He recommends biting off lists that are too long into groups of five to nine items. So,

for example, if preparing to send holiday greeting cards, compartmentalize people into groups such as family members, coworkers, neighbors, college friends, and friends from your worship group. (Kittel, p. 52)

While there is natural ability involved, the use of patterns can be developed. Baddely studied Rajan Mahadevan, who, until recently, was the world record holder in memorizing the digits of PI. He discovered that Rajan, in other sorts of memorization, had a fine memory, but not better than the best graduate students generally have. Early in his life Rajan was praised for memorizing license plates at a party. This motivated him to develop strategies and expertise in memorization over many years of practice. Ericsson, who has studied outstanding memorizers argues that it is always associated with huge amount of practice-the perspiration rather than inspiration theory of genius. (Baddely, p. 103)

More than one sense

The level of retention is also increased when more than one sense is involved. Wittrock, in the context of teaching notes: "Instruction may often be better when multiple modes are used, not just the learner's dominant mode. One important educational

issue seems to be, not the determination of a single mode for a learner, but rather the selection of which primary mode is to be excited simultaneously with which secondary one. . ." (Zollie Ward, p. 17, footnote 30, , Wittrock, Brain, p. 180)). Trudeau, encourages saying things out loud as part of his Mega Memory program. Why? "Research shows that the body has what it called neuromuscular memory. When you say something out loud, you are using your vocal chords in addition to just thinking about something. You're reinforcing your memory in a new way because now the brain not only has to think about words, but also has to instruct your vocal chords to say them out loud." (Trudeau, p. 23). Multiple senses provide multiple hooks. Use of this may be done concretely, such as reciting a verse aloud while reading it. I've had the children and I speak aloud while making physical motions. Or multiple uses can be incited in the mind, creating pictures of the object to be recalled along with a sense of its texture, smell, taste and sound. One of the most effective, in my opinion, is the use of music in memorization. I and my children have learned hundreds of Scripture verses in this way with a strong retention rate. Another combination method is writing out a verse to be memorized. This uses both visual and kinesthetic memory.

Chain Imagery

This approach is a staple of mnemonics instruction and quite ingenious and effective, especially when it comes to remembering lists. What one does is take a list of objects and tie them together mentally like a chain. Let's say the list includes six objects: a monkey, a key, a bar of soap, a swingset, an orange, and a can of paint. As you link the objects together, use vivid pictures and strong action to make it more memorable. Trudeau recommends putting "two very dissimilar pictures together in a ludicrous way." (Trudeau, p. 29) Imagine the monkey swinging circles around a giant silver key. Every time around his hairy toes hit a large bar of Irish Spring soap which is swinging on a bright red swing in a swingset. The soap, at the arc of its swing kicks an orange off of a pile of oranges. This orange flies across the yard and hits a stack of paint cans and the top can falls off. This technique is fun and allows for humor and creativity. Mort Herold encourages individuals to choose their own images because: "The pictures you decide to use will work far better for your memory than any that I might suggest." (Herold, p. 10)

Peg Lists

Another favored mnemonic technique is the use of "peg" lists. A peg list is a standardized set of memory hooks which can be used over and over to remember changing lists of information. The idea is to link the familiar with the unfamiliar. For example, Kevin Trudeau has created a "body" list. He uses ten parts of the body to represent numbers one through ten. They are as follows: one-toes, two-knees, three- thigh muscle, four-rear, five-love handles, six-shoulders, seven-collar, eight-face, nine-top of head, and ten-ceiling. He also teaches students to make a twenty item list based on choosing five items in each of four rooms in their houses. (Trudeau, pp. 42-45). And he also offers a list of twenty based on pictures which in some way resemble the numbers(1-tree, 2-light switch, 3-stool. . .).(Trudeau, pp. 15,16) If one is trying to remember a to-do list for the day, each item is then memorably fastened to one of these number pegs. If the first job is to cut the lawn, picture a lawnmower doing something with the toes, perhaps cutting a green swath of grass growing on top of the toe-nail. If the second job is return a library book visualize the right knee, with hands coming out of it, and eyes, holding and reading that particular book. Again, as with chaining, vividness of detail and exaggeratedness of action are crucial to making

a strong memory connection. A detailed list can be remembered rather easily in this way. I could see this technique being useful in Scripture memory for remembering chapters or chapter segments and their general contents.

