EasyLanguage Forum Session I

July 12-August 2, 2022 Tuesdays at 10amPT/1pmET

Sunny J. Harris & Samuel K. Tennis July 12, 2022 10:00am PT / 1:00pm ET

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DISCLAIMER

IMPORTANT: THE RISK OF LOSS IN TRADING STOCKS, FUTURES, OPTIONS, CASH CURRENCIES AND OTHER LEVERAGED TRANSACTION PRODUCTS CAN BE SUBSTANTIAL. THEREFORE ONLY "RISK CAPITAL" SHOULD BE USED. STOCKS, FUTURES, OPTIONS, CASH CURRENCIES AND OTHER LEVERAGED TRANSACTION PRODUCTS ARE NOT SUITABLE INVESTMENTS FOR EVERYONE. THE VALUATION OF STOCKS, FUTURES, OPTIONS, CASH CURRENCIES AND OTHER LEVERAGED TRANSACTION PRODUCTS MAY FLUCTUATE AND AS A RESULT CLIENTS MAY LOSE MORE THAN THE AMOUNT ORIGINALLY INVESTED AND MAY ALSO HAVE TO PAY MORE LATER. CONSIDER YOUR FINANCIAL CONDITION BEFORE DECIDING TO INVEST OR TRADE. ALL RESULTS SHOWN ARE HYPOTHETICAL, NOT ACTUAL RESULTS.

HYPOTHETICAL PERFORMANCE RESULTS HAVE MANY INHERENT LIMITATIONS, SOME OF WHICH ARE DESCRIBED BELOW. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN. IN FACT, THERE ARE FREQUENTLY SHARP DIFFERENCES BETWEEN HYPOTHETICAL PERFORMANCE RESULTS AND THE ACTUAL RESULTS ACHIEVED BY ANY PARTICULAR TRADING PROGRAM.

ONE OF THE LIMITATIONS OF HYPOTHETICAL PERFORMANCE RESULTS IS THAT THEY ARE GENERALLY PREPARED WITH THE BENEFIT OF HINDSIGHT. IN ADDITION, HYPOTHETICAL TRADING DOES NOT INVOLVE FINANCIAL RISK, AND NO HYPOTHETICAL TRADING RECORD CAN COMPLETELY ACCOUNT FOR THE IMPACT OF FINANCIAL RISK IN ACTUAL TRADING. FOR EXAMPLE, THE ABILITY TO WITHSTAND LOSSES OR TO ADHERE TO A PARTICULAR TRADING PROGRAM IN SPITE OF TRADING LOSSES ARE MATERIAL POINTS WHICH CAN ALSO ADVERSELY AFFECT ACTUAL TRADING RESULTS. THERE ARE NUMEROUS OTHER FACTORS RELATED TO THE MARKETS IN GENERAL OR TO THE IMPLEMENTATION OF ANY SPECIFIC TRADING PROGRAM WHICH CANNOT BE FULLY ACCOUNTED FOR IN THE PREPARATION OF HYPOTHETICAL PERFORMANCE RESULTS AND ALL OF WHICH CAN ADVERSELY AFFECT ACTUAL TRADING RESULTS.

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Sunny is a Trader/Programmer

- And has been for 41 years
- I trade both Futures, Stocks & Crypto
- I am fluent in EasyLanguage, having used TradeStation continuously since 1987
- I am the author of "TradeStation Made Easy!" &
 5 other books as well as many articles
- And am almost done authoring "<u>EasyLanguage</u>
 OOEL Made Easy!" with Samuel K. Tennis

Sam is an EZL Programmer

- Teacher and Consultant
- And is the author of "Ask Mr. EasyLanguage"
- He is the originator/designer of EasyLanguage
- And lead programmer for Omega Research
- His website is www.vista-research.com

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Vista-Research.com

- Sam's website www.vista-research.com
- Email: sktennis@vista-research.com
- Please drop by



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- The products I have were all developed for my use in my own trading
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- Any Symbol
- Any TimeFrame
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- SunnyBands \$2,495 \$1,996
- DMA_Histogram \$ 995 \$ 796
- PHW dots \$ 695 \$ 556
- TOTAL for all 3 \$4,185 \$3,348
- 20% off
- "But Wait", if you buy all 3:\$2,678
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This Session We Will Cover

