



# Oral Information Management Tools

## Lighting the Path to Financial Inclusion



I observe that when we mention any great number, such as a thousand, the mind has generally no adequate idea of it, but only a power of producing such an idea by its adequate idea of the decimals, under which the number is comprehended.

-- David Hume, *A Treatise on Human Nature*

by

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## **TABLE OF CONTENTS**

<b>PREFACE</b>	<b>1</b>
<b>EXECUTIVE SUMMARY</b>	<b>3</b>
Definitions	5
<b>1. THE THEORY OF ORAL INFORMATION MANAGEMENT</b>	<b>6</b>
The Impact of Oral Culture	10
Behavioral Finance: Building Oral Trust	15
Psychology: How Oral Clients Learn	23
Design: From Cash Flows to Information Flows	27
<b>2. THE PRINCIPLES OF OIM DEVELOPMENT AND DESIGN</b>	<b>33</b>
<b>3. THE OIM APPROACH</b>	<b>36</b>
Financial Numeracy	37
Literacy	41
Financial Planning	44
<b>4. OBJECTIONS</b>	<b>46</b>
<b>5. RECOMMENDATIONS FOR DONORS AND PRACTITIONERS</b>	<b>49</b>
<b>BIBLIOGRAPHY</b>	<b>50</b>
<b>APPENDIX: OIM TOOL GALLERY</b>	<b>51</b>

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Very special thanks are due to the board members and volunteers of My Oral Village, Inc., who have been enormously supportive of a long and uncertain process – that is by no means over!

This paper is dedicated to my best friend and life-long companion Margaret, who always gets things in perspective.

## PREFACE

In the summer of 1996 I was in Dhaka, Bangladesh, researching the various kinds of savings clubs that are popular among the poor in the slums there. Some MFI fieldworkers that I ran into at a tea-stall shook their heads when I told them I'd found that some kinds of club, especially the ROSCAs,<sup>1</sup> seem to work very well. They told me they advised their microfinance group members to avoid these clubs, because they were 'dangerous', and the reason they thought them dangerous was because 'being illiterate they don't keep any records, so people are easily cheated'.

A few weeks later I was in the audience at a conference where Muhammad Yunus bravely told us that he agreed with researchers who had found that the Grameen Bank – the bank for the poor that he had founded and with whom he later won a Nobel Prize – was having difficulty reaching the poorest rural households.<sup>2</sup> Fifteen- to twenty-percent of households were not getting the banking services that had been designed for 'the poorest of the poor' - on account of being too poor.

My mind went back to the ROSCAs in the slums. I thought of other examples of 'popular' finance that I'd seen around the world, like the 'bidding' ROSCAs of coastal Vietnam, run by uneducated fisherman, or the 'deposit collectors' of southern Indian slums who, barely literate themselves, safely collect savings from their illiterate neighbours, and return them just when they're needed – at the start of the school year, to pay school fees, for example.<sup>3</sup> How was it that such things, set up and run by poor people themselves, were so popular, while formal microfinance found it hard to reach the very poor?

Most of us who work in microfinance are well-educated, while many of our clients – especially those in the hard-to-reach poorest fraction of the population – are unschooled. Literate people – like the MFI workers I met in the Dhaka tea-stall – find it hard to imagine what it is like to be illiterate or innumerate. As a result, though we recognise that many of our clients lack schooling, we take insufficient account of this fact in the design of our products and services.

Even when we do try to take account of it, we don't find it easy, as I found out for myself. *SafeSave*, the microfinance provider that I founded in Bangladesh, prides itself on having unusually simple paperwork designed to be as friendly as possible to the illiterate, but research by Brett Matthews shows that of a sample of clients at one branch, only a quarter could find an entry in their passbook, and only a third could find an entry in a savings withdrawal slip. We had to recognise that our documentation, designed to engender trust, that most essential ingredient of intermediation, may well have been fomenting distrust.

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<sup>1</sup> Rotating Savings and Credit Associations hold regular meetings where every member hands a fixed sum to one of their number, until each member has received this 'prize' once.

<sup>2</sup> The conference was organised by the Institute for Development Policy Analysis and Advocacy (IDPAA), an arm of the Bangladeshi NGO Proshika. See *Who Needs Credit? Poverty and Finance in Bangladesh*, edited by Geoffrey Wood and Ifath Sharif, University Press, Dhaka, 1997. See page 253 for more on the failure of microfinance to reach the very poor. My research on savings clubs in the Dhaka slums appears as Chapter 16 in the same volume.

<sup>3</sup> See my book *The Poor and Their Money* (with Sukhwinder Arora), Practical Action Publishing, Rugby, UK, 2009, for more examples.

Brett Matthews has been one of the few to have noticed this and to have given it the attention it deserves. His work explores the 'oral' world and explains it to the literate. He shows how a mismatch between literate and oral cultures might explain some of microfinance's banana skins. And best of all, he shows, in detail with worked examples, what might be done about it. His paper should be taken seriously.

**Stuart Rutherford**

## EXECUTIVE SUMMARY

This paper is about designing financial products that illiterate and neo-literate people can use effectively and comfortably. Here the tools required for such design are referred to '**oral information management**' or **OIM** tools.

Approximately 775 million adults are classified as illiterate, but this figure is widely viewed as an underestimate.<sup>4</sup> In addition, hundreds of millions of adults are 'neo-literate': so marginally literate that they avoid dealing with text, and may find the experience stressful or even incapacitating. While the level of financial exclusion among illiterate and neo-literate populations has not been quantified directly, there is indirect evidence (see for example, pp. 6-7 below) of very high exclusion. Their futures -- and significantly those of their children -- depend on their ability to achieve a basic level of numerical and financial competence.

Readers moving beyond this summary might start with the gallery of OIM Tools in the appendix. The gallery indicates the practical frontiers of the author's current research and testing, and hints at the much wider scope of possibilities. The OIM approach, along with some objections to it, is outlined on pp. 36-48. General recommendations for implementation, at both industry and institutional level, appear on p. 49. Since the concept is new to financial inclusion, a detailed discussion of the theoretical framework is on pp. 6-32. This concludes with principles of OIM design, appearing on pp. 33-35.

Illiterate and neo-literate people live mostly in '**oral**' communities – the farms, villages and towns of the developing world. '**Orality**' refers to the characteristic modes of thinking, speaking and managing information in oral communities: where the technologies of literacy (especially writing and print) are unfamiliar to most of the population. Oral communities have co-existed with text for millennia. But – like the ancestors of Westerners during the oral-literate transitions in their countries – they are often wary of text, which is easily manipulated by literates without their knowledge. Oral populations are also wary of cash, especially in its role as a store of value. These attitudes impact the motivation to acquire new capabilities. Field tests by this writer suggest that large numbers of oral clients (perhaps most) cannot decode multi-digit numbers, which means personal, real-time validation of financial records is impossible.

Management information systems rely on text and numbers. But this does not mean that at the retail interface text and numbers must *monopolize* the relationship with oral users. Just as Braille is found on ATMs in many modern cities, it is possible to add material that oral populations can decode to the retail financial interface. Nor must *everything* must be re-encoded from text. When transacting with oral clients financial services suppliers should encode information that is *vital to their awareness and confidence* either in a form that they already understand, or in one that they can readily acquire.

OIM tools or solutions are designed to address the information needs of oral populations. They supplement text and numbers, providing an accessible bridge for users to the powerful planning tools embedded in the service propositions of most financial institutions. While the business case must be proven through structured pilots

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<sup>4</sup> It relies on census counts and personal disclosure. Population test samples frequently generate higher figures.

and scale-ups, OIM tools are designed to support expansion within the oral market segment, without compromising financial or operational sustainability. By contrast, Western-style financial literacy training depends on basic schooling, and cannot address this segment effectively.

There are two components to the OIM approach. The first is to utilize **images** and spatial cues to provide clients with mnemonic support as they deal with a passbook or a loan contract. Skill is acquired through repetitive transacting and experience. The second is to build selected skills – especially in the **financial numeracy** and **cash planning** domains -- that are essential to making oral financial markets work.

Oral financial exclusion hits some financial products harder than others. A desperate person may thumbprint a loan contract that she can't read to get a loan. But she is much less likely to save cash for her child's schooling by using a passbook she can't read. Where a financial product requires that the client trust the institution – especially **voluntary savings** and **insurance** products – OIM tools may mean the difference between functioning markets and failing ones. OIM tools may also contribute to credit and payments markets – especially in areas like enterprise cash-flow planning, consumer awareness of rights, and initiation of mobile payments by oral individuals.

We are at the dawn of a new era of **digital financial inclusion**. But the digital channel, like every other financial channel, depends heavily on literate capabilities, behaviors, concepts and attitudes. It would be tragic if precisely our optimism about technology were to perpetuate exclusion among oral populations, by blinding us to predictable problems based on past experience in other channels.

**Oral financial system designers** can be credited with what is arguably the most elegantly parsimonious financial intermediary in existence: the ROSCA (see p. 5 for definition). And most financial services that oral populations use today – from informal moneylending to money guards and savings groups – have been designed by them. Literate designs can meet a far wider and deeper range of human needs, but we have made literate products inaccessible. If there is to be real financial inclusion in our lifetimes, it is time for us to grab the baton that oral designers keep trying to pass to us.

The **first task** of OIM implementation must be careful research into the varieties of numeracy profiles that exist among oral populations, and the strategies that oral individuals use to negotiate the cash economy and financial services. These profiles and strategies form the foundation on which potential tools and solutions can be systematically and empirically tested: determining which ones are most effective, and in what types of contexts. This will place OIM on a scientific foundation, and open the door to global dissemination.

Finance is one the most powerful tools humans possess. For the sake of a billion + oral adults, and the literate generations they would like to leave behind them, let's drop our literate prejudices and start designing financial interfaces and products that are accessible, useful and *actually used*.

## Definitions

**Orality** refers to the modes of thinking, speaking and managing information in societies where technologies of literacy (especially writing and print) are unfamiliar to most people. Orality encompasses not just speech but a wide range of modes from pictures and numerals to memory, music and dance.

In his key work Orality and Literacy Walter Ong distinguishes between:

- *primary orality* ("the orality of cultures untouched by literacy"),
- *residual orality* (the orality of cultures where literacy is not yet common or fully integrated into national institutions), and
- *secondary orality* (the orality that has reasserted itself in the modern world, through oral technologies like TV or the podcast).<sup>5</sup>

**ROSCA/ASCA.** ROSCAs (rotating savings and credit associations) and ASCAs (accumulating savings and credit associations) are oral or semi-oral forms of group-based financial intermediation that operate in the informal sector. If a ROSCA has 10 members it will meet 10 times, and each member will bring a fixed amount (e.g. \$10) to each meeting. At each meeting, a different member will receive \$100. Since no money accumulates within the group, no records need be kept, so ROSCAs are an example of fully oral financial intermediation.

An ASCA involves internal financial accumulation. All members deposit cash at every meeting. The cash is then lent out based at least partly on relative demand, interest is periodically charged, and after a pre-agreed period of time, all loans are repaid. The ASCA returns the funds to its members, along with their share of the interest collected during the cycle. Because ASCAs keep money internally, they must also keep records, but the cycle-end distribution is an oral practice. A manager who is unable to return the members' cash to them will not be selected to run another group.

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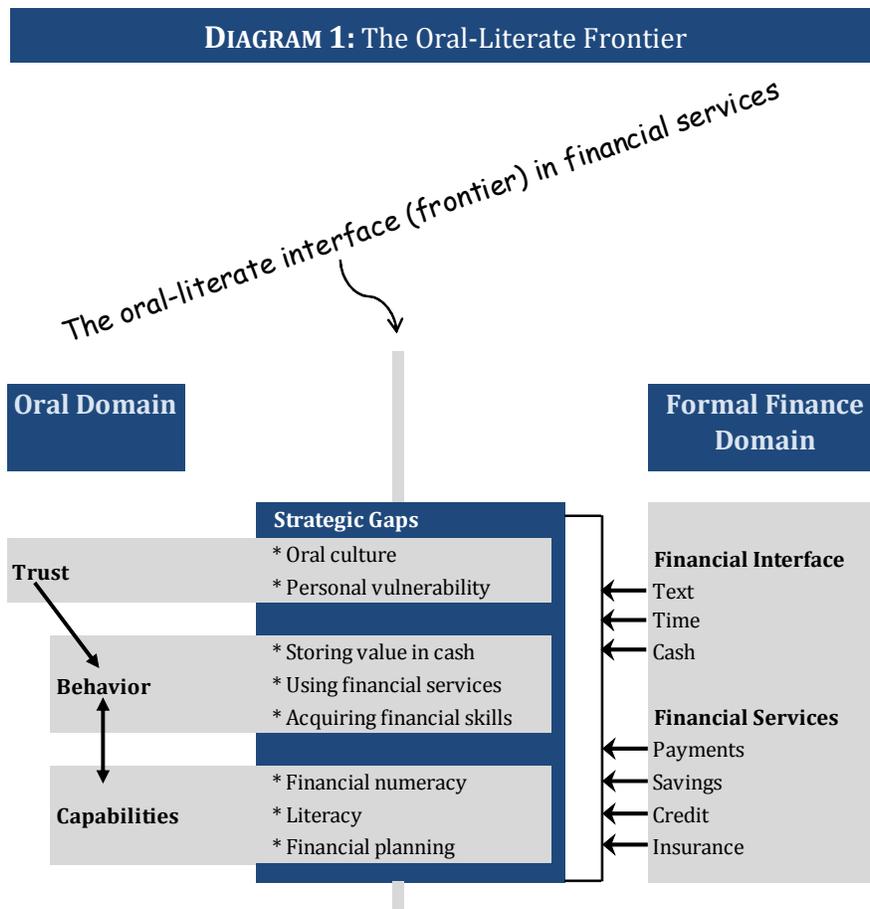
<sup>5</sup> Ong, Walter J. (2002) p. 6.

# 1. THE THEORY OF ORAL INFORMATION MANAGEMENT

"We cannot solve our problems with the same level of thinking that created them."  
 -- Albert Einstein

Demand-side challenges profoundly limit financial inclusion, and they are at the heart of oral information management. This discussion may best be introduced by Oliver E. Williamson, the dean of transaction cost economics. To catalyze a market, he argues, the central challenge is not product design but transactional governance. The solution is to find ways to lower transaction costs, on both the supply and the *demand* sides.<sup>6</sup>

The 'integrity' of transactions (the pre-requisite for functioning markets) can only be ensured through effective *two-way information flows*. If illiterate clients cannot decode information they receive during a transaction, they cannot provide feedback on it, which chokes off the evolution of a trusting relationship. Their response may be wary product use -- committing minimal resources -- followed by abrupt exit. Or they may open an account but not use it. This shallow and unstable engagement reflects a retail interface at which (in Williamson's apt phrase), 'transactional integrity' is not 'decided' -- or to put it another way, transaction costs are too high for the market to clear.



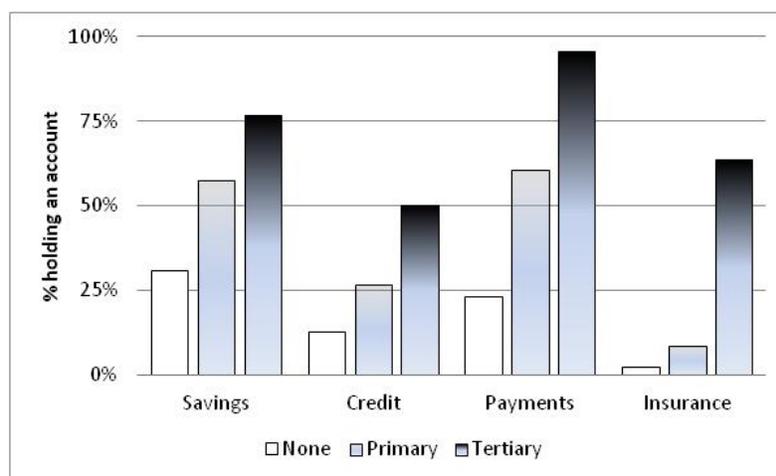
<sup>6</sup> "A governance structure is usefully thought of ... as an institutional framework in which the integrity of a transaction, or related set of transactions, is decided." Williamson, Oliver E. (1996), p. 11.

**DIAGRAM 1** depicts the oral-literate interface (or frontier) in financial services. The oral domain is depicted on the left, the formal finance domain on the right, and the strategic gaps that perpetuate market failure on the client-side are listed on the frontier line between them. Currently, the exploration of these gaps is largely theoretical. However, the theoretical case and the nascent empirical grounding merit deeper exploration.