Music

I've left my favorite till last. This is the approach which I use and I've spent hundreds of hours at it. I set Scripture texts to music. This includes everything from short phrases to whole chapters. I've used almost every music style I can muster from rhythm and blues to rock to country. There've even been some poor attempts at rap.

Why this approach? For one thing, it's fun. I've enjoyed exploring the possibilities of each text, wondering what music style will fit it and how to make the irregularities of prose fit into musical meter. When I finish, there's satisfaction both in learning the text and in the creativity involved. I've found, as well, that children seem to enjoy learning a song more than just reciting a verse.

More importantly, I've found this method to be highly effective. My recall of texts memorized in this way is very strong. In order to forget a Scripture song I have to neglect it for years. I've taught my boys hundreds of

verses in this way. Even though they're not that disciplined and they don't like to sing, they learn quickly and retain quite well. A quick brushup on a song unsung for months brings it back with a good degree of accuracy. One challenge is to teach people to recite a Scripture song without having to sing it aloud in order to do so.

Another challenge is that most people don't write music. The obvious solution to this is to find someone else who has already set Scripture to music. There are a number of Scripture music tapes already available on the market. These are usually one or two verse selections. For longer passages I have a number which I've done which I would pass on. A less obvious solution is to choose familiar tunes already written which can be packed with new words from the Word.

Reading and Remembering

Here's another approach that will help increase reading retention in general and can also increase efficiency when memorization is to follow. Kevin Trudeau suggests that when we read we should always read as though we are sharing the information presented in the book to someone else. As we read, we picture in our mind's eye a particular person or audience which is listening intently.

Although this is an awkward imposition at first, he asserts that it forces people to concentrate more closely on what they are reading. (Trudeau, pp. 156,157)

One of the challenges which has to be tackled is that a number of the most popular mnemonic approaches, such as chaining or association, while they are great for lists or outlines or names, have limited effectiveness when it comes to memorizing lengthy sections of prose, such as Scripture. Of course, there are places in Scripture where lists occur (Romans 1:29-31). These lend themselves to the aforementioned techniques. To create an association, however, for every word or two in a verse would require an enormous amount of effort for even a few paragraphs of text.

Some, like Jerry Lucas, have dealt with this by encouraging the memorizing of basic ideas in a text without attempting a precise word for word recall. So what you're memorizing is basically a detailed outline. I respect this approach since it is still beneficial and superior to not knowing the text at all. Nevertheless, I'm a strong proponent of word for word memorization. I believe that the precision of quoting the actual words of God is a substantial benefit. It enhances the clarity of understanding as well as adding authority. It allows for

greater accuracy.

So how do we use these mnemonic techniques for memorizing prose? Some of the principles I've mentioned can be applied even to rote memorization. These include: careful attention, adequate amount of time, repetition, assimilation and multiple senses.

Kevin Trudeau, speaking of memorizing from Scripture, suggests learning a number memorization system first. This is done by assigning phonetic sounds to numbers (see his book or others for a system). These phonetic sounds allow the learner to create a word picture for the number. The beginning of the verse is converted into a picture and linked to the phonetic number picture. Then the passage, if long, is broken down into manageable chunks which are connected by pictures. (Trudeau, pp. 309,310)

Modern Educational Views on Memorization

How do modern educators view memorization? The answer to that is different depending on the basic educational philosophy. Perennialists, such as Mortimer Adler, used memorization as a way to structure the thinking and the brain. Facts were memorized more as mental exercise and not necessarily with a view to application. The progressivists, like John Dewey, came along and tossed

Adler's ideas. The focus for this philosophy seems to be more on method than on content. The key word for this view is "natural." How does a child "naturally" learn? A child left alone in a forest would not naturally memorize, at least not in a systematic way. The emphasis seems to be that it doesn't matter so much *what* they learn, but *how* they learn it. Imposed structure is bad unless the child generates it through natural discovery. One educator in this group comments: "Instead of seeing learning as the act of pouring out-of-date information into empty heads, we can focus the future on learning as an act of processing and applying information." (Costa, p. 21).

Another goes even further: "Research by Charles Brainerd and Valery Reyna at the University of Arizona has led to the conclusion that rote learning and thinking are independent (Reyna & Brainerd, 1991) learning processes. Thus, energy devoted to one of the forms of learning detracts from the other." (Volume II: Designs for Change, p. 21) As you might suspect, this group, with its values, de-emphasizes memorization.

Some of this is probably good when it teaches learning in context and as part of a process rather than it simply being a mindless rote recitation of facts. On the other hand, I don't seem where rote memorization and thinking are

polar opposites. This is what is called in logic a "false dichotomy." And, I suspect, that there are definite philosophical values at work here, a sort of relativism, shying away from the need to master absolute truth, especially moral truth.

A third category of educators are moralists. The thrust here is moral education. Many, but not all of these are Christians. They are not interested as much in process as they are interested in right action (orthopraxis). They are principle focused. This reminds one of the ancient Jewish education discussed earlier. In this perspective, it is critical to commit to memory the basic principles of life so that they can be effectively applied wherever one goes. (Ideas-Matt McNatt) Although I resonate more with this approach, I would also caution that the process *is* important. Skillful application requires thoughtful understanding.

I suspect that most modern schoolteachers, although influenced by progressivism, see the relevance of remembering key facts. Fogarty notes: "There is a natural, spatial memory that needs no rehearsal and affords instant memory, and there are facts and skills which are dealt with in isolation and require practice and rehearsal; thus, teaching must focus on the personal world of the

learner to make the learning relevant, as well as rote memorization techniques to foster long-term learning for transfer."(Fogarty, p.48).

Egan comments: "Consider Spencer's, Dewey's, and so many others' claim that rote learning is 'vicious.'" This was paradigmatic of the traditional practices that progressivism has been trying to displace-in this case with some success. Students today, in my experience, are rarely asked to learn anything substantial by rote-or, to use an alternative term, by heart. Again the trouble is not that we are thus able to displace stultifying practices but that the term becomes understood increasingly literally and separately from the complex of educational ideas that originally gave it meaning. Many young teachers I work with have been through educational programs that have persuaded them that it would be bad educational practice to make students learn chunks of text-poetry, prose, or anything-by heart.

Learning chunks of text is also neither effortless nor pleasurable, and certainly not 'natural,' and because we prefer these to their opposites, then such activities are to be avoided."(Egan, Getting it wrong, p. 67)

What about at the college level? Gordon Bower cites experiments with college students in which the use of a

loci mnemonic . . . produced memory recall 700 percent greater than for those students not using a memory technique for the same material (Herold, p. 230, Gordon H. Hower, "Analysis of a Mnemonic Device," *The American Scientist* 58 (1970), 496-510) Curiously, however, although these techniques have been shown to make such a difference in the academic context, they haven't been taught extensively to the students. Why? Herold says: "Old ideas persist, and the results of the first experimental memory studies by Egginghaus as far back as 1885 still emphasized learning primarily by repetition and influenced psychologist and educators away from the value of classical, applied mnemonics. This academic bias still exists. . . Also, many educators have not rid themselves of their image of mnemonics as 'mental trickery' of doubtful practical value. This image is kept alive by the exploitation and exaggerated promotional claims of various insubstantial memory improvement books and courses. . . ." (Herold, p. 231)

Why Should We Memorize Scripture?

There are two basic issues when it comes to getting myself or anyone else to memorize.

One, which I've discussed in limited detail, is "how?" A

lot of us, especially those out of school, aren't particularly skilled at memorization. The intention of this course is to strengthen memory skills, particularly as they relate to mnemonics or artificial memory techniques.

The deeper and more poignant issue, however, I believe is the issue of "why?" Plainly put: Why should I memorize the Bible? Can't I just read it and study it? Isn't it enough to clearly understand the doctrine and facts without necessarily being able to repeat them word for word? Why should I put out all this effort when I can just pick up my Bible and read it? I believe that the primary issue holding people back is not ability, but *motivation*.