While schooling has been correlated with use of financial services in recent studies, there are still very few studies that directly correlate levels of literacy with financial inclusion. In a 2005 study of 602 villagers in 37 villages with savings-led microfinance institutions across Cambodia, the author found that 55% of microfinance clients were literate, compared to only 33% of non-clients in the same villages.<sup>7</sup>

Since then, lack of education has been correlated with financial exclusion in a series of three 'FinAccess' national surveys in Kenya, conducted during the period 2006-13 (see **CHART 1**).<sup>8</sup> Financial exclusion is strongly correlated to lower education levels in each of them. In the FinAccess surveys, *all* financial service provision, including that accessed through informal channels like rotating savings groups (ROSCAs), is included. If financial

**CHART 1:** Use of financial products by education, Kenya, 2013



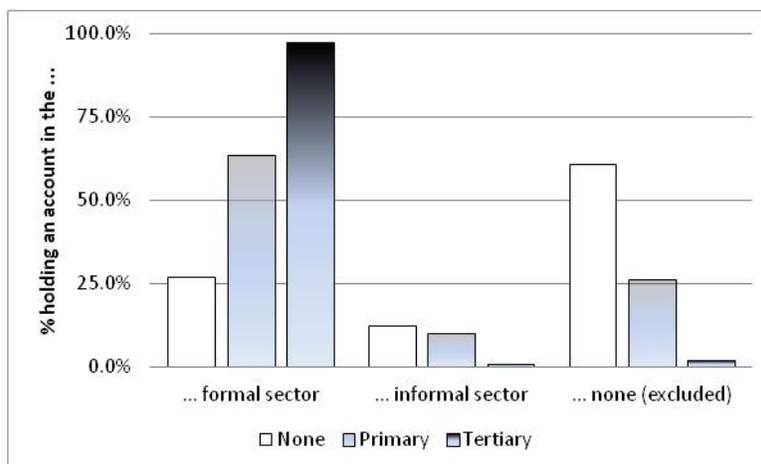
institutions with no legal identity (the informal sector) are excluded, the results are even starker (see **CHART 2**). Respondents who use both formal and informal services are automatically included in the formal category. Even so, nearly 75% of the adult population who have not completed primary school are excluded from *any* type of formal financial service. Of this adult population, 60% report that they do not even use informal financial services.

Recent studies have found that literacy and numeracy can be lower than that predicted by grade levels. An East African NGO that conducts numeracy tests observes

<sup>7</sup> Matthews, Brett Hudson (2005), p. 9.

<sup>8</sup> A cluster-stratified sample of 6,449 adults across the country. *FinAccess National Survey 2013: Profiling Developments in Financial Access and Usage in Kenya*. Financial Sector Deepening Kenya and Central Bank of Kenya, Oct, 2013, p. 28.

CHART 2: Level of financial inclusion by education, Kenya, 2013



that “once they reached Standard 7 most [children] were numerate and possessed competencies expected by the end of Standard 2. Even in Kenya, the country with the best performance, 12% of children in Standard 7 failed to reach the Standard 2 level. In Uganda, 15%, and in Tanzania a disturbing 32% of children in Standard 7 failed to perform numeracy tasks expected at the Standard 2 level.”<sup>9</sup>

At the same time, humans all have a remarkable *innate* sense of number. Although the very isolated Mundurukú in the Amazon have no words for numbers above five, when presented with clusters of numerous dots on a computer screen, Dehaene observes that “they perform approximate additions and comparisons of large numbers at about the same level as educated French controls.”<sup>10</sup> The difficulty comes with exact calculations. They will frequently err on calculations as simple as 5-3, because they approximate even small sums: they have never acquired the practice of counting.

It could be argued that the model presented here omits an important gap: digital literacy. While digital literacy is certainly important, for oral clients it is largely dependent on more fundamental gaps. If they wish to, literates can cross the *literate-digital divide* with modest effort and little or no help. By contrast, oral users will hit hard capacity constraints and challenging motivation issues related to the *oral-literate divide*. This is because digital technologies depend on prior technological solutions in both the oral and literate domains, including

- language, *especially oral* and to a less degree written;
- number, counting and mathematics; and
- concepts and practices related to time, value and exchange.

These oral and literate technologies and practices have been evolving for thousands of years. Digital financial inclusion among oral populations requires that designers drop literate biases and grapple directly with oral capabilities, behavior and motivations.

<sup>9</sup> The Standard 2 level may be seen as a useful proxy for basic numeracy. [Are Our Children Learning: Numeracy and Literacy in East Africa](#), Uwezo, 2012, p. 10.

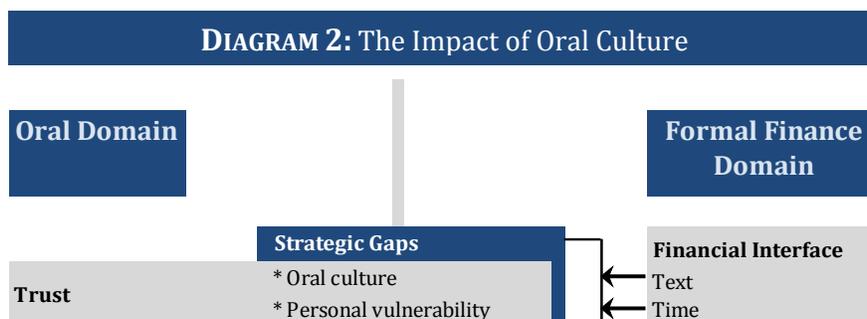
<sup>10</sup> Dehaene, Stanislas (2011), p. 262.

To clear oral financial markets, literate institutions (and electronic products) must *reduce the costs and risks of transacting for oral clients*. The following sections walk through four aspects of this problem. They begin by addressing the nature of oral culture and financial behavior, and then move on to the theoretical background behind developing effective solutions. Consecutively, these sections look at the OIM challenge through the lens of four disciplines:

- studies of oral culture,
- behavioral economics,
- cognitive psychology, and
- human factors (or human centred design).

## The Impact of Oral Culture

"Long after a culture has begun to use writing, it may still not give writing high ratings. A present-day literate usually assumes that written records have more force than spoken words as evidence of a long-past state of affairs, especially in court. Earlier cultures that knew literacy but had not so fully interiorized it, have often assumed quite the opposite."<sup>11</sup>  
-- Walter J. Ong



As observed by communications theorist Walter J. Ong, in a critical way the view from the oral village is simple: *they don't trust written text*.

To illustrate this point, Ong cites a study of decision-making from 12<sup>th</sup> century England.<sup>12</sup> Writing already had a long history there, and it would have been possible to use texts to establish for example, the age of majority of the heir to an estate. But people were skeptical about texts, noting especially the problems and costs involved in preventing tampering or frauds.<sup>13</sup>

As a result, they retained the traditional solution: gathering together "mature wise seniors of many years, having good testimony", and publicly discussing the age of the heir with them, until agreement was reached. This process resulted in the retrieval of collective information they could accept as legitimate. Ong remarks that "[w]itnesses were *prima facie* more credible than texts because they could be challenged and made to defend their statements, whereas texts could not."<sup>14</sup>

Another alternative to text, favored for centuries both in trade and tax collection, was the tally stick. Tally sticks were notched with a knife to record the time, amount and duration of a transaction. Then the stick was "carefully split down the middle and each party got to keep one half of the stick. If a dispute arose, the interlocking halves were proof of authenticity ..."<sup>15</sup> Like the public meeting, the tally stick had the great virtue that illiterate users could understand it, use it and trust it. It was not until 1834 – over a thousand years after the dawn of written English literature -- that the British parliament finally discontinued tally sticks as instruments of public record.

<sup>11</sup> Ong, Walter J. (2002), p. 95.

<sup>12</sup> Ong, Walter J. (2002). Ong is citing M.T. Clanchy (1979). *From Memory to Written Record. England 1066-1307*. Harvard University Press, Cambridge, Mass.; pp. 230-33.

<sup>13</sup> Subsequent studies have shown this concern to be well founded. Nearly half of the birth certificates from this period were manipulated after they were prepared. Clanchy (1979).

<sup>14</sup> Ong, 2002, p. 95.

<sup>15</sup> Tyner, Kathleen (1998). *Literacy in a Digital World: Teaching and Learning in an Age of Information*. Lawrence Erlbaum Associates, Publishers, Mahwah, New Jersey; p. 14.

It has long been assumed that the main barrier to financial inclusion among illiterate individuals is their capabilities. If so, illiterate individuals might share the desire of their literate neighbours and relatives to build personal financial assets – a desire that would in turn motivate them to acquire basic numeracy and literacy skills. But people who can't read and write are not simply illiterate. They are **'oral'**. And orality refers not just to their capabilities but to their *culture and motivations*.

Most of the villages of the developing world are oral societies. That is, a majority of the population are either illiterate or so marginally literate that they experience discomfort each time they are required to decode text. "For an oral culture learning or knowing means close, empathetic, communal identification with the known."<sup>16</sup> This feeling comes from human interaction, not from text.

Oral communities have co-existed with text for generations or even for thousands of years. There has been much adaptive evolution: festivals, markets, property transactions, service delivery, public meetings, money-lending etc. may involve text at the planning stages or in governance, but in implementation may be very well adapted to the needs of illiterate and innumerate locals. This milieu offers little incentive for villagers to learn to read or write, and may offer even less incentive – especially for girls – to maintain or enhance skills acquired during the all-too-brief school years.

But oral culture is not just about adaptation; it is also about vulnerability. Literate individuals and institutions can and do exploit illiterate people. Land titles are forged, officials recite text as a pretext for demanding money, urban NGOs and companies 'collect deposits' and then vanish, and interest charged by moneylenders spirals exponentially.

Common sense counsels that neither the illiterate nor the marginally literate would *want* to depend on text as the primary determinant of the fate of their savings plans and consequently, of their financial futures. Common sense also counsels that oral populations would not *want* to hand over the success of their future plans as hostage to a system they can't understand and that could be easily changed without their knowledge or consent. Behavioral incentives are not just shaped by financial flows; they are shaped by information flows as well.

The heart of the modern financial system is our concept of time and space, from which springs our concept of 'time-value of money'. Our Western culture visualizes space as three-dimensional, infinitely divisible, continuous and endless in every direction. Time is understood as a single dimension, also infinitely divisible, continuous from past through present, and moving into an indefinite future. Space and time are separated from one another. This world view, Ong argues, emerged with and through centuries of gradual 'interiorization' of widespread literacy, and the practices and ideas facilitated by it.

By contrast, studies of oral cultures depict a world view in which space is measured based on physical references like 'feet' or "a day's walk" or acres (the ground a man could plough in a day with a yoke of oxen). Time is measured in natural cycles and

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<sup>16</sup> Ong (citing Eric Havelock), 2002, p. 45.

segmented not into abstract units but into life's events. Time is much less clearly differentiated from space. For example, John Mbiti, in a study of traditional African culture, describes oral time in Africa as "a composition of events." Numerical calendars, which track time without reference to events like seasons, the sunrise, the births and deaths of people and animals, or the movements of the cattle, are seen as both 'impossible' and 'meaningless' in the traditional village.<sup>17</sup>

Cultural attitudes are also linked to livelihoods. For example, studies in cultural psychology find that hunter-gatherers have a strong intuitive grasp of space, but a much weaker grasp of quantity, weight and volume. Agriculturalists are the opposite.<sup>18</sup>

The relationship between time and modern finance is neatly summed up by Max Weber in the The Protestant Ethic and the Spirit of Capitalism.<sup>19</sup> Weber quotes Benjamin Franklin, the sage of American capitalism, on the logic that built the American economy.

"Remember, time *is* money."

"He that spends a groat a day idly, spends idly above six pounds a year, which is the price of the use of one hundred pounds."

"He that wastes idly a groat's worth of his time per day, one day after another, wastes the privilege of using one hundred pounds each day."

Weber argues that successful enterprises at the dawn of modern capitalism were driven by a cultural shift: a Calvinist ethic that drove business people to manage their hours, minutes and seconds to maximum effect. These habits and practices, like the time units themselves, incubated for centuries before Franklin's era, as literacy gradually spread.

Franklin's vision emerged not just in a world of widespread literacy, but in a world of deep literacy: writing had been used among his readers' ancestors for centuries, and most would have had trouble imagining life without it. Ong argues that cultures 'interiorize' literacy slowly. Starting as a technical ability learned in school, it gradually diffuses into a virtually limitless repertoire of practices, behaviours and attitudes. Marshall McLuhan, who also mapped the transition from orality to literacy, pinpoints the moment of transformation as the invention of the printing press by Johannes Gutenberg.

The power to translate knowledge into mechanical production by the breaking up of any process into fragmented aspects to be placed in a lineal sequence of movable, yet uniform, parts was the formal essence of the printing press.<sup>20</sup>

The lessons of the printing press "invaded the world of number" giving rise to formal concepts of zero and infinity, abstract time, and the idea that mechanical production

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<sup>17</sup> John S. Mbiti, African Religions and Philosophy, p. 21, cited in Zaslavsky (1993), p. 63.

<sup>18</sup> Poortinga, Ype H. & Fons J.R. Van de Vijver. *Culture and cognition: performance differences and invariant structures*. In Sternberg and Grigorenko (eds., 2004), p. 141.

<sup>19</sup> Max Weber (trans. by Talcott Parsons, 2003). The Protestant Ethic and the Spirit of Capitalism. Dover Publications, Inc., Mineola, New York; pp. 48-50.

<sup>20</sup> McLuhan, Marshall (1994). Understanding Media: The Extensions of Man. The MIT Press, Cambridge, Mass; p. 116.

could be planned, in principle at least, on an unlimited scale. By contrast much of the frontier of financial exclusion is in regions where literacy is not deeply 'interiorized': practitioners may have illiterate grandparents or even parents, and their native tongue may have been entirely unwritten less than a century ago.

Numeracy is clearly affected by oral culture today, and the impact is not just a capability gap: it lingers also in social and moral questions. For example, in a tradition that was noted in the Old Testament, many oral societies have sustained taboos against counting people, animals or property.<sup>21</sup>

Advanced societies developed large numbers at a pace that corresponded with their overall development. It is only recently, for example, that the word 'trillion' has entered popular discourse to any great degree. At the height of their civilization, the classical Athenians rarely used numbers larger than hundreds.<sup>22</sup>

Yet in the developing world, due partly to a long history of weak currencies, subsistence farmers may encounter numbers of an unfamiliar and even alien scale – particularly in the context of financial services. Many currencies trade at hundreds or thousands of units to a US dollar. A microloan can span 6 or 7 digits.

Stanislas Dehaene argues that every adult human has a mental 'number line', from which they derive numeric meaning. A basic spatial-numeric mapping, nascent even in babies, is developed and deepened by the acquisition of number words in human cultures, by informal 'learning by doing', and by schooling. Among completely untouched oral cultures such as the Mundurukú in the Amazon, the mental number line compresses as the numbers increase. The distance between 99 and 100 is visualized as shorter than the distance between 8 and 9, which is again shorter than the distance between 1 and 2. Dehaene describes this pattern as 'approximating a logarithm', and suggests that it is also evident among unschooled children.<sup>23</sup> Broader application to the adult oral world might reasonably be predicted.

To the author's knowledge, orality has rarely been discussed *directly* in the context of financial inclusion. However, it has been discussed indirectly, by writers such as Fritz Bouman and Stuart Rutherford. Many studies of informal practices such as ROSCAs, ASCAs, moneylenders and moneyguards have cited oral practices. Rutherford writes of ROSCAs: "People stay in ROSCAs because they observe, round by round, that everyone else is obeying the rules. Trust is more of a verb than a noun."<sup>24</sup> This neatly captures the essence of trust-building in the absence of the capacity to keep formal records. 'Semi-formal groups' (i.e. those incubated by NGOs) often conduct annual 'action audits' in which all funds are distributed back to members. This is essentially a technology transfer from the informal (oral) sector. Transparency in savings groups is not about seeing records or audit reports; it's about seeing your money and having it in your hands.

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<sup>21</sup> In the Bible King David conducts a census and Yahweh punishes him by visiting pestilence on Israel (Second Samuel, 24:1-25). The taboo against counting people in rural Africa is still influential. Zaslowsky (1993), pp. 52-3.

<sup>22</sup> Denise Schmandt-Besserat (1999). The History of Counting. William Morrow & Company, New York; p. 27.

<sup>23</sup> Dehaene (2011) p. 265.

<sup>24</sup> Rutherford, Stuart (2000), p. 41.

In his book *The Geography of Time*, Robert Levine explores cross-cultural attitudes to time. He highlights the contrast between 'event time' and 'clock time', and suggests that 'extreme present-orientation' is highly correlated with poverty.<sup>25</sup> Ong writes

"... living in an oral-aural universe, the village consciousness has to live in simultaneity in the sense that it lives in the present to a degree unknown to [a] man who can relate to the past circumstantially through writing and concomitantly to the future through highly controlled and sophisticated planning."<sup>26</sup>

Many oral households strive aggressively to plan for the future. But clocks, calendars, numbers and text are potent aids to this effort, and they are absent or lie unused. Categorization, the basis of budgeting and business planning, is another tool that strengthens greatly with interiorization of literacy. Without better planning capabilities oral individuals are highly vulnerable to crises, which hit them often. Not only do literate individuals understand these tools and practices, they also have institutions (like pension plans and the welfare state) that do much of their risk-planning for them. A major step forward would be savings inclusion: delivering safe, flexible saving accounts that oral populations can use to minimize risk.

In literate culture we become accustomed to accessing information privately and individually, whether reading a book or signing a loan contract or withdrawing cash from an ATM. But for oral cultures the methods that work – whether a community meeting in 12<sup>th</sup> century England or a ROSCA today, tend to involve collective information management. The recently published 'Global Findex' survey shows for example, that in sub-Saharan African, 48% of those who report saving in the past year used 'community-based methods.'<sup>27</sup> Systems that depend on individuals to engage in a private and confidential relationship with a point-of-sale purchase machine, an ATM or a mobile phone, may struggle for traction in an oral market segment.

There is a serious financial capability gap in oral culture. But capabilities are only part of the story. The incentive to acquire skills depends on the evolution of trust and on mastery of foundational skills. To shape an effective response to this challenge, practitioners must take control of *both* flows of money and information. Oral financial inclusion then involves building, from existing skills and practices up, the behaviors and skills to use clocks, calendars, categories and numbers to record value and to plan for the future.

Skill building is often most effective when it starts in a group context, allowing users to time their own transition towards individual access to services.

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<sup>25</sup> Levine, Robert. *A Geography of Time: The Temporal Misadventures of a Social Psychologist, Or How Every Culture Keeps Time Just a Little Bit Differently*. Oneworld Publications, Oxford, 2006, p. 188.

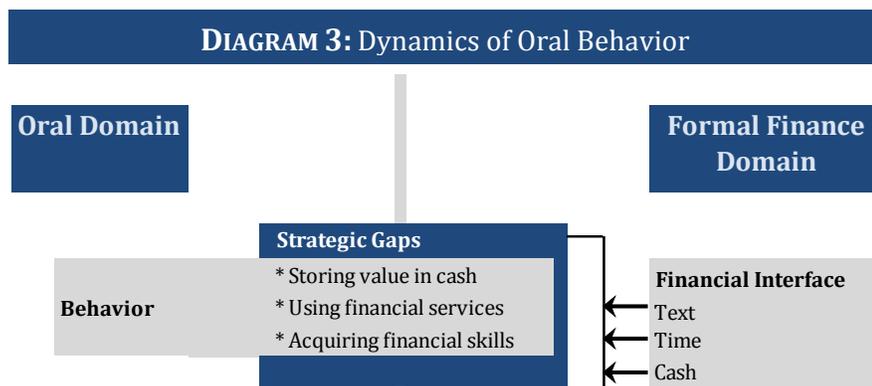
<sup>26</sup> Ong, Walter J. (1967), p. 91.

<sup>27</sup> Demirgüç-Kunt, A. & Klapper, L. (2013). *Measuring financial inclusion: explaining variation in use of financial services across and within countries*, Brookings Papers on Economic Activity, Spring 2013, p 300.

## Behavioral Finance: Building Oral Trust

Money, when considered as the fruit of many years' industry, as the reward of labor, sweat and toil, as the widow's dowry and children's portion, and as the means of procuring the necessaries and alleviating the afflictions of life, and making old age a scene of rest, has something in it sacred that is not to be sported with, or trusted to the airy bubble of paper currency.

-- Tom Paine (1786)

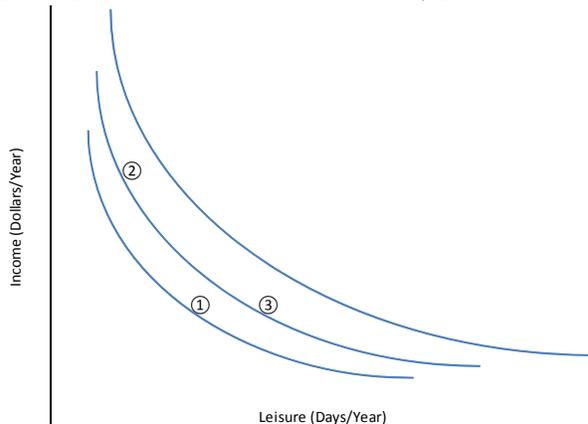


In Thinking, Fast and Slow, his classic introduction to behavioral economics, Daniel Kahneman relates a thought experiment featuring Ben and Albert, twins who work for the same company.<sup>28</sup> They have "identical tastes and currently hold identical starting jobs." This position is outlined as point 1 on the indifference curve presented in **DIAGRAM 4**. This is an 'indifference' curve because Ben and Albert don't care where on it they are positioned: everyone is prepared to trade off income and leisure to some degree, and for them, this curve maps their zone of indifference.

The company they work for offers them both a step up the ladder – one can go to position 2, and the other to position 3 on the second curve in the diagram. Each of these positions represents a better mix, from their perspective, of income and vacation time than their current position. Since they are indifferent between the two options, they flip a coin. Ben takes position 2 and Albert takes position 3.

A few years pass and they become accustomed to their new positions. Then the company again makes an offer: they may stay in their positions, or switch with each other. The 'indifference' curve implies that they may be expected to switch about half the time.

**DIAGRAM 4:** Indifference Curve, Ben and



Source: Thinking, Fast and Slow, p. 289

Kahneman argues that in fact they will no longer be indifferent. They have grown accustomed to their new positions. Ben won't be ready to take a salary cut to get more

<sup>28</sup> Kahneman, Daniel (2011). The example appears on pp. 289 ff.

holidays, and Albert won't be ready to give up weeks of free time for more money. Kahneman notes that in labour negotiations reference points are considered fixed in spite of the rational dictates of economic theory, and "the role of loss aversion in bargaining is ... well understood: making concessions hurts."<sup>29</sup>

This example highlights two aspects of choice that the standard [economic decision-making] model does not predict. First, tastes are not fixed; they vary with the reference point. Second, the disadvantages to a change loom larger than its advantages, inducing a bias that favors the status quo. Of course, loss aversion does not imply that you never prefer to change your situation; the benefits of an opportunity may exceed even overweighted losses. Loss aversion implies only that choices are strongly biased in favor of the reference situation (and generally biased to favor small rather than large changes).<sup>30</sup>

The concept of financial inclusion has long been based on the goal of 'access' to financial services. Anyone in the cash economy who gained access to financial services, it was argued, would be highly motivated to use them. The recent focus on mobile money has taken this argument even further, depicting mobile money as a beacon of freedom for poor people trapped in a backward cash economy.<sup>31</sup>

Behavioral economics challenges both these assumptions. A large fraction of payment transactions in many economies where mobile money is active are *not* conducted in cash – *especially* among oral populations. Understanding this is central to pinpointing the nature of the 'significant behavioral change' required by customers. Reference points matter because we all inhabit distinctive worlds, hold biases that favour our status quo situations, and are strongly risk averse.

Oral villagers are no different. And they are not trapped in a cash economy: most have *not yet entered* one. Their reference point is a traditional economy in which neither cash, nor the financial services that help people manage it, play a dominant role.

This drastically skews their incentives.

Why might many of the world's poorest economically active people feel they were losing something by entering the cash economy? Why would they feel even more doubtful about 'leapfrogging' over it into a digital one? Poor people readily buy mobile phones, but that decision involves neither status quo biases nor risk aversion. The only cash involved is the price of the phone.

Kahneman's prospect theory can help us answer this question.

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<sup>29</sup> Kahneman (2011), p. 290.

<sup>30</sup> Kahneman (2011), p. 292. Loss aversion is defined more formally by Thaler. "[T]he disutility of losing a given amount of money is significantly greater in absolute value than the utility of gaining the same amount." Thaler (1992), p. 101.

<sup>31</sup> For example, GSMA's 2013 MMU report explains the high number of dormant mobile accounts this way. "A customer's journey from awareness of mobile money, to registration, and finally to regular usage, is quite complex. ... Using mobile money represents a significant behavioral change in economies where almost all payment transactions are conducted in cash ..." Pénicaud, Claire and Arunjay Katakam. State of the Industry, 2013: Mobile Financial Services for the Unbanked. Mobile Money for the Unbanked, GSMA, 2013, p. 19.

Villagers have had doubts about paper money for as long as it has existed, and they have not been alone. The 18<sup>th</sup> century American Tom Paine launched his incendiary broadside against what he saw as the inherently fraudulent nature of paper currency with a terse ‘summation’ from a German farmer whose attitude would resonate in any oral village today. “Money is money, and paper is paper.”<sup>32</sup>

Economists generally define cash in terms of three functions: a medium of exchange, a store of value, and a unit of account. Oral populations require tools to carry out these functions, but are far less likely than modern ones to use cash (see **TABLE 1**). Oral economies are based on practices and tools that pre-date the rise of cash, and when cash is used, it plays a less prominent role. Competition from other practices and tools is stronger in every function, and trust of cash is lower.

The role of cash as a store of value is the wedge issue. In moments of household peril the alternative ‘use-values’ of oral poor people’s non-cash savings -- in livestock or commodities or reciprocal commitments to others in their community – support and often ensure survival. These planning tools function at multiple levels: not just as stores of value but as livelihood activities, mediums of exchange, and crucially as insurance.<sup>33</sup>

Behavioral economists view this as a portfolio-management approach.

The best bet is often to try to limit exposure to risk by building, like a hedge-fund manager, a diversified portfolio, and it is clear that the poor invest a lot of ingenuity in doing so. The only difference is that they diversify activities, not just financial instruments.<sup>34</sup>

Without reliable access to savings accounts, cash is not nearly as well tailored to this complex mix of needs and is viewed with skepticism *as a store of value*.

Without financial services, the greatest strength of cash becomes a liability. Since it is such a powerful medium of exchange, the greatest threat to using it as a store of value is our own lack of discipline. Experts have often remarked on the indulgent use poor people make of small cash in-flows. Poor people however are not machines, they are human beings. Villages, regions and even nations that experience large cash in-flows after centuries outside the cash economy can face transitional problems like a spike in cigarettes, alcohol or gambling. This is especially true if the shift is sudden: for example during a resource boom, or when governments start a cash transfer program.

The oral poor are no less likely to recognize this self-control issue than the rest of us. Karlan argues in another context that “[i]f individuals with time-inconsistent preferences are sophisticated enough to realize it, we should observe them engaging in various forms of commitment (much like Odysseus tying himself to the mast to avoid the

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<sup>32</sup> Foner, Phillip (ed.) *Complete Writings of Thomas Paine*, Citadel Press, 1945, pp. 405ff.

<sup>33</sup> “Shell money” was an important store of value in the Solomon Islands even before the colonial era. But it is crucially different from money as we understand it: the uses (and therefore the value) of shell money is culturally circumscribed – for example for dispute resolution or marriage. Uses outside cultural boundaries are strictly forbidden.

<sup>34</sup> Banerjee and Duflo (2011), p. 141.

**TABLE 1: Cash in the Oral and Modern Domains, Compared**

	<b>In the (Monetizing) Oral Domain</b>	<b>In the Domain of Formal Finance</b>
<b>Medium of exchange</b>	Exchange is powerfully shaped by norms of barter and reciprocity, although the use of cash is diffusing slowly -- at a pace aligned with the expanding availability of opportunities to earn and spend cash. Even today there are many communities that not only have little or no cash, but are accustomed to living without it, and feel little urgency to secure more of it.	Cash has been almost without rivals for a century, although gold (its principal historic rival) has never entirely lost its potency, and new digital currencies are gradually emerging and will probably continue emerging.
<b>Store of value</b>	Oral stores of value combine two properties notably absent in paper money. 1. they have consumption value, so they help insure against risk. Saving may be in live animals or preserved commodities, in labour provided against future reciprocity, or in building materials, etc. 2. oral stores of value restrain frivolous expenditure (it is very difficult to spend building materials or gold on candy, or beer).	Cash is highly valued, but not without rivals. Several other stores of value (from land and commodities to patents and human capital) are very important.
<b>Unit of account</b>	In an environment in which there are many mediums of exchange and many stores of value, the only common standard is practicality.	Cash is without serious rivals. The invention of double-entry book-keeping consolidated its technical pre-eminence in accounting for enterprise, which paved the way for its dominance in the modern global economy.

tempting song of the sirens).”<sup>35</sup> Most non-cash forms of saving embody these ‘various forms of commitment’ intended to build and sustain habits of self-control.<sup>36</sup>

Even decision-makers in modern cash economies do not treat all money equally. Research suggests that they divide their financial resources into different ‘mental accounts’ according to their tastes – such as current income, future income and assets.<sup>37</sup> Each will then be treated differently, based on different personal goals. For example, current expenses are more likely to be met by current income than by asset sales. Thaler argues that households

adopt internally enforced rules of thumb. Examples of such rules are: keep two months income in the assets account, do not borrow except to make durable goods purchases such as a house, car or major appliance. Note that households following the latter rule might appear to be liquidity constrained ... whereas they are actually *unwilling* to borrow.<sup>38</sup>

<sup>35</sup> Ashraf, Nava, Dean Karlan and Wesley Yin (2006). *Tying Odysseus to the mast: evidence from a commitment savings product in the Philippines*. Financial Access Initiative/Innovations for Poverty Action; *Quarterly Journal of Economics*, May, 2006, pp. 636.

<sup>36</sup> These behaviors are very common in cash economies also, though they take a different form. For a good discussion see Thaler (1992), pp. 92-106.

<sup>37</sup> For example, Thaler, Richard and Hersh Shefrin. *An economic theory of self-control*. *Journal of Political Economy*, (89), 1981, pp. 392-410.

<sup>38</sup> Thaler, (1992), p. 109.

This form of mental accounting is also present in oral villages. In a study of household savings and microfinance in 37 Cambodian villages, villagers told our research team “When they need money, they prefer to draw down on savings, sell their labour or even sell off household assets before asking anyone – even friends and relatives – to borrow.”<sup>39</sup> No economist would describe this as economically rational behavior, since the option of borrowing from friends and relatives, and quite possibly moneylenders and microfinance institutions, was always available and would be often be less costly if cash were the *only* indicator of cost.

In-kind stores of value also support mental accounting. Villagers reported to us that gold was acquired and saved for long-term goals, while chickens and pigs were for food security, and the small cash saved up in clay ‘piggy-banks’ was for short-term cash expenses. Villagers who were older and better off were setting aside land for their retirement.<sup>40</sup>

In summary, oral practices related to cash are driven by both status quo biases and risk aversion, and they lead to a self-reinforcing cycle of financial behavior in which doubts about cash as a store of value limit both cash usage and the motivation to build cash-related capabilities.

Cash use and related practices *do* take root among poor city dwellers, due to three critical factors that are not present in the much more rural, oral world:

1. widespread availability of formal financial services;
2. a much closer alignment between household cash flows and calendar time (both due to jobs and due to active markets, in which people can sell products daily);  
and
3. higher education levels, including substantial literacy and numeracy.

These inter-related factors drastically change individual calculations. Assuming macroeconomic and macropolitical stability cash is then seen as a reasonably trustworthy store of value, because it is safe from momentary impulses and available when it is needed. The power of cash as a medium of exchange is transformed from a liability to an asset.

Underlying the limited role of cash in the village economy are two issues more directly related to user capabilities.

1. The concept of ‘**time-value of money**’ -- which drives modern interest rates and is central to modern banking practices -- evolved in parallel with the ascendance of cash as currency and as a unit of account. It is an abstract concept, contrasting with the more concrete oral view. The time-value of a chicken relates to its life cycle profile and its risk of disease or early death, not to a calendar.

The very survival of poor rural families depends on natural time cycles (e.g., crops, livestock, seasons, festivals). In most cases they have no choice but to meet their

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<sup>39</sup> Matthews (2005), p. 17.

<sup>40</sup> Matthews (2005) pp. 22-24.

basic needs through subsistence agriculture, supplemented by a variety of livelihood activities that may or may not involve cash.

Even if they were willing to make their survival dependent on purchasing power alone, oral populations usually have no way of earning that much cash, so calendar time can be both irrelevant and distracting. Abstract time is not easily understood even among modern financial consumers, who make serious errors induced by the complexity of financial time-value. This has been a theme in economics since Irving Fisher observed widespread conflation of real and nominal cash values – a phenomenon he dubbed ‘the money illusion’.<sup>41</sup>

2. The practical absence of **literacy and numeracy** capabilities (of which the second is more important for financial inclusion) is a ‘hard’ constraint with empirically observable implications. To accelerate oral financial inclusion, investments in overcoming disincentives to acquiring numeracy skills are essential. It is probable that many oral poor people would acquire relevant numeracy and even literacy skills if they could see tangible benefits in terms of household financial management.

If humans were perfectly rational actors, the line in **DIAGRAM 5** would be a straight diagonal in which the psychological value (depicted on the vertical axis) of every dollar gained or lost was equal to its monetary value (on the horizontal axis).<sup>42</sup> But humans are not perfectly rational. We are governed by status quo bias and risk aversion, and our mental accounts reflect our ethics and preferences as much as they reflect objective options available to us in financial markets. The shaded areas have been added by the author. They map the typical incentives of oral decision-makers related to financial inclusion.

It is worth pointing out that oral cultures generally would not accept the modern standard of rationality embedded in Diagram 5. Cash is depicted on the horizontal axis as a definitive unit of account, against which the rationality of an economic decision-maker can be measured. This concept would baffle an oral decision-maker. His or her mental model of rationality is quite simply, totally different.