This is a good question. Furthermore, the key issue in regard to Scripture is not: am I memorizing the Bible? The most crucial concern is that we study God's Word and obey it. An enormous amount of good can be gained even without actually memorizing a text. Kenneth Kantzer, a giant in the world of evangelical scholarship once noted in class that although he studied texts intensely he did not memorize word for word. I would gladly give up my memorized verses for half of his breadth of understanding.

Having said this, I still believe that memorization is worth the effort. It confers significant advantages to the learner. How? First, memorization allows us to access

Scripture anywhere at any time. I don't just need a jolt of heavenly truth in the morning during my devotions. I also need it on the way to work, during a confrontation with my boss or at the kids' ballgame. I need it when an opportunity to witness arises. A point of theology comes under discussion.

These moments come and go quickly and usually we cannot carry a Bible with us to open wherever we go. Yet we need its truth for strength and guidance all day long. This is what Joshua implied when he said: "Do not let this book of the law depart from your mouth. Meditate on it day and night. So that you will be careful to do everything written in it. Then you will be prosperous and successful."

Incidentally, what would you think of a soldier who left his sword sitting on the table at home every day?

Second, memorization drives Scripture roots deep. Have you ever been introduced to someone and immediately forgotten their name? Our study of the Bible can be like this. We do a quick reading of a passage for devotions, run out the door and almost immediately forget what it was we read. Memorizing forces us to slow down and go over the basic truths in the passage multiple times. This allows the truth to begin to get a grip on our spinning mind.

Third, memorization chews the meat of the Word

thoroughly. In the process of repeating the words, with a little extra effort (avoiding mindless rote) we can begin to mine the depths of the passage. Why does God say: "Come now and let us reason together"? What does reasoning have to do with it? Why do we need to "come?" A friend of mine recently noted, with irony, that he needs to study a passage repeatedly to overcome the barrier of familiarity.

Fourth, memorizing makes the meal last. Scripture, well-digested has a longer and deeper impact on us throughout the day and in the days to come. Instead of a gulp-and-run meal it can become a sit-down dinner.

Fifth, memorizing adds authority in our reference to biblical truths. Which is more powerful, making a general reference to Scriptural teaching or giving an exact, word-for-word quote? Any accurate reference to the Bible carries weight, but to be able to share the actual words is most powerful. They're not just hearing your explanation of the Bible; they're hearing God's actual words. When Jesus was tempted by Satan he was able to say: "It is written. . ." There is a confidence and boldness which this creates in our hearts and in our presentation. Furthermore, when others note that we care enough about the Bible to memorize it, this adds extra credibility to our witness. Our effort shows how important God's Word is to

us.

Sixth, memorizing has a salutary affect on our minds. The practice of memorizing, in general, is useful in exercising our mind and keeping it sharp. In addition, running God's Word deep into my mind has a purifying and healing affect upon it. Our mental filters get gummed up with the entire grimy residue of our fallen world. The act of memorization seems to sanitize and realign. Whatever is "true and noble and right and pure. . ." populates our mind and begins to change the neighborhood.

Why People Resist Memorizing Scripture

Scripture memorization brings with it many advantages. Yet, I have noticed that few Christians, especially adults, seem to practice this discipline. My attempts to promote it, up to this point, have not been successful. Why the resistance?

First, we live in a society where memorization is a minor factor. Baddely notes: "While mnemonics are certainly useful in contemporary Western society, the role they play is relatively minor. The reason is simple: important information is usually written down, or indeed recorded on film or magnetic tape. In non-literate societies, however, tradition is crucially dependent on

memory, and hence devices to preserve and communicate traditions assume vital importance." (Baddely, p. 267) Even when memorization is required, as in a history test, it is often learned in a superficial short-term manner and quickly fades when the exam is over. So when we ask people to memorize the Bible, we are asking them to do something which they seldom do elsewhere in their day to day routines.