Millions of dormant ‘no frills’ and mobile payment accounts eloquently testify to this point. At the margins, an oral villager who must decide whether or not to sell a dozen chickens or a silver earring and deposit the proceeds in a bank or mobile wallet may prefer the safety and familiarity of what she knows. And the dominant source of risk aversion is not hard to discern. As she cannot read or write, will she not fear that she can be easily exploited by those who can?

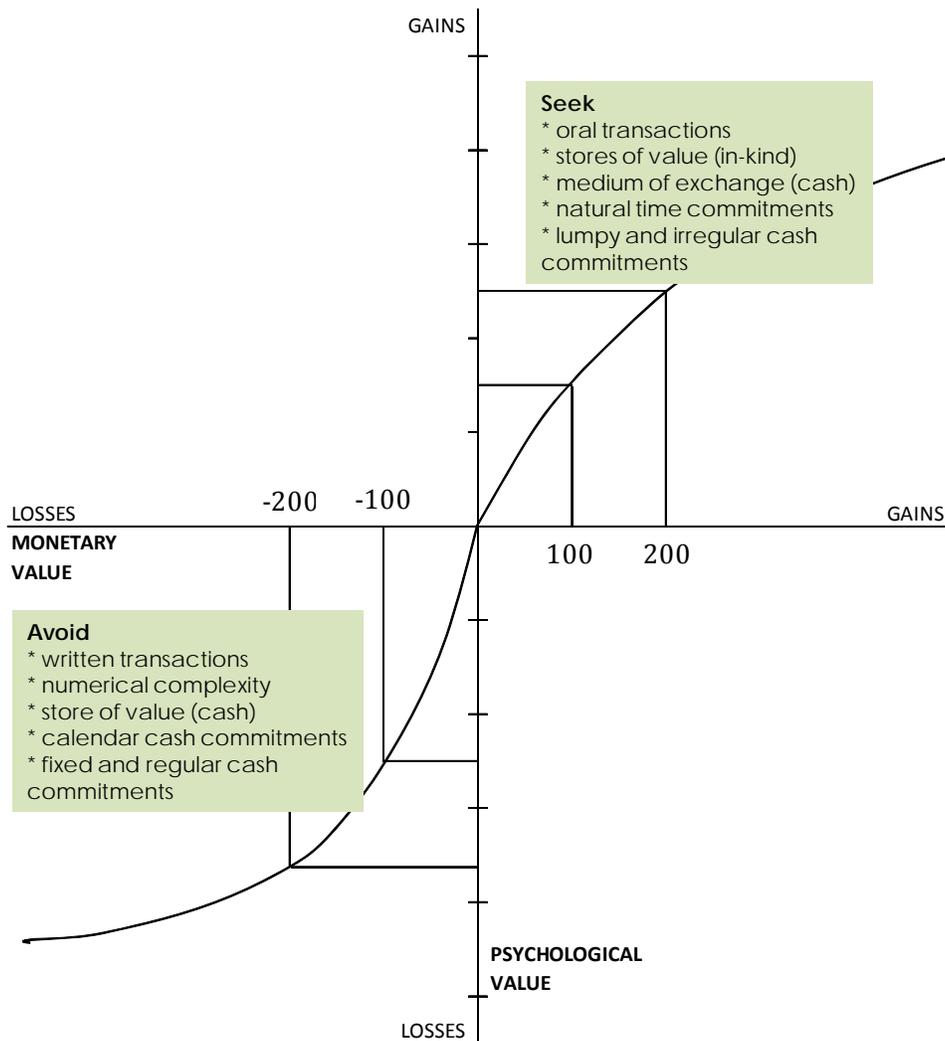
Practitioners know that it is hard to find a village today without its signature story (or stories) of fraudsters collecting money from too-trusting villagers and then vanishing. Would it not be more humiliating and painful to fall for such ordinary deception than to

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<sup>41</sup> Fisher, Irving. *The Money Illusion*, Adelphi Press, New York, 1928.

<sup>42</sup> Speaking of the black and white portion of the image, which depicts how human financial behavior deviates from rationality, Kahneman remarks: “if prospect theory had a flag, this image would be drawn on it. Kahneman (2011), p. 282.

**DIAGRAM 5:** Prospect Theory – Psychological Values and Oral Financial Incentives



Source: Adapted by the author from *Thinking, Fast and Slow*, p. 283

suffer less avoidable losses – like losing chickens to disease, or being forced to sell an earring at the bottom of the silver market? In the opinion of the village, while the latter losses can be attributed to misfortune, the former may well be put down to naiveté or even stupidity, and elicit less sympathy.

Behavioral finance sheds new light on another long-standing debate in development practice: whether there is any point in delivering financial services to people in communities at the early stages of monetization? It is sometimes argued that what will drive up-take of financial services is rapidly increasing cash incomes. The implication is that financial services should be offered as an adjunct to enterprise development interventions; not independently. But the process of household monetization is separate from the process of enterprise development. Even households with little cash in-flow can benefit from a usable depository for cash earned from seasonal agricultural surpluses, or cash that could often be raised by selling other stores of value -- *if* the

household viewed cash as a safe store of value. Acquiring such practices can lay the foundations for accelerated engagement with the cash economy – and perhaps even accelerated enterprise development. Conversely, a household with rising cash income and easy access to financial services -- but still governed by oral practices, habits and incentives -- may continue to quickly convert all cash in-flows to ‘safer’ stores of value.

Oral financial behavior under conditions of monetization offers many fruitful avenues of inquiry. One relates to the so-called ‘endowment effect’. Richard Thaler, who first observed it, was studying under an economics professor who had purchased ‘some nice Bordeaux wines’ years earlier at very low prices. Now the wines were worth \$200 a bottle at auction, but the professor would neither sell his stock, nor buy new stock at this price. Thaler was intrigued by this anomaly. Not only was his professor not acting rationally himself; he appeared to be unaware of it. Thaler began observing this anomaly in a wide variety of situations. He dubbed it the ‘endowment effect’: “the fact that people often demand much more to give up an object than they would be willing to pay to acquire it”.<sup>43</sup>

Kahneman, Thaler, and a Canadian economist named Jack Knetsch designed an experiment among their students using coffee mugs and tokens. Some were given mugs, some bought mugs in a structured market opportunity, and at the end everyone had the option to buy or sell. The owners charged double the price they had paid for their mugs, and offers from non-owners remained at the market level. Once a person had become accustomed to owning the good, and was able to visualize herself using it with feelings of satisfaction, she charged more to give it up, even though other identical ones were available at the market price.

The story of the Bangladeshi widow who loved her cow too much to sell it is apocryphal, but in-kind stores of value all have alternative uses. These can play a critical insurance role in the management challenges of oral households.

As economists would predict, customers tend to increase their purchases of eggs, orange juice or fish when prices drop and reduce their purchases when prices rise; however, in contrast to the predictions of economic theory, the effect of price increases (losses relative to the reference price) is about twice as large as the effect of gains.<sup>44</sup>

Does the endowment effect apply then, to chickens, pigs, gold, jewelry and building materials? The answer appears to be a resounding ‘yes’. When a village monetizes, whether through a slow multi-generational seepage, or expansion of external trade, or through deepening financial markets or any other route, the psychology of behavior surrounding both relationships to stores of value, and attitudes towards exchange, must change, too. Unlike cash, each in-kind store of value is unique in its own right (e.g., no water buffalo or plank of sawn timber is identical). This factor might be expected to further enhance endowment effects. If we wonder why the process of monetization can be slow and unpredictable, perhaps we need look no further than this.

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<sup>43</sup> Thaler (1992), p. 63.

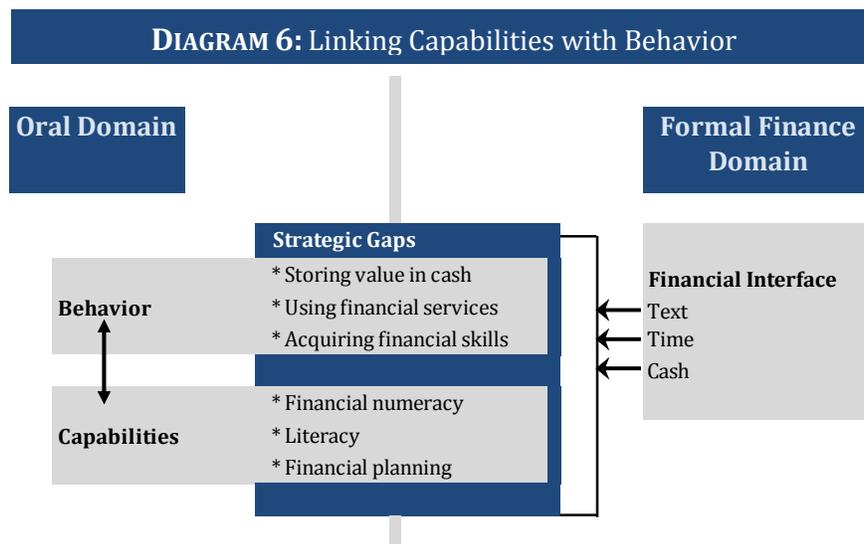
<sup>44</sup> Kahneman (2011), p. 296.

Behavioral finance shows us that oral populations will use financial services, but the path to financial inclusion is not the one we have been laying out for them. There is a status quo bias in the oral village, and there is also risk aversion. Both of these factors cause financially excluded people to shy away from too much reliance on cash, especially as a store of value. This does *not* mean that they don't save; it simply means that they prefer saving in other instruments that are better aligned to their risk management needs. Like modern household financial managers, they engage in mental accounting and plan for the future – though they are constrained by oral planning capabilities. Endowment effects may be larger for many in-kind stores of value, further entrenching status quo practices.

Oral financial practices require little or no understanding of time-value of money, modern calendars, and financial numeracy. Oral practices and behaviors drive incentives, incentives drive decisions to invest in the acquisition of new capabilities, and capabilities drive financial inclusion – and exclusion. If we want to change this, microcredit is not enough. We must give oral populations a chance to learn from experience that cash is a trustworthy store of value, and that cash planning skills are within their reach.

### Psychology: How Oral Clients Learn

"A nail is driven out by another nail; habit is overcome by habit."  
 -- Erasmus



Oral populations engage in personal and household financial management. While most of this takes place using in-kind instruments, the option of using cash is often available. Can a self-reinforcing behavioural loop be established among oral clients, leading to greater use of *both* cash and financial services?

Knowledge can be learned in a classroom, but to transform knowledge into living skills requires practice. Old habits are 'driven out' by new ones. In few domains is this truer than in that of money management, which depends on a fusion of schooling and life experience. Financial services suppliers are well placed to address financial exclusion

because they provide day-to-day money management solutions. This offers clients incentives to acquire better skills: a self-reinforcing behavioural loop that is particularly evident among young banked adults. But this loop is harder to get started when clients don't have schooling around which to build financial skills.

However, even adults with no schooling at all retain a vast quantity of information in a form psychologists dub 'semantic memory' – in common language, our general, working knowledge. As normally functioning humans,

- we usually know thousands of words, sometimes in multiple languages, including multiple shades of meaning;
- we retain in our accessible memory copious quantities of technical information about our daily work, as well as general information about our culture and our community; and
- our knowledge – once stored in semantic memory – is extraordinarily resistant to decay.

The task of financial services providers is therefore clear: to encode information that is vital to the awareness and confidence of oral clients either in a form that they already understand, or in a form that they can readily acquire. There are numerous tools drawn from the realm of cognitive psychology that financial services suppliers can use.

The retail interfaces of many supplier institutions are well suited to stimulate significant learning, because of the *frequent, regular, long-term* nature of contact with clients. Due to what psychologists call the 'spacing effect', these moments can act as 'reviews' for the client, bringing back information to their attention that, with less frequent contact – or more frequent contact over shorter periods -- they might forget. These regular frequent reviews "... may do more than simply increase the amount learned; they may shift the [adult] learner's attention away from the verbatim details of the material being studied to its deeper conceptual structure."<sup>45</sup>

The retail interface also offers many opportunities for what cognitive psychologists call 'cueing' – using reminders or 'triggers' to induce clients to retrieve previously stored information. New information is more easily recalled if it has high *association value* – that is, if it is readily associated by a learner with other information that is already securely stored in semantic memory.<sup>46</sup>

Proponents of *dual coding theory* argue that words and images are channeled by the brain through separate processing systems that are "independent and additive in their effects on memory."<sup>47</sup> That is, information is most successfully processed *both* verbally and visually. When humans learn a word they mentally shape two distinct constructs. The first is the sound of the word as it is heard or uttered. The second is an image of the object it references. (If they learn to write they shape a third – the appearance of the letters.) To have only the sound of the word – devoid of a mental image drawn from experience -- would make the word much harder to remember.

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<sup>45</sup> Dempster, Frank N. *Distributing and managing conditions of encoding and practice*. In Bjork and Bjork (1996), p. 318.

<sup>46</sup> See for example, Cochran, S. W., & Wickens, D. D. (1963). *Prediction of learning by group-rated association values versus individual-rated association values*. *Journal of Verbal Learning and Verbal Behavior* (2, 1963), pp. 509-512

<sup>47</sup> Sadoski and Paivio (2001), p. 170.

Dual coding theory draws inspiration from mnemonic techniques designed to serve the needs of ancient oral civilizations.<sup>48</sup> Mnemonics involved coding information in memory – especially information that was dry, abstract, or hard to remember – in striking visual images that are more easily retrieved than the underlying content (see text box).<sup>49</sup>

[T]here is abundant evidence that forming mental images can enhance performance on a variety of learning and memory tasks. This general finding holds for both direct (e.g., instructions to generate images) and indirect (e.g., the use of image-evoking stimulus materials) manipulations of imagery.<sup>50</sup>

Beginning in the 1970s, with the publication of Allan Paivio's book on mental imagery,<sup>51</sup> cognitive psychologists began to rediscover mnemonics, both as recall and learning devices. Paivio found that mental retention of images -- whether they are actually seen or *simply imagined* -- is subject to mental processing that is independent from that used to recall words. As a result people are better at recalling words and sentences when they are able to easily pair them with images (even imagined ones).

Other studies suggest that there may be a separate sub-system of memory that retains spatial layouts, such as that of a village or neighbourhood. Decades after they have left their childhood homes, most can still map the rooms, furniture and many objects in relation to one other. Experiments have shown that these spatial layouts "appear to preserve much more abstract and hierarchically organized information than do images or representations of individual objects."<sup>52</sup>

Mnemonic retention is not learning: it helps people to recall important information frequently enough, and in enough of the right situations, to facilitate learning. Francis Bellezza likens mnemonics to 'scaffolding' that is especially critical when the learner's semantic memory has few relevant reference points. Like the scaffolding used in construction, mnemonic supports can be taken down once the learning is complete – that is, when product has become usable for the client.<sup>53</sup>

### **The Image Mnemonic**

"We ought, then, to set up images of a kind that can adhere longest in the memory. And we shall do so if we establish likenesses as striking as possible; if we set up images that are not many or vague, but doing something; if we assign to them exceptional beauty or singular ugliness; if we dress some of them with crowns or purple cloaks, for example, so that the likeness may be more distinct to us; or if we somehow disfigure them, as by introducing one stained with blood or soiled with mud and smeared with red paint, so that its form is more striking, or by assigning certain comic effects to our images, for that, too, will ensure our remembering them more readily."

Rhetorica Ad Herennium, III, xxii, p. 221.

<sup>48</sup> Sadoski and Paivio (2001), pp. 11-17.

<sup>49</sup> The textbox is cited from Harry Caplan (trans.) Rhetorica Ad Herennium. Harvard University Press, 1954, III, xx, p. 33. Cited in Yates, Frances (1992). The Art of Memory. Pimlico, London.

<sup>50</sup> Cooper, Lynn A. & Jessica M. Lang. Imagery and Visual-Spatial Representations. In Bjork and Bjork (1996), p. 131.

<sup>51</sup> Paivio, Allan (1971). Imagery and Verbal Processes. Holt, Rinehart & Winston, New York.

<sup>52</sup> Cooper, Lynn A. & Jessica M. Lang. Imagery and Visual-Spatial Representations. In Bjork and Bjork (1996), p. 157.

<sup>53</sup> Bellezza, Francis S. Mnemonic methods to enhance storage and retrieval. In Bjork and Bjork (1996), p. 366.

Client-driven 'elaboration' of mnemonics can be a highly effective technique, supported by supplier institutions in two ways. Elaboration implies that the more closely new knowledge can be 'fitted' into

- familiar activities that learners engage in day-to-day,
  - mental frameworks they understand already, and
  - mental processes they engage in frequently,
- the faster and more fully learning will take place.<sup>54</sup>

A special problem in this area is the relationship between 'concrete' words (e.g., cashbox, mobile phone) that are easy to visualize, and abstract words (e.g., confidentiality, interest rate) that are very common in finance but also very hard to visualize. For example, in a focus group in Cambodia composed of oral Khmer-speakers, the author asked: how would you depict the word 'interest' in your passbooks? They stated that the Khmer word was 'pka', and that they could recall this from an image of a flower: 'ka' in Khmer.

Discussing the Oksapmin of Papua New Guinea, Saxe comments that their

... words for cassowary, butterfly, 'cascas' not only index these animals, but have become conventional indices for standard coin and bill denominations themselves. ... Body part expressions like 'wrist,' the sixth position on the body, are taken to mean six 'silings' or ten toea coins, the equivalent of 60 toea.<sup>55</sup>

The context of in which information is recalled can also aid learning performance. "[T]he means of acquisition of material forms part of its representation in memory and ... to the extent that the retrieval task recapitulates the original enactment, performance benefits."<sup>56</sup> Dehaene has observed that Iranians, who read from right to left, visualize large numbers increasing to the *left*, suggesting that "[t]he direction of the association between numbers and space seems to be related to the direction of writing."<sup>57</sup> This may help to explain a recent observation that women in Pakistan have difficulty learning to use and input ATM and EFTPOS pin numbers oriented from left to right.<sup>58</sup>

Social settings also create opportunities for learning – for example in solidarity groups. Deborah Best outlines numerous strategies that adults use "to improve memory performance in the context of social interaction".<sup>59</sup> Specifically:

- slowing a conversation, to absorb what others are saying more fully,
- repetition of important points to themselves or others,
- asking questions to clarify points or link new information to mental frameworks,
- limiting conversation to one or two topics,

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<sup>54</sup> Pashler, Harold & Mark Carrier. *Structures, processes and the flow of information*. In Bjork and Bjork (1996), p. 14.

<sup>55</sup> Saxe, Geoffrey B. and Indigo Esmonde (2004). *Making change in Oksapmin tradestores: a study of shifting practices of quantification under conditions of rapid shift towards a cash economy*. *South Pacific Journal of Psychology* 15(1), University of Papua New Guinea: p. 16.

<sup>56</sup> Roediger, Henry L. III and Melissa J. Guynn. *Retrieval processes*. In Bjork and Bjork (1996), p. 221.

<sup>57</sup> Dehaene (2011), p. 70.

<sup>58</sup> Lehrer, Rachel and Harry West. *Literacy, a hidden hurdle to financial inclusion*. Continuum Research, CGAP Blog, Jan 13, 2014. <http://www.cgap.org/blog/literacy-hidden-hurdle-financial-inclusion>.

<sup>59</sup> Best, Deborah L. *The role of social interaction in memory improvement* in Herringmann, Douglas J., Herbert Weingartner, Alan Searleman and Cathy McEvoy (eds., 1992). *Memory Improvement: Implications for Memory Theory*. Springer-Verlag, New York, Berlin, p. 133.

- referring questions to others, and
- asking others to remember.

Many microfinance service propositions today are not clearly attached to client goals. Clients are often expected to keep saving indefinitely with no withdrawal options, or treated as if they have a 'right' to borrow as soon as money is available, whether their goals are clear or not. But psychologists counsel that goal setting is critical to success in either saving or microenterprise. A systematic approach to goal setting has been shown to improve performance in many contexts, and

... is especially likely to do so under the following conditions: people accept the goals set, they are informed about their progress, rewarded for achieving goals, have the ability to reach them, and are appropriately supported and encouraged by those in charge.<sup>60</sup>

In oral cultures, goals are most effectively set in an oral, communal context rather than in a written, private one. While oral goal-setting has worked in some loan contexts (e.g., Grameen-style solidarity groups and centres) it has been applied less commonly or effectively in the context of saving. Yet savings products based on oral goal setting can create self-reinforcing loops, in which setting the goal triggers the practice, and the practice generates the cash – which creates motivation to set more goals. Savings groups could adopt savings plans, in which the saver announces her intentions in front of other members. MFIs could test such an approach in solidarity groups and centres.

Financial services suppliers can access many tools from cognitive psychology, to trigger learning through the processes of transacting. Many suppliers already have relationships with oral clients that involve frequent, repetitive transacting. This condition is ideal for client learning. The strategic use of memorable images -- in retail documents, in posters, in stories told by staff and in other forms – can build the 'scaffolding' required by clients in order to learn new skills as part of a transactional context in which they are already motivated. Oral goal setting can provide practical links in clients' minds between calendar time, numbers, cash and savings. Better still, it can deepen the perception that cash is a useful store of value, and expand individual incentives to use it.

### Design: From Cash Flows to Information Flows

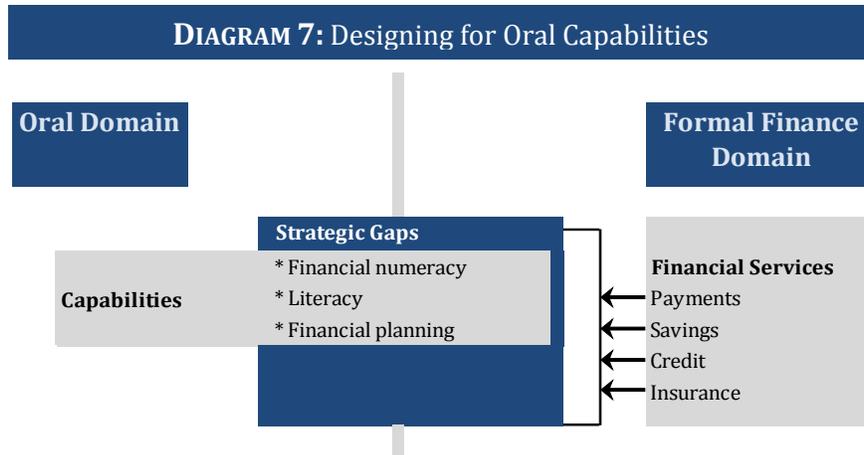
"Ergonomics (or human factors) is the scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data, and other methods to design in order to optimize human well-being and overall system performance."<sup>61</sup>

-- International Ergonomics Association

The modern history of finance has devoted enormous attention to the needs of the users of financial information. The entire science of accounting is oriented around this problem. As yet, we have not been so careful about the methods used to present financial information to poor people. 'Human factors' design tools offer us solutions to reduce this critical demand-side transaction cost.

<sup>60</sup> Butler, Gillian and Freda McManus (1998). *Psychology: A Brief Insight*. Sterling Publishing, New York, London, p. 81.

<sup>61</sup> International Ergonomics Association (2000). There are two professional journals covering research and advances in this field: *Human Factors* and the more recent *Journal of Cognitive Engineering and Decision Making*.



Human factors include two main categories – physical and cognitive. It is the cognitive factors related to consumer use that are of particular concern.

Human factors research began with military (primarily physical) factor applications during World War II, but in the past three decades it has been applied increasingly to consumer and cognitive contexts. An early example was the work of Lucy Suchman, an anthropologist at the Xerox Palo Alto Research Centre (PARC). In the late 1980s Xerox had developed an advanced new copying machine. They advertised that it was very easy to use, implying that the only task new users had to learn was how to push the ‘start’ button.

Suchman conducted a study in which she provided 15 technology PhDs and Nobel laureates with the manual and asked them to use the machine to make 15 double-sided copies of an article from a bound book. “Most participants could not complete the task, and those that did spent the better part of an hour figuring it out.”<sup>62</sup> The research concept drew on experience with ‘ethnographic research’ methods. Suchman had learned in anthropology. Her study marked a turning point for PARC, which increasingly began to focus on the factors related to product users, and the contexts of product use.

Illiteracy and innumeracy are cognitive human factors affecting the usability of financial services for hundreds of millions of people. Human factors design lends itself

**Product ‘usability’**

Product ‘usability’ can be defined as “[t]he extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use.” (ISO 13407 – Human Centred Design Processes for Interactive Systems)

In establishing the usability of a product, the key factors to be considered include:

- the intuitiveness of the product interface, or its ‘learnability’ for the typical client;
- the client’s personal sense of being ‘in control’ of product use; and
- the degree to which possible mental or physical stress are minimized in product use.

<sup>62</sup> Conley, Chris V. *Contextual research for new product development*. In Kahn (2005), p. 231.

readily to microfinance tangibles, such as transactional documents, mobile banking and POS software, the layout and signage in retail branches and ATMs.

To find a financial product usable, clients must be aware of all transactions in their accounts – not what they *think* took place, but what *actually* took place, and how consistent it is with what *should have* taken place. This provides them with a way of correcting errors, enhances their sense of personal control, reduces the risk that they will experience account shortfalls, and over time serves to increase their trust in the financial institution and its systems.

In 2012 at the invitation of Stuart Rutherford, My Oral Village, Inc. assessed the capabilities of the rural clients of SafeSave, a Bangladesh-based ‘product development laboratory’ in microfinance.<sup>63</sup> The study looked at clients who lived in the service area of the branch in the farming community of Hrishipara in the district of Torgaon. All were using a savings product called ‘P9’. While this area is rural, there is much interchange with the very dense urban area of Dhaka, which is a short bus-ride away. Capacities, though low, can be expected to be similar or lower for hundreds of millions of people in the developing world.

Twenty clients (18 women) flagged as illiterate by staff were invited to a capacity test. Illiteracy in the P9 market is heavily concentrated among women. The results appear in **TABLE 2**.

The test administrator asked clients to give their name and age, and wrote these down with errors. He then showed his work to clients, and asked them if it was correct? Only 5 in 20 could identify a spelling error in their name. Several could not identify age errors although the administrator used a 1-digit or 3-digit number, instead of 2 digits.

**TABLE 2: Capabilities of Oral Microfinance Clients in Bangladesh**  
**Numeracy/literacy capabilities**

<b>N= 20</b>	<b>Yes</b>	<b>No</b>
<b>General</b>		
Recognize error in their name	5	15
Recognize error in their age	7	13
<b>Passbook</b>		
Can find an entry in the passbook	4	16
Can identify a 4-digit value	4	16
<b>Withdrawal Slip</b>		
Can find an entry in the withdrawal slip	5	15
Can find the withdrawal amount	2	18
<b>Note:</b>		
Female	18	
Male	2	

<sup>63</sup> Stuart Rutherford is the founder of SafeSave. SafeSave has subsequently become part of BRAC. Matthews, Brett Hudson (2012), *Lighting the ‘P9’ path: testing an oral passbook at Shohoz Shonchoy*. My Oral Village, Inc.

Clients were then shown the inside flap of the P9 passbook and asked to identify the column where they would find the savings amount? Only 4 out of 20 could do this; the same 4 who could correctly read a 4-digit savings amount when it was shown to them.

When shown a 4-digit number, those who can recognize numerals may use the 'mobile phone' version – they will say (for example) “four-seven-zero-six.” On clarification, it becomes clear that this does *not* mean that they know the number is 4,706, or can speak it completely and correctly (“four thousand, seven hundred and six”). Clients were then shown the P9 withdrawal slip, and asked where they would find the date of the transaction, and the amount withdrawn? Again, most were unable to perform these tasks.

**TABLE 3** explores the capacity of clients to engage in financial planning. It is notable that most tested clients could estimate a volume of rice in a container, and calculate the likely price. The people of Hrishipara are farmers, for whom volume has intuitive meaning. Women are increasingly shopping for their families, which may be further strengthening these skills. This skill could be used as a foundation for building other quantity-related skills with this population.

Of greater concern was the inability of any client to estimate, even vaguely, how much they would have to invest in their account per month to save 20,000 *taka* in 3 years. Answers ranged from 200 *taka* to 1,000 *taka*, though many respondents could not answer.

**TABLE 3: Capabilities of Oral Microfinance Clients in Bangladesh**  
**Numeracy/literacy capabilities**

N= 20	Yes	No
<b>Financial Planning</b>		
Can estimate simple volume and price	12	8
Can divide (to make a deposit plan)	0	20

Designing forms and documents that can address the needs of oral populations is not as difficult as it may appear to be. During a transaction oral clients are typically placed under time pressure; the field agent has other clients to attend to. The client is confronted with a large amount of undecipherable text and many numbers – often similar but different in important ways. This causes stress, which is coped with by shutting down mental processing and going through the motions.

Financial suppliers should seek to reduce client stress during transactions by maximizing five 'human factor' components of usability (see textbox). At the heart of this effort is a retail interface design that eases document navigation and comprehension, and facilitates acquisition of financial numeracy skills.

Other design considerations should support this general thrust towards enhanced usability. For example,

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### **The Five Components of 'Human Factor' Usability**

*Guessability:* The efficiency, effectiveness and satisfaction with which oral clients encountering new products (or new features of a product they are already using) can complete a transaction.

*Learnability:* The efficiency, effectiveness and satisfaction with which oral clients can achieve competence in completing transactions.

*Experienced user performance:* The efficiency, effectiveness and satisfaction with which oral clients can conduct transactions after allowing for a reasonable period of skill acquisition

*Re-usability:* The efficiency, effectiveness and satisfaction with which oral clients can conduct transactions after a lengthy interval (months or years) away from the product.

*System potential:* The optimum level of effectiveness, efficiency and satisfaction that can be achieved with a given configuration of product and interface design.

**Source:** Jordan, Patrick W. An Introduction to Usability. London and Bristol, PA., 1998.

- aspects of the interface should not contradict each other and they should be free of interference effects;<sup>64</sup>
- design should be aesthetically pleasing to both oral and literate users;
- informal usage behavior should be studied and where it adds value, integrated into successive design iterations;
- wherever possible, the system should constrain errors -- that is it should notify users that they are about to make an error; and
- symbols, pictures, stories, colours, shapes and other design elements should steer the user in a single, consistent, integrated direction.

A good example of system potential in oral microfinance design is the shift that took place in the VSLA savings groups from ledgers to a 'pass-book only' system.<sup>65</sup> Designers made important trade-offs. Every member observes every transaction under fixed and simple rules, and cash is distributed once a year. Therefore the cost of tracking incidental expenses in a ledger, or catching small errors in real time, is deemed not to merit the risk of loss. The financial position can be easily reconstructed at any meeting from the passbooks, so group-level financial statements have been taken out.

The new system was resisted by many literate members, who kept informal 'ledgers' – feeling that more writing *must* (somehow) make the groups safer. But informal ledgers have proven ineffective: members can see and understand entries made in passbooks in real time, but entries in informal ledgers are not observed or approved by the groups.

While oralization does not require any changes in information systems or product design, it is most effective when it opens a larger analysis of both. This is because an oralized interface can improve client awareness, which can have a positive effect on institutional profiles of risk and product use. The cash flow relationships between some

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<sup>64</sup> A summary of the principles involved, which are applied throughout this paper, is contained in Lidwell et. al. (2003).

<sup>65</sup> The author has been privileged to be able to observe this transition closely, in Tanzania, Kenya, Rwanda and Tajikistan.

MFIs and their clients are rigid. Whether the product is called a 'savings account' or a 'loan' a fixed amount must be paid every week or two weeks. 'Savings' that are not paid are delinquent, and 'savings' that are overpaid are returned. Since most oral households have highly seasonal cash flow patterns, this system is poorly aligned with their needs. If oral users understand their passbooks in real time, the risks of fraud are reduced, and a more flexible and useful system can be executed around real needs.

Serving oral clients is not fundamentally different from serving any other client segment: it starts with understanding them – their needs, capabilities, incentives and behaviors. OIM tools are designed to directly address the needs of this distinctive segment, using principles that have consistently proven efficacious in serving other segments, and in facilitating other types of transactions.

Why was the challenge of oral financial inclusion not systematically addressed earlier? There are several answers:

- Oral financial inclusion involves a significant transactional governance problem that has not been systematically addressed (transaction cost economics).
- The demand for financial services – especially savings and insurance – is lowered by oral distrust of literate record-keeping systems. Distrust cuts both ways: literate practitioners do not trust oral systems either (the theory of oral culture).
- Oral skepticism also lingers in a monetizing context of behaviors and practices, in which cash is not seen as a reliable store of value, obviating much of the need for financial services entirely (behavioral finance).

Perhaps however, the best answer is offered by Don Norman, a prominent designer.

New technologies, new applications, and new methods of interaction are continually arising and evolving. New industries spring up. Each new development seems to repeat the mistakes of the earlier ones; each new field requires time before it, too, adopts the principles of good design. And each new invention of technology or interaction technique requires experimentation and study before the principles of good design can be integrated into practice. So, yes, things are getting better, but as a result, the challenges are ever present.<sup>66</sup>

Cognitive capabilities have a direct and debilitating impact on the 'integrity' of financial transactions – in particular savings – among poor populations. As with market research, human-centred design requires deep exploration of client preferences, needs and behaviors. The gravity of this problem has been observed in many situations in the modern world – such as the impact of less serious cognitive factors on navigating a web site. It is time to recognize the gravity of cognitive factors in the struggle for financial inclusion.

The next section discusses principles of OIM design drawn from the theoretical background presented here.

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<sup>66</sup> Norman (2013), p. 8.

## 2. THE PRINCIPLES OF OIM DEVELOPMENT AND DESIGN

"Because there is no culture-free behavior, there can be no culture-free competence."<sup>67</sup>  
-- John W. Berry

Effective integration of OIM tools into the retail interfaces of financial suppliers can overcome three important problems that impair the depth of financial inclusion.