Second, as mentioned in the previous section, people often wonder whether memorization is really necessary or useful. Is it truly worth all the effort? This is particularly true in our affluent society where most of us can afford multiple Bibles if we so choose and can get good teaching with the flick of a radio knob.

Third, people frequently comment that they are "no good at memorizing." "I just can't remember Scripture," they say. Andy Warhol is said to have commented: "My mind is like a tape recorder with one button-erase." Kevin Trudeau, in his book *Mega Memory*, explains how fleas are trained. The natural tendency of a flea is to jump. If you put a flea in a jar it will jump right out (The *Guinness Book of World Records* notes that a flea can long jump 13 inches and high jump $7 \frac{3}{4}$ inches. This is a jump of 130 times its own height and subjects it to a force of 200g.

Guinness, p. 68). In order to train a flea you put it in the jar and put a lid on it. The flea doesn't understand this lid, and for several hours it continues to jump right into it, whacking its head. Then, something in that tiny brain kicks in and the flea adjusts its flight plan and begins to jump to about an inch *below* the lid. After that, the lid becomes irrelevant. If you take it off the flea will continue to jump below the level of the opening of the jar. In other words, although it is free to jump out, it won't. What began as an unexpected limitation imposed from the outside has now become a self-imposed limitation. Trudeau notes that that when it comes to memory skills we are often limited, not by real limitations, but by imagined barriers. Many times "we don't know the difference between real limitations and those that we have artificially imposed upon ourselves." (Trudeau, p. 69).

While it is true that some have serious memory problems, I suspect, in most situations, that the lack of memorization ability stems from other sources. In the first place, it's hard to be good at anything if you put very little effort into it. Nobody becomes a basketball star just by wanting to be one. Basketball expertise requires hundreds of hours of hard practice. If I seldom memorize and then, when I do, neglect to rehearse what I've

memorized, it will fade quickly. Developing the skills takes effort and persistence. That leads to another point. Memorization is a skill which can be developed and strengthened. It's not just an ability you either have or don't have. Both natural and artificial memory can be improved, especially the latter. When many people evaluate their memory skills, they are basing their evaluation on rote memory techniques, which are usually among the least effective approaches available to them. I have found, for example, that my retention is much higher when I set Scripture to music than when I learn it by rote.

Fourth, people often avoid memorization because they don't want to make the effort required. It's true that we can teach folks more enjoyable and effective ways to memorize, but it still requires a certain amount of work. It takes effort to learn and maintain a memorized body of Scripture. But that's true of nearly every worthwhile achievement in life. You've got to pay your dues. The fact that it takes effort does not mean that we're "no good at it." It simply means that it's a challenge. A worthwhile challenge.

Fifth, people often avoid memorization because it's not an especially urgent challenge. Many of us (myself included) live our lives putting out fires. We do the

laundry. Pay the bills. Run the kids to practice. Meet work deadlines. These things shout for attention. Scripture memorization isn't a fire to put out. It's incredibly valuable, but if it's put off for another day no one loses their job or gets chewed out or goes hungry. The consequences of *not* memorizing are not immediately apparent. So it's easy to put it in the "someday when I have time" category.

Sixth, people may demur on memorizing because their relationship to God and his Word isn't very passionate. They have lost the "first love." Spiritual things have become ho-hum. When people are experiencing intimacy with God they're excited about his Word. When they're excited about his Word they're motivated to study it, meditate on it, and, at least sometimes, to memorize it. Sometimes this lack of interest comes from over familiarity. We've heard the Scriptural truths so many times that they've become to us like the wallpaper on our living room walls. We hardly even see it anymore.

Seventh, people hesitate to memorize because it doesn't seem very useful. They think back about the times they have memorized (like in VBS, for example), how quickly the verses were forgotten, and even when remembered, how little use this knowledge seemed to be. When did they ever

quote it? How have they ever used it? The verse sits like a dusty trophy on a shelf in the back room of their mind. No wonder they're not motivated to memorize. When skillfully used a memorized verse becomes a useful tool. It can be used for praise, worship, spiritual warfare, truth evaluation, witnessing, teaching, and intercessory prayer.