1. If oral clients do not feel some level of confidence and trust at the retail interface – a level considerably higher in the case of savings and insurance than of credit or payments – they will not use the product, and will have no opportunity to understand it.
2. If oral clients do not clearly understand the opportunities embedded in the service menus offered to them, they cannot take advantage of them.
3. If oral clients do not adequately understand their rights, they cannot stand up for them or correct errors that take place in data systems that affect them.

The general principles of OIM development and design are embedded in the larger domain of principles of microfinance: that oral tools must be financially sustainable and effectively governed, that they must be designed around 'win/win' propositions that benefit institutions *by* benefiting clients, that they must be integrated into the retail interface as efficiently as possible, and that adaptations to existing systems and other supply-side investments must be designed to be as integrated and parsimonious as possible.

Other principles that are more specific to OIM tool design include the following:

1. tools must enhance client-side financial product *usability*,
2. wherever practical, tools should provide positive incentives to clients to acquire useful financial numeracy and financial literacy skills,
3. the process of tool design and application must be client-guided,
4. on a net basis OIM tools should strengthen existing control systems,
5. oral tools should not inconvenience or embarrass literate clients, and
6. OIM tools follow universal principles of design.

### 1. Usability

A financial product should be as usable as possible. A highly usable product is one that consistently generates high quality transactions. Financial product quality can be measured by observing the extent to which clients are aware of *exactly* their position at each moment during a transaction. Awareness of the progress of transactions, the size of current balances, the rights and responsibilities linked to accounts etc., are critical to a client's sense that she is in control of her financial position, and that the relationship with the microfinance institution is accomplishing goals she values.

The principle of usability primarily serves the goal of financial inclusion. More usable financial services will also advance the goal of consumer protection, and reduce the perception of risk experienced by consumers in transacting with financial service delivery agents.

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<sup>67</sup> John W. Berry. *An ecocultural perspective on the development of competence*. In Sternberg and Grigorenko (2004), p. 12.

## **2. Build Bridges to Financial Numeracy and Financial Literacy**

Many of the oral poor suffer from a lack of confidence about text because of an experience in childhood in which they spent a very brief time in school and acquired some skills, only to lose them later. This sense of failure can be reinforced by the attitudes of relatives, friends and others in the oral society surrounding them: a sense that they don't need to know writing and arithmetic in order to carry out the daily tasks of their lives, and such pursuits are impractical at best, and slightly subversive at worst. Women face a particular burden from such limiting attitudes.

Financial institutions are particularly well placed to offer positive incentives for the acquisition of basic numeracy and literacy skills – especially the former – to clients who are motivated to acquire them. By integrating images and mnemonic priming cues into operational documents, financial institutions can enable a process of learning through frequent, repetitive transacting that can create a powerful and self-reinforcing feedback loop of personal action learning.

## **3. Client-Guided Process**

The acid test for OIM tools is that they are greeted with rapid, intuitive understanding by microfinance clients. The tools presented here offer indications of what is possible, and cannot take the place of field testing with clients in diverse cultural settings, and with widely varying levels of numeracy, literacy and general education. A financial institution's product mix and marketing strategy can have a significant impact on retail presentation of oral tools.

For interested institutions the first principle of market-led operations is to consult clients on what tools work for them and what ones don't. There are numerous tools for accomplishing this goal, including:

- context of use research (ideally using video recordings),
- focus group discussions (attribute rankings, prototype review etc.), and
- structured interviews.

It is wise to test OIM tools with fully literate clients as well, to ensure that they do not cause alienation, but are viewed in broadly positive terms among all segments that will be exposed to them.

## **4. Strengthen Microfinance Control Systems**

The purpose of OIM tools is to make financial products more usable, and clients more aware of their position at each moment during a transaction. This increases client confidence in pointing out errors to staff, and if necessary, raising concerns to higher levels.

If OIM tools are successful, they will attract more illiterate clients, which will temporarily raise control risks until those clients have adapted to product use. This counsels that financial suppliers maintain a measured acquisition strategy, in which control systems are consistently strengthened, net of new client acquisitions.

## **5. Seamless Interface**

Clients who are fully literate should not be made to feel that an interface designed to accommodate oral clients is signaling to them that they are less important. When Braille was introduced to ATMs in banks, sighted clients barely noticed. Certainly, the presence of this new communications medium at the retail interface of their institution caused them neither inconvenience nor embarrassment. For some, especially those with family or friends who found the new features valuable, pride and loyalty in their institution may have increased.

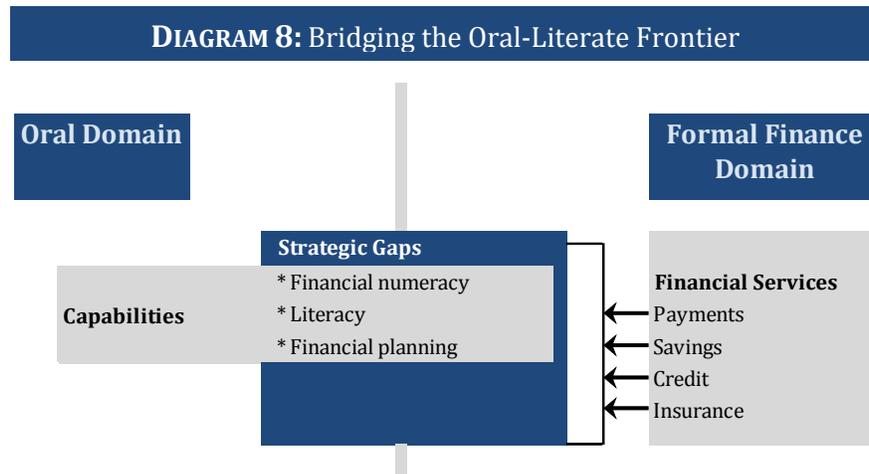
Such seamlessness is entirely possible, and is consistent with our best understanding of how oral clients learn. Much of the focus is on triggering client memory as discretely and yet clearly as possible. Combined with discrete mnemonic or iconic images and, for more ambitious financial institutions some training (much of which can take place between clients in savings groups), these interventions are expected to be effective without compromising the relationship of the institution with more literate clients.

## **6. OIM Tools Follow Universal Design Principles**

OIM tools should adhere to universal principles of good design. They should enhance the experience of oral users within a financial services delivery system, so that users can quickly grasp what they must do in any given situation, and can do it with minimal stress and discomfort.

### 3. THE OIM APPROACH

"If we all did the things we are capable of doing, we would literally astound ourselves."  
-- Thomas Edison



The core issues between oral users and any financial services interface – oral, documentary or digital -- relate to capabilities. The capabilities involved in using an oral interface such as a village moneylender or money guard, or a ROSCA, are quickly and easily acquired. Other interfaces demand more skill from users: specifically certain types of numeracy, literacy, and a deeper conceptual grasp of the logic of a cash economy and even of a financial system.

Capability issues reinforce traditional attitudes of distrust, and perpetuate them. This does not mean that people won't change – it is a clear and historical fact that they do. However, it is very difficult to address the trust issues directly. The most effective leverage for practitioners is in the field of capabilities. Communicating in a manner that oral populations can trust alleviates doubts and feelings of vulnerability, and may expand not only the use of financial services, but participation in the cash economy as well. This could transform an uneven supply-led process of expanding financial inclusion that perpetuates or even widens inequality into a faster and more balanced demand-led process, achieving deeper financial inclusion in this generation, with compounding consequences in future generations.

OIM solutions involve eight general categories of tools:

- graphic representation;
- precisely targeted numeracy training;
- mnemonics;
- repetitive learning systems;
- physical assets;
- story, image and formula;
- collective or delegated memory; and
- modern information and communications technologies.

In practice, most solutions blend tools from various categories. For example, a numeral recognition legend might involve numeracy training, graphic representation and mnemonics.

## Financial Numeracy

The state of being 'numerate' has been defined as:

... to be competent, confident, and comfortable with one's judgments on whether to use mathematics in a particular situation and if so, what mathematics to use, how to do it, what degree of accuracy is appropriate, and what the answer means in relation to the context.<sup>68</sup>

There are several numeracy skills required to use basic financial services (see **TABLE 4**). The hypothesis of the author is that the first three of these capabilities are strategic for financial inclusion: once these barriers fall the last two will pose fewer problems. Oral populations are already adding and subtracting in markets *without* the first three abilities, and as noted above, recent studies such as those among the Mundurukú in the Amazon suggest that approximation is innate in humans. Addressing points 1-3 through repetitive practice may straighten and rationalize users' 'mental number lines': a foundational change.

**Table 4: Elements of Basic Financial Numeracy**

<b>1</b>	<b>Numeral recognition</b>	This can be an absolute capacity gap, or can result from the fact that a supplier of financial services prepares numerals in one system, while clients are generally using another.
<b>2</b>	<b>Positional notation, including the role of zero</b>	It is one thing to decode the numeral '7'; another entirely to decode the number 30,700, including the positional meaning of the numeral '7' and the meanings of each zero. Even if clients can recognize numerals, they won't be able to write the amount of their cash deposit or repayment in numbers on a transaction slip without understanding positional notation.
<b>3</b>	<b>Syntax of rows and columns</b>	The syntax of rows and columns that underpins passbook mechanics (and in mobile banking, transaction records and balance up-dates). Clients need this skill to confidently find records of specific transactions, interpret their meaning, and cross-check running totals.
<b>4</b>	<b>Basic adding and subtracting</b>	Clients need this skill to align their transaction activity with their goals, and check for errors in their transaction records.
<b>5</b>	<b>Approximation</b>	In order to cope with a page filled with 3-, 4- and 5-digit numbers, we navigate to ones that we consider important and compare their relative sizes. To avoid unwieldy comparisons, we round multi-digit numbers to a convenient size. If we did not do this, we would be unable to extract most of the meaning. We do the same when we estimate the cost of a loan or our interest income from saving for a period of time.

In the author's view, based on widespread personal observation, there may be hundreds of millions of adult women and men in Asia and Africa who are not sufficiently conversant with base-10 notation to understand the meaning of a 6-, a 4- or even a 3-

<sup>68</sup> Coben, D. (2000b). Introduction to section 1: Perspectives on research on adults learning. In D. Coben, J. O'Donoghue, & G. E. Fitzsimons (Eds.), *Perspectives on adults learning mathematics: research and practice* (pp. 47-51). Dordrecht, the Netherlands: Kluwer Academic Publishers.

digit number if it is presented to them on a loan contract, a cash receipt or a passbook. As noted above, due to national currencies that often trade at hundreds or even thousands to a dollar, oral individuals may be required to manipulate much larger numbers in their financial accounts than (for example) literate Americans or Europeans.

To understand the meaning of a number is to be able to identify its value relative to other numbers, and to perform basic manipulations with it. If a savings account user with a balance of 3,400 *rupees* makes a deposit and receives an up-dated balance of 3,500, she – first of all – must know that the new balance is *larger* than the previous one. Secondly, she must know that the difference is + 100, and match this with the value of her deposit. If she is charged 22,500 *riels* for rice and vegetables in the market and she gives the vendor 25,000, the vendor will probably show her a calculator and perform a calculation on it: 25,000 minus 22,500 equals 2,500. He may punch in the numbers quickly and take her consent for granted. If he punched in 25,000 minus 23,500 equals 1,500 she must be able to follow along and correct the error. For oral adults, numeracy means real-time awareness in situations like this.

To understand the meaning of a number it is essential to understand the role of zero. For example an unschooled but intelligent person would not automatically assume that 3,500 is larger than 390, even if she knew that 3,500 was larger than 3,400 and even if she understood the primary numerals.

While the ability to decode base-10 notation is not the only capabilities-based barrier to the microfinance interface that has the potential to impact behavior and trust, it is a very important one that clearly impacts both. Successfully supporting the acquisition of base-10 capabilities among oral populations may not be a sufficient for full financial inclusion, but it is undoubtedly an essential – and likely a very high impact – intervention.

### *Numeral Recognition*

Numeral recognition involves three parts: small, median and larger Indo-Arabic numerals (see **TABLE 5**).

The capability challenge at the retail interface can result from simple lack of education, or from a mismatch between an indigenous number system and the system used by a

**Table 5: Numeral Recognition**

<b>Problem</b>	<b>Examples</b>	<b>Solutions</b>
Client can't recognize or reproduce small Indo-Arabic numerals ( $\leq 9$ )	Date (month), # of remaining installments, etc. <ul style="list-style-type: none"> <li>this is elemental and compounds all later problems</li> </ul>	Finger icon- or tally-based legend in passbook, link tallies to numerals
Client can't recognize or reproduce median Indo-Arabic numerals (10-100)	Client's age, date (day), total # of installments, interest charges and credits, small deposits, etc.	Link tallies to numerals, format passbook for positional notional
Client can't recognize or reproduce larger Indo-Arabic numerals ( $>100$ )	Installment amounts, loan amounts, balances, savings etc.	Require client to write key items in passbook, format passbook for positional notation

financial institution. The latter problem compounds the former, and is common in settings where several language groups co-exist, and retail financial documents may be presented in one number system only. It has a disproportionately large impact on aboriginal and tribal populations.

When oral populations cannot recognize or reproduce small Indo-Arabic numerals, financial services suppliers should integrate a legend such as that in **APPENDIX 1.1** into their passbooks, cash receipts and related documents. Tallies can be used instead, as they are equally recognizable. ‘Pegword’ mnemonics can also be used: locally memorable images that resemble the shapes of the digits (see **APPENDIX 1.2**). These provide their users with the mental ‘scaffolding’ to consolidate numeral recognition, especially if accompanied by a period of repetitive financial transacting.

### *Positional Notation*

Finger-counting<sup>69</sup> is practiced and recognized by everyone in most oral cultures. Among the ancient Egyptians, Mayans and Chinese, and among many oral cultures today, there are local variations of finger-counting that are universally understood and used. These systems can be integrated into documents using visual icons to support quick understanding.

Zaslavsky traces the emergence of ‘fingermath’ or *chisanbop*<sup>70</sup> -- a simple and elegant method of counting from 0-99 using only ten fingers – from the Japanese abacus.<sup>71</sup> The abacus, like the ‘counting boards’ used in commerce in ancient Rome, is structured to visually embody positional notation, since the rods – which reference place-holders -- are arrayed from left to right, mimicking conventional numeral strings. Not only can such methods be learned quickly with little formal education, they also offer many good examples of visual addition and subtraction, which supports a rapid induction to basic arithmetic. In group-based service delivery contexts, such as savings groups and solidarity groups, knowledge can be transmitted from more advanced individuals to less advanced ones, using tools like the fingermath guide in **APPENDIX 1.3**.

For larger numbers, acquisition of skills can be supported through the use of positional notation guides, such as the one in **APPENDIX 1.4**.<sup>72</sup> The right-hand column shows local currency units, which are generally recognized by illiterate users of cash, often due to differentiations in size, colour or shape.<sup>73</sup> When these are combined with the tallies in the centre of the diagram – also recognized by illiterate users – they produce modern numeral strings such as those appearing in users’ passbooks or loan contracts. In highly oral settings the notes and coins are often vernacularly referenced by the picture on

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<sup>69</sup> Including variants like finger-joint counting, widespread in South Asia.

<sup>70</sup> Lieberthal, Edwin M. and Bernadette Lieberthal (1979). [The Complete Book of Fingermath](#). McGraw-Hill Book Company, New York. Pai, Hang Young (1981). [The Complete Book of Chisanbop: Original Finger Calculation Method Created by Sung Jin Pai and Hang Young Pai](#). Van Nostrand Reinhold.

<sup>71</sup> Zaslavsky (1993), p. 18.

<sup>72</sup> Designed by the author for SafeSave’s rural replication, Shohoz Shonchoy in Dec, 2012. The words and numbers in the original appear in Bangla. Thanks to Stuart Rutherford at SafeSave for his support.

<sup>73</sup> Rezwana Razack, chairman of the Indian chapter of the International Bank Notes Society, recently told that BBC that Indian banknotes are designed in various colours and sizes partly to help the nation’s nearly-300 million illiterate users, who “relate to colour and size to determine the denomination.”

them, such as the 'copra man' in the \$100 note in the Solomon Islands. In such cases the picture (of the 'copra man', not of the note) is sufficient.

The inside flaps of passbooks are often not well utilized, and there is often little cost to integrating finger-counting legends or positional notation guides into them.

### *Syntax of Rows and Columns*

For oral clients, the syntax of rows and columns is first and foremost a navigational problem. Because they learned this either superficially or not at all in school, they cannot find their transactions. For example, if they are asked to locate the record for the last deposit they made, or their last loan repayment, they may be unable to find it. When this problem is combined with inability to decode base-10, and time-pressure to complete a transaction, the result may be complete mental over-load.

For this reason, the author has designed passbook navigation images, such as those in **APPENDIX 1.5**.<sup>74</sup> These images cannot be 'icons' or abstractions – they must be readily understood by users. Those in the diagram were tested with focus groups of members of an agricultural cooperative that delivers savings and loan products in the village of Kampong Os, Cambodia.

A few points about this diagram:

- dates appear numerically (no alpha-text) with day (sun) appearing before month (moon) – for example 30/12/2010;
- the withdrawal image is a mnemonic device -- withdrawals among oral villagers in Cambodia are most commonly associated with the withdrawal of rice from household stocks between harvests;
- the 'interest' image is a different type of mnemonic designed to handle abstract concepts – the Khmer word for interest is 'pka', while the word for flower is 'ka'; and
- to alleviate the large number problem (the Khmer *riel* trades at about 4,000: 1 \$US), the last two digits are zeroed out, and staff are instructed to round down for sums below 50, and round up for sums of 50 or greater.

Abstraction must be culturally specific. At right is another image depicting 'interest', from the Solomon Islands. It shows a coconut palm tree that is yielding bags of copra, a local commercial product.



It is also possible to use supplementary teaching tools (e.g. **APPENDIX 1.6**) that help users to understand the relationships between the elements in the passbook page.

Financial suppliers that introduce navigational aids for passbooks should ask themselves if they want oral clients to learn how to up-date their balances by themselves. Such up-dates can be supervised and if inaccurate over-ridden by staff. However, once oral clients can up-date their balances, they have learned a valuable life-skill, and both they and the institution are less vulnerable to error and fraud.

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<sup>74</sup> Designed by the author for the Kampong Os Agricultural Cooperative in Aug, 2010. The words and numbers in the original appear in Khmer. Thanks to Vong Sarinda of the Cooperative Association of Cambodia for his support.

While innumeracy limits the use of cash-based financial services, this limitation is less formidable than illiteracy. Opportunities to substitute numbers for text – for example in a date or in numbering key points in a document – should be found and exploited.

## Literacy

It is not practical for a financial institution to teach its clients' literacy; nor is it necessary. However clients should be

- able to verify that any reference to themselves or the 'know your client' data in a document is correct;
- aware of the exact size and timing of expected future cash flows;
- able to identify and correct an error in a passbook or receipt;
- aware of the price they are paying for the service; and
- aware of their rights as consumers.

### *Client Identity*

Some financial suppliers teach clients how to write their names, and more should do this. Once a client can consistently recognize the letters of his own name, she can begin recognizing other words that have some of the same letters, if he wishes.

Clients must refer to themselves at various points in operational documents, including account opening forms, loan contracts, etc. For example:

"By signing below, I \_\_\_\_\_ agree to pay XYZ ..."

"Applicant's signature: \_\_\_\_\_"

etc.

In some cases, clients are not referring to themselves; a staff person may be filling in a form that the client must later sign. The client should be able to find and recognize her name in the section that reads:

"Name \_\_\_\_\_"

In most languages the words 'I' and 'Name' are neither long nor complex. They can be highlighted and emphasized, for example by using images or graphics emphasis.

Thumbprints are problematic partly because it is difficult to verify them/match them with a record on file. There may be smudges, or variations in the consistency of the ink, or unreadable angles of capture. One of the common forms of microfinance fraud is the 'ghost loan', in which a credit officer or manager prepares a loan application in the name of a villager and then pockets the money. After working in a community for a while, the staff know who is literate and who is not. If they are tempted to commit fraud, the 'thumbprint' client is the obvious 'mark'.

### *Dates*

Hand-written dates on all documents should use a consistent standard composed of numbers only (for example, 31-04-12 or 04/31/12, etc). See **APPENDIX 1.7**. The numbers can be accompanied by the name of the month written in text. This approach offers standardization and a conceptual bridge from the number of a month to the alphabetic name of the month, for those who can interpret it.

Simple depictions of the sun and the moon can represent days and months respectively. For example, a numerical date could then be superimposed above them, so the client will know exactly which numbers refer to the day, which to the month, and which to the year.

### *Words and Documents*

Staff should learn to recognize all abstractions, and in their engagements with clients should master the art of presenting concrete associations between *all* important abstractions and the real world.

Financial services suppliers should keep the words in the text of retail documents as brief, concrete and phonetically regular as possible, so that clients who wish to decode them can do so easily. Many abstractions have concrete analogues, but these are not always obvious. For example, in some traditional cultures the word 'balance' can be grasped through association with 'equinox' – the time when day and night are exactly balanced. If clients can recognize a few words that they know are important, this may empower them to learn other ones as well.

In **APPENDIX 1.8** is a list of exemplary words that can act as a 'learning magnet' if they are highlighted in retail financial documents, easily identified and backed up with mnemonic images or other cues.

For example, these words may appear in block capital letters, be highlighted in bold, be set off slightly from surrounding text, or appear in graphically distinct sector of the document. Because most of them appear in other documents clients will see them repeatedly, further aiding retention.

If the first letters are highlighted more than other letters, clients can use them as memory aids. For example, once they have seen the shape of the 'a' in "address" or the 'b' in balance several times, they will associate the sound with the letter and may be able to retrieve the sound when they see the letter in future.

Like passbooks, documents can present many navigational problems for oral users, but the reasons are different, and so are the solutions. The first lines of a loan contract illustrate this in **APPENDIX 1.9**. Oral users need 'safe harbours' in what appear to be vast oceans of indecipherable text. There are several ways of providing such harbours:

- numbers can be clearly set off and highlighted (see **APPENDIX 1.10**);
- mnemonic images can accompany critical text, such as user-identity, collateral, expected cash flows, etc.;
- sectors can be visibly differentiated (e.g. in adjacent boxes) with spatial cues that suggest the topic of the sector; and

- points can be numbered, so that there are numerical references in each section.

### *Expected Future Cash Flows*

Retail financial documents include many references to cash flows; for example: loan disbursements, loan payments, amortization payments, deposits, withdrawals, transfers, etc. If financial service delivery requires us, in Ong's words, to force "the future into the present with an overpowering explicitness" unknown to oral people, we should try to execute this heavy-lifting in a manner that is comfortably understandable.

The only elements required to fully and clearly represent any cash flow are:

- the logo or a pictogram of the financial delivery organization;
- an arrow depicting whether the payment is to the organization, or from it;
- the amount of the payment; and
- the date.

Financial suppliers can include simple graphic representations of (for example) loan disbursements and repayments, in which cash passes to or from them. These can then be included beside text in demand promissory notes, in passbooks, and in other useful locations. The source of payments can be indicated by designing a pictogram representing the generic client (see right) and teaching all clients its meaning.



### *Double-Entry (Retail Documents)*

When a banked individual writes a cheque, he must write its total value in both numbers and text. This is one of many transaction values for which bank regulations require 'double-entry' on retail forms. Regulators (or banks) want to ensure that both transactors are clear about the total value that is being exchanged.

In microfinance there are various instances of double entry in retail documents. Examples include the total value of a loan, or the value of a loan repayment appearing on a voucher.

In conducting retail financial operations with oral clients, it would be useful to translate 'double-entry' into a code they can interpret. A good option may be to permit illiterate transactors to prepare double-entries using numbers and tallies (see **APPENDIX 1.11**). Tallies, if managed properly through the procedures of financial institutions, form a natural bridge to positional notation. The client completes the right-hand column using tallies, and the entry is stamped. If able, she also writes the number in the box below. The third entry (in words) need not appear; it would be used only by literate clients. In the case of illiterate clients the critical match must be between tallies and numbers.

Many illiterate clients may be able to complete this system without help, but others may require support. The support required however, is strategically targeted: it involves teaching the basics of positional notation. This may take a morning. If the client wants to learn and transacts repetitively in subsequent months, the learning will consolidate.

### *Financial Language*

Many finance and banking terms have evolved in the English language ('balance', 'account', 'interest rate' etc.) that may appear simple to a schooled person, but can create considerable problems for others. Senior managers may know that clients don't always understand them, but may still use them in communicating with employees. They may also agree that many could be banned in communication with clients, without adverse consequences. However, they may feel that others should be learned by their clients, and messaging may not be consistent. Staff training sometimes addresses this problem, and MFI executives are right to assume that many staff will simplify and concretize their language. But forms and documents are the most telling sign of the true posture of MFIs. And they remain decidedly opaque.

In centralized financial institutions, the verbal communication of staff with oral clients can be governed more carefully, for example by providing staff not just with a standard 'script' for typical client interactions, but with a repertoire of stories that they are expected to tell and images they are expected to convey. The use of this repertoire by staff can then be monitored for quality, and best practices rewarded.

### **Financial Planning**

Among oral populations the time-value of money may not be easily entrenched. It may first be necessary to prove that cash can be a reliable store of value, otherwise its time-value will remain dubious. This involves inculcating practices that prove to clients they can accumulate substantial sums safely, using a time-bound planning approach.

Financial services suppliers can prepare calendars for their clients, linking the abstract cycle of dates with agricultural cycles, markets and natural cycles like water levels and birthing. Loan repayment dates can then be added directly to the client's calendar, where he can see visually and graphically the link between payment dates and the events driving household income.

Staff should emphasize to their clients, in a supportive way and before the loan is disbursed, that the payment must take place at that time, in spite of foreseeable difficulties in repayment. This will help clients to be ready when the time comes. A calendar-based cash planning tool appears in **APPENDIX 1.12**. This type of tool can support either business-planning during a loan underwriting, or the development of savings plans by households.

Purpose-based saving addresses the time-value challenge directly. It does not teach poor people to save. Rather, it shows them how *cash* can be a practical savings tool and a practical store of value -- and how cash may help them achieve savings goals that in-kind instruments cannot, such as paying school fees, or buying land, equipment or consumer durables. Purpose-based saving should permit each user to tailor his savings plan to his time-schedule and needs. Individual savings plans must require *commitment*, such as is possible in a savings or solidarity group that meets every week or two. Members who have made commitments in front of the whole group to save a stated amount for a stated purpose over a stated length of time are more likely to succeed.

Because purpose-based saving is directly linked to a person's goals, and she can see the time and money implications and act them out in practice, it builds for her a working model of time-value of money. Obviously it is important that the organization with which she is saving keep its promises and redeem her funds when they come due.

An example of a purpose-based savings contract, designed for savings clubs in the Solomon Islands, appears in **APPENDIX 1.13**.

## 4. OBJECTIONS

Some objections can be raised to an oral tools approach. Following are some key ones, followed by the response.

### 1. Financial Sustainability

Any serious attempt to support the development of literacy and numeracy by our clients is not our work. It will involve more training and more staff time – in other words, more costs – than the status quo. It will damage our financial sustainability.

*Response:*

The OIM approach is still in the research stages and has not been costed. However, the approach is designed to keep overall costs per client stable while expanding product use. For financial suppliers that are strategically committed to this market it can also offer substantial social impact at a nominal cost because it offers a social mission – building client numeracy skills – that is uniquely tailored to their core strengths and capabilities. The approach can be tailored to their retail interface, operational systems, client base and product mix.

### 2. Complexity of Financial Services

Even assuming that an ‘oral tools’ strategy is possible, it would be completely impractical. Financial services are heavily text-based for a reason: there is a lot of content in loan contracts, application forms and even smaller documents like receipts and deposit slips that must be included for legal reasons as well as to ensure transparency in dealings with literate clients. Are microfinance suppliers to restrict their product design to features that illiterate clients can understand without text? That is not only impractical, it is absurd.

*Response:*

It is not essential that illiterate clients be aware of every nuance in a contract, any more than literate clients necessarily choose to read such details. Certain information is very important, however. For example, clients should

- be able to verify that any reference to themselves, to the ‘know your client’ data etc. in a document is correct;
- be aware of the exact size and timing of expected future cash flows;
- be aware of the price they are paying for the service;
- be aware of their rights as consumers; and
- be able to identify and correct an error in a passbook or receipt.

It is neither impractical nor absurd to attempt to design a system that guarantees the effective flow of this type of information.

### 3. OIM Tools are Overkill

In every consumer products industry, including microfinance, some people adopt the product early and some take longer. Once voluntary savings are introduced literate people may be among the early adopters. But illiterate and innumerate people will learn from them, and will pick this up over time. There’s no need for the supply side to do anything.

*Response:*

Oral culture is different from literate culture. In a literate context such as a bank, illiteracy is a disability because it impairs basic understanding of transaction processes. Illiterate clients must either give up confidentiality or become dependent on literates to gain access, or they must invest trust in processes and transactions they can neither see nor understand. The argument is analogous, in some ways, to suggesting that there is no need to accommodate the needs of blind people in banking. Yet banks have recognized the need for this, and ATM machines usually have Braille on their touch pads.

#### **4. OIM Tools Introduce New Control Risks**

In many cases, you ask that information be presented to our clients in two notations (e.g., when tallies or finger icons accompany numbers). This creates new potential for staff error, and situations in which the two notations disagree.

*Response:*

This is true, but it may be a good thing. Banks use this type of dual notation on cheques and deposit slips, by requiring that payments be entered in both numbers and words. This reduces the risk of an error, since either the client or the bank official can see any discrepancy and correct it.

#### **5. OIM Tools Are Not Aligned with the Incentives of the Financially Excluded**

The financially excluded are generally not active participants in the cash economy, so they have little or no incentive to acquire financial numeracy skills, or the skills required to read passbooks or account statements. Once they become active participants in the cash economy, they will have the reasons and the determination to acquire these skills, whether we help them to do it or not. Hundreds of millions of people have done this already, and no one needs help to do it.

*Response:*

In fact, OIM tools are very well aligned with the incentives of the financially excluded. Villagers begin to enter the cash economy as soon as their villages start to monetize. Any villager in a monetizing village needs cash sometimes: for example for schooling, medicine or a water pump. Life-cycle events can involve substantial and increasingly mandatory cash outlays. Many villagers have strong incentives to acquire financial numeracy skills, and the skills to read passbooks or account statements. But financial services suppliers have avoided this vulnerable segment and the key financial service it requires -- safe, flexible savings -- due to high transaction costs. People do cross this threshold without our help -- by leaving the villages and over-crowding the urban slums. But that is neither good development nor a solution for those left behind.

#### **6. OIM Tools Will Perpetuate Innumeracy and Illiteracy.**

Suppliers of microfinance services that make it easy for oral clients to understand loan documents, passbooks, posters and so on, without reading them; are giving them an excuse for not learning to read and write -- even an incentive not to learn.

*Response:*

Clients always have an incentive to understand the microfinance interface, but this incentive is especially concentrated on grasping the flow of transactions within savings products, which have been underplayed in many suppliers. While it is tempting to believe that, over time, oral clients grasp the microfinance interface, the evidence suggests otherwise. A more typical response appears to be adaptation without comprehension, or even self-selection out of microfinance. The distance between oral capabilities and the text/number-based interface used at the retail interface appears too wide from the outset, overwhelming the natural incentive to learn.

Much of the purpose of this initiative is to dissolve this sense of distance, awakening in clients a hope that indeed they can become more literate and numerate by devoting a realistic amount of personal time and resources to the task.

## **7. Oral Populations do not Exclude Themselves from Microfinance**

This is a solution in search of a problem. Many illiterate and innumerate individuals use microfinance services, as evidenced by the thumbprints on so many loan contracts and passbooks. Furthermore, the task of microfinance is to provide access; if some people are too lazy or unmotivated to take advantage of it; that is their problem alone.

*Response:*

Whether there is, or is not, a self-exclusion problem in microfinance is an empirical question that can only be resolved using empirical methods. There are many circumstantial indicators, including the oral methods in general use in informal finance, the failure of microsavings during the past four decades, and the poor penetration of microfinance in rural areas, which are overwhelmingly oral.

Some of those who exclude themselves may be lazy or unmotivated, but the barriers to usability outlined here are large. The most important barrier involves lack of trust. While this is demotivating, it cannot be attributed to laziness, and removing or alleviating it would likely bring many hard-working and energetic poor people into the financial sector.

## 5. RECOMMENDATIONS FOR DONORS AND PRACTITIONERS

### Donors

#### *Proof of Concept*

A representative selection of the very wide range of potential oral information management (OIM) tools should be systematically tested, in differing retail and cultural settings, in order to establish proof-of-concept. Not all will succeed, but some – possibly hundreds or thousands -- will. The goal is to build an inventory of proven solutions that can be systematically configured to address unique local problems world-wide.

#### *Oral Numeracy*

There is a need for deeper research into how the oral mind relates to numbers. We must understand the varieties of oral numeracies, the impact of livelihoods, and adaptations to cash, markets and changing livelihoods. This will permit systematic mapping of oral numeracy assets, and design of strategies for leveraging those assets to build critical skills.

#### *Proving the Business Case*

Invest in systematic and controlled pilots with different types of financial suppliers in different contexts to assess the potential for roll-out and scale-up of OIM solutions. Do a detailed analysis of the business case and determine what types of institutional and contextual conditions predict success.

#### *Numeracy Games*

Invest in the design and development of numeracy games for oral adults that can be played on tablets or smart phones. These should facilitate direct transfer of skills from the game environment to targeted retail contexts, both real and digital.

### Practitioners

#### *Strategic Clarity*

Decide if the oral segment is strategic for your practice. If so, secure board approval and commit to understanding oral culture, attitudes, behaviors and capabilities.

#### *Retail Interface Diagnostic*

If you deliver financial services to an oral segment, analyze how it uses and relates to your retail tangibles. Is the interaction effective and comfortable, or are there important challenges? If there are challenges, how can they be resolved?

#### *OIM Solutions*

Test OIM solutions across the retail interface and across all documents and software that form part of client transactions. Test the development of oralized passbooks (using prototyping and focus groups) and assess the ability of oral users to learn to up-date their passbooks over time.

#### *Follow-Up*

Track the performance of the oralized interface in terms of client acquisition, client product use, and the overall profile of control risks and product use. Consider changes to control systems and product/feature design.

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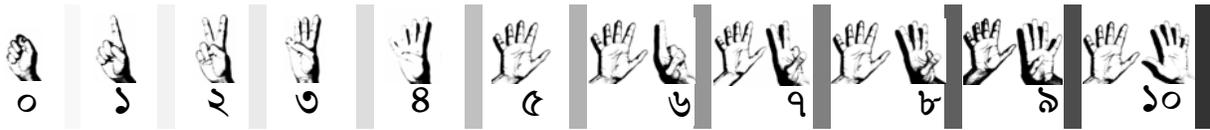
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## APPENDIX: OIM TOOL GALLERY

### I.1

#### Numerical Recognition Legend (for bottom of passbook), Bangladesh



Finger-counting and tallying are universally known systems for recording numbers. Where large segments of the population do not recognize the numeral system use in financial accounts, a recognition legend such as this can be added. It should reflect local variations in finger-counting and tallying systems.

## 1.2

### Training resource (pegword mnemonics) for learning Indo-Arabic numerals

0	1	2	3	4	5	6	7	8	9
an orange	a knife	a chicken	horns of a pair of yoked oxen	edge of a roof	bicycle rack	baby elephant with trunk raised	bicycle seat	woman with bag of rice on head	mobile phone
very sweet and juicy!	sharp steel; can stab and pick up a bun	calling at 5 a.m., full of energy!	pointed, they glisten in the sun after the rain	just painted, bright green!	can carry five baskets of fish	excited, exploring a new world	strong but squeezable	feel of the burden, sense of balance walking	ringtone; feel of the keys

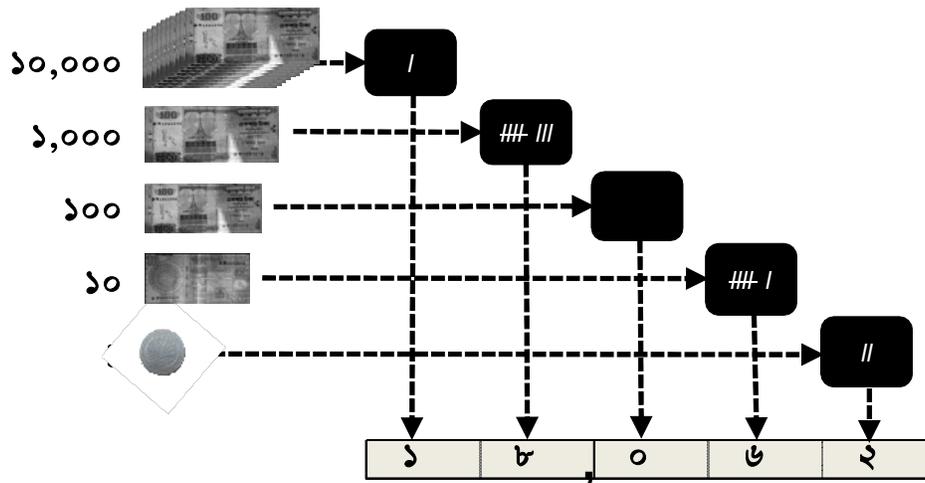
Pegwords link familiar objects to a target to be learned, such as numerals. Learners can then memorize the link between the object and the number, recalling the correct number from the shape of the object. To further aid recall objects can be associated with memorable images, such as a bicycle rack with five baskets of fish piled on it. The bicycle rack recalls the shape of the '5', while the image helps to recall the value.



## 1.4

### Positional notation guide (back flap of passbook), Bangladesh, 2012

*Prepared for 'Shohoz Shonchoy', the rural replication of SafeSave.*



Positional notation may be the single biggest financial numeracy gap among economically active poor people. The right side of this notation guide includes two components they can recognize: images of notes and coins (that they use in the markets) and tallies. These are then fused and result shown at the bottom in positional notation. A blank notation is also included in the passbook as a client worksheet.

## 1.5

### Passbook navigation images (English version) with numeral recognition legend, Cambodia, 2010

*Prepared for the Co-operative Association of Cambodia.*

Date	Deposit	Withdrawal	Interest	Balance	Signed
					
	0 0	0 0	0 0	0 0	
	0 0	0 0	0 0	0 0	

										
0	1	2	3	4	5	6	7	8	9	10

Updates in passbooks are by hand, and the literate record-keepers often do not align their numbers, further confusing users who are already struggling with numeracy. Because there are 4,000 *riels* to one \$US, the last two digits are 'zeroed' out to keep the numbers simple (and the transactions material).

Saving of cash in Cambodia is often done by inserting coins or bills into clay 'piggy banks'. Another way to save involves storing sacks of rice after the harvest. Rice is gradually 'withdrawn' again in the months leading up to the next one. The Khmer word for interest – an abstract concept -- is 'pka' while flower is 'ka'.

## 1.6

### Prototype Training Resource, Place Mnemonics

The purpose of this memory aid is to have clients recall exactly what information appears in each row and each column of their passbook, and consequently the meaning of the numbers in the various cells. This mnemonic can be taught by staff, group leaders or clients. The setting imagined by the client may be any they choose and can easily recall: for example their house, the local temple, an area in the village, etc. Here the client walks from area to area within her house.

**Area 1:** front door (left column of passbook -- dates)

Suns and moons circle very quickly near the entrance. Night and day pass each other so quickly that your skin tingles with the rapid change in temperature. The plants and the calves are growing in front of your eyes. A greying but attractive farm woman is sitting cheerfully in front of your house, writing quickly at a little desk. As you enter your front door she checks the sun first and writes a number, then the moon, and writes another, and finally she writes the year.

**Area 2:** sitting area for visitors (column 2 of passbook – deposits)

You find a round clay pot about 4 feet high in the middle of the sitting area. It is closed, but you can read a number incised in the clay on the top. When she sees you, a serious looking girl with golden eyes and silver hair, dressed in a blue uniform, waves her hands across the top of the pot, and it opens. You look in and can count the coins and notes lying inside. The amount is the same as the incised number. You want to save that day, so you drop in some money. With a pen-shaped knife she inscribes the amount you deposited on the side of the pot. Unexpectedly, the pot changes into an ox; it is strong and you can hear it lift itself to its feet. But you feel happy in its presence, with no fear or disgust – it is gentle, clean and without odour. It walks into the sleeping area.

**Area 3:** sleeping area (column 3 of the passbook – withdrawals)

The wonderful ox stops in the middle of the sleeping area and again changes into a pot. You remember you need some money to buy matches and salt tomorrow, so you take some coins out. The golden-eyed child has been following; she scratches the amount of the withdrawal with her pen-knife in the side of the pot. The pot transforms again – this time into an eagle. Again you feel happy in the presence of this magnificent bird, and you follow its flight into the next room.

**Area 4:** washing area (column 4 of the passbook – interest credits)

A big, unfamiliar machine with many moving parts is taking up much of the washing area. The eagle lands beside it, and changes back into a pot. The machine is banging and whirring and calculating something. Suddenly, some coins roll out and drop into the pot. You recall that the more money you have in the pot, the more coins you can expect to fall in. The golden-eyed girl is again in the room, incising the deposit amount on the side of the pot. The pot changes into a lion and bounds away, towards the cooking area.

**Area 5:** cooking area (column 5 of the passbook – balance)

The lion stops in the middle of the cooking area. Another girl dressed in blue is waiting in this room, and puts her arm around the lion. Then, he transforms into a pot. She takes all the money out of the pot and counts it with you. When you agree, you return the money to the pot together and she waves her hand over it, closing it tight like it was when you first saw it. The number incised on the top appears again. She has a calculator, and she uses it to sum all the new writing on the side, by adding the deposits and subtracting the withdrawals. Then, she adds the result to the number on the top and asks you if the total is the same as your count. If you agree, she scratches the new number on the top, where you will find it next time you visit.

**Area 6:** vegetable garden (rights of clients)

When you step into the vegetable garden, you see a woman putting money in her pot. But the child in blue is confused, and she is writing the wrong amount on the side. The woman explains patiently to the child and the child understands, and corrects her work.

## 1.7 Generic Date Mnemonic



Whenever possible, dates should include numbers (not just written words) and if there is any risk of confusion about their order of appearance, it can be made explicit with images. The images above show that the date sequence is day-month-year (not month-day-year).

## 1.8 A Generic List of Key Retail Words

<b>I</b>	<b>N</b> AME	<b>Y</b> OU	<b>A</b> DDRESS	<b>D</b> ATE
<b>Y</b> ES	<b>C</b> OLLATERAL	<b>L</b> OAN	<b>D</b> EPOSIT	<b>W</b> ITHDRAWAL
<b>B</b> ALANCE	<b>A</b> MOUNT	<b>P</b> AYMENT	<b>L</b> AND	<b>I</b> NCOME

This list of words can be emphasized in all documents, highlighting the first letter so that clients can find it, recognize it, and form a mental bridge to recalling the letter. Utilizing these bridges is up to client. The financial supplier could give materials to adult literacy programs as a good will gesture or as part of a marketing initiative.

## 1.9

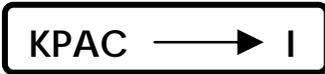
### First Lines of Loan Contract, Cambodia (English translation), 2010. Prepared for the Co-operative Association of Cambodia.

1. **N**ame \_\_\_\_\_ Age \_\_\_\_ **S**pouse **N**ame \_\_\_\_\_ Age \_\_\_\_

2. Nationality \_\_\_\_\_ **A**ddress (Village) \_\_\_\_\_

Commune \_\_\_\_\_ District \_\_\_\_\_ Prov. \_\_\_\_\_

Amount in Tallies	
1,000,000s	
100,000s	
10,000s	
1,000s	

3. **I** take **L**oan from **KPAC**  principal  
of

(Rs) \_\_\_\_\_, **000**s [in words] \_\_\_\_\_

4. **P**urpose of  \_\_\_\_\_

The amount in tallies is recorded on the right, and the first letters of each key financial word (in Khmer) are highlighted.

The Cambodian riel trades at approximately 4,000 to one \$US, so a loan of over \$250 > 1 m *riels*. For example a loan of 840,000 *riels* would have eight tallies in the 100,000s row (++++ | | |) and four tallies in the 10,000s row.

## I.10

### Prototype Savings Withdrawal Receipt, (Bangla version), Bangladesh, 2012 Prepared for 'Shohoz Shonchoy', the rural replication of SafeSave.

সহজ সঞ্চয় সমবায় সমিতি লি.  
**EASY SAVINGS Co-operative Ltd**  
কাপাসিয়া, গাজীপুর, ঢাকা  
নিবন্ধন নং: ০৪

**টাকা উত্তোলনের স্লিপ**

নং \_\_\_\_\_ তারিখ \_\_\_\_\_ | \_\_\_\_\_ | ২০ \_\_\_\_\_

নাম \_\_\_\_\_

হিসাব নং \_\_\_\_\_

আমি সহজ সঞ্চয় থেকে নগদ নেই

 →  আসল টাকা 

২	৩	০	৩	০
---	---	---	---	---

Client may complete (based on capabilities)

One of the most common sources of fraud in microfinance results from the inability of clients to recognize the number on a cash receipt during a loan disbursement or a savings withdrawal. Unable to read, the client may not be able to differentiate this number from other numbers on the form. The Shohoz Shonchoy receipts included a date, a member ID number, a member account number and the actual cash amount of the disbursement, which was often a lumpy savings withdrawal. The purpose of the revised form is

1. to ensure that the client can *confidently find* the amount she is receiving on the receipt; and
2. to support decoding of multi-digit numbers (by utilizing the financial numeracy tools in her passbook).

Shohoz Shonchoy is then able (if it wishes) to build the capacity of clients to *enter this number themselves*.

## I.II

### Example of Oral Double-Entry, 'Bread-board', 2010

I take Loan from MFA

MFA → I

Amount in Tallies	
1,000,000s	
100,000s	### ///
10,000s	###
1,000s	

Principal of (Rs) 850 000s [In words] *Eight hundred & fifty thousand*

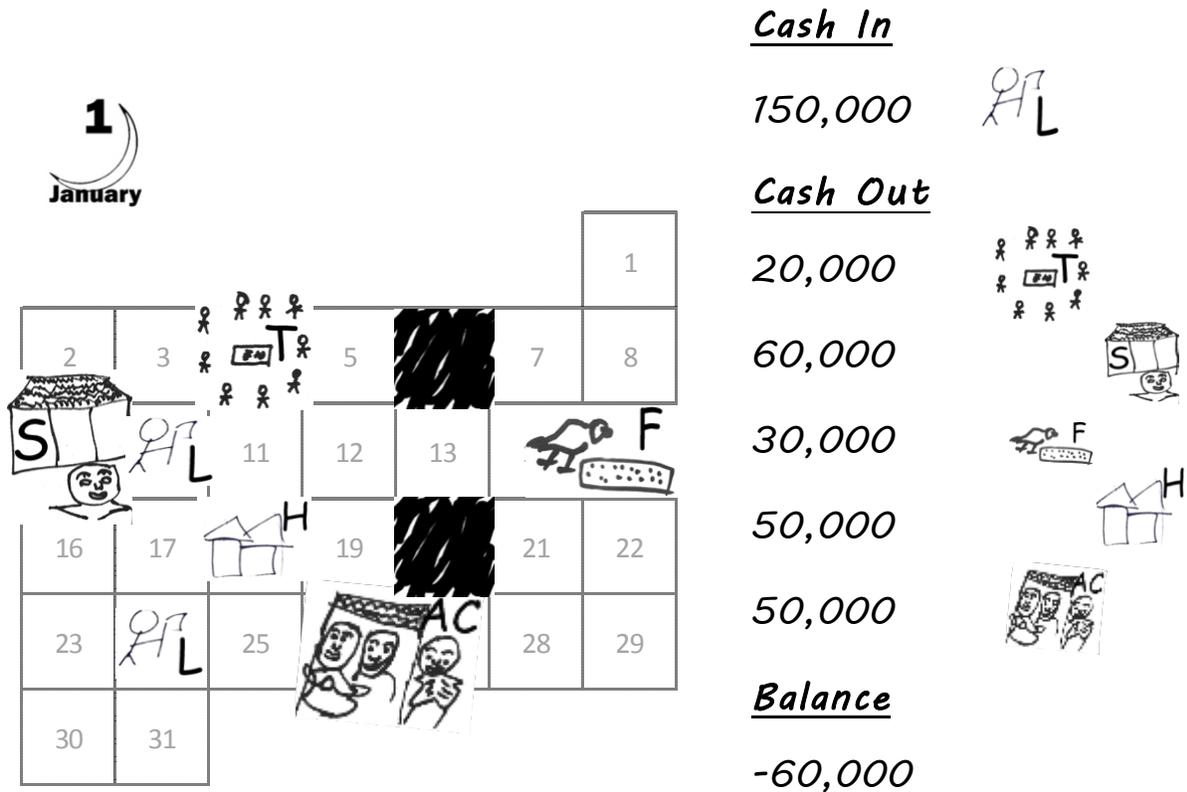
Client must complete  
 Client may complete (based on capabilities)

Commercial banks require that cheques be written in numbers and in words. The two have to match, or the cheque is not valid. Is it possible to provide the protection of a 'double-entry' system to users who cannot write? This cash receipt includes entries in numbers and in tallies. The empty spaces are then stamped or crossed out, to prevent over-writing. Both literate and illiterate clients may use this; the literate ones can use numbers and words.

## I.12

### Calendar-based cash-flow planning tool (English version), Cambodia, 2010

Prepared for the Co-operative Association of Cambodia



The client contributes 20,000 Cambodian *riels* to a *tontine* (ASCA) on the first Tuesday of every month. There is a picture, combined with the letter 'T'. School starts the week of Jan 10<sup>th</sup>, and she anticipates costs of about 60,000 *riels* in books and school supplies for her two children. The letter 'S' again appears as a bridge. Subsequently there are notations for chicken feed ('F'), household expenses ('H'), income from selling labour ('L') and costs for the ancestor ceremony ('AC'). The following month she plans to sell pigs and chickens in the market. The first month the images are used as reference in the cash flow analysis to the right. However, later it may be possible to shift to the bridging letters, and leave the pictures behind.

## I.13

### Purpose-Based Savings Pages for Savings Club Passbook, Solomon Islands, 2014 Prepared for UNCDF/Pacific Financial Inclusion Programme

No.	Target 	Date 	Cash-Out Amount 	
A		Start 	/ /	
		Finish 	/ /	
B		Start	/ /	
		Finish	/ /	

While oral cultures use cash as a medium of exchange, they avoid it as a store of value. This 'Savings Plan' form is the first page of a savings group passbook. During regular meetings in front of other members, any member may open a new savings plan by paying a small fee to the group. She then announces a savings 'target', a start-date and end-date, and a target cash-out amount. Whether the target amount is reached or not, the member receives her funds back on the finish date.