- Intro to EasyLanguage (EZL)
- Reserved Words
- Skip Words
- Key Words
- Verifying Your Code
- Functions
- Quick Start
- Detailed Steps
- CPC Index
- PHW Analysis

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This Session We Will Cover

- Basic Math
- Terminating EZL Statements
- Comments
- Bars Ago
- More Math Rules
- Order Dependence
- Built-In Functions
- Free Variables & Conditions
- · Linear vs Semi-Log Scaling
- Averages

This Session We Will Cover

- MaxBarsBack
- · Using Price Fields
- Programming Conventions
- Declaration Statements
- Declaration Type Casting
- Boolean Logic
- If ... Then
- If ... Then ... Else
- Block Statements

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Intro to EZL (EasyLanguage)

- Developed by Omega Research in 1987
 - · System Writer
 - System Writer Plus (Product of the year 8 years running)
 - TradeStation (moderately acceptable replacement)
- Plain English-like
- · Simplicity instead of obscure computer terminology
- Uses many of the terms traders use to describe and test Trading Strategies
- Just WHAT makes up a language? Vernacular. 'You HAVE to speak the language'.

Samuel K. Tennis

• "I developed it after hearing hundreds (thousands) of orders being called in by clients"

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Reserved Words

Symbol	Meaning
#	Character used to denote compiler directives
(Open parenthesis, used in formulas
)	Close parenthesis, used in formulas
*	Multiplication sign
+	Addition sign
-	Subtraction sign
1	Division sign
//	Comment
<	Less Than sign
>	Greater Than sign
<>	Not Equal sign
{}	Comment of 1 or more lines
[]	Bars Ago
;	Statement Terminator

More Reserved Words

Statement	Action
plot1-99	Plots a line, marker, or text on a chart or grid
if-then	Executes one or more statements when an if condition is true
else	Executes one or more statements following else when the preceding condition is not true $% \left(1\right) =\left(1\right) \left(1\right) $
begin	Specifies the beginning of a block of statements to be conditional executed
end	Specifies the end of a block of statements
for	Executes one or more statements within a loop using a counter variable
while	Executes one or more statements within a loop while a condition is true
variable	Declares one or more user defined variables to an initial value
input	Declares one or more input values of a specified type and with a default value
array	Declares one or more array variables to contain a specified number of cells with a default value
print	Sends output to the print log
commentary	Sends output to a commentary window
once	Specifies that the EZL statement or begin-end block that follows will only be executed once

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Reserved Words

- Words like:
 - Buy, Sell, BuyToCover and SellShort
 - are also reserved words
 - As are Limit and Stop
- We'll will get into that in a bit
- There are many more
- In fact, there are hundreds of pages in "EasyLanguage OOEL Made Easy!"

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Skip Words

There are also Skip Words that EZL ignores. These are:

Α	An
At	Ву
Does	Is
Of	On
Than	The
Was	

These skip words are for your use in making your code **easier to read**. For instance, these two sentences are the same, but the second one **(verbose)** is easier to read.

- if Close > High[1] then Buy next bar at market;
- if the Close is > than the High of 1 bar ago then Buy on the next bar at the market;

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Key Word Examples

- AsType
- Catch
- Finally
- In
- IsType
- Method
- New

- Once
- Out
- Override
- Throw
- Try
- Using

Terminate Your Sentence

- Each full statement must be terminated
- Termination character ;

```
Vars : myVar( 0 ) ;
Vars : myCond( false ) ;

If myCond = true then
   Begin
   myCond = false ;
   End ; // myCond

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```

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Verifying Your Code

- When you Verify <F3> EZL checks your code for validity
 - Not Fitness For Purpose
 - Not whether if makes money (you'll do this by reading the Performance Report)
- Locates programming errors. Not logic errors.
- I Verify every few lines of code

Functions

- TS Comes with a large Library of Built-In functions
 - Trig functions
 - Averages
 - BarNumber
 - BlackScholes etc
 - See TSME Appendix G1 for full list
- Can be extended by creating your own User Functions

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Quick Start

- You thought your trading problems were over
- Your first Indicator
- Your first Strategy
- Your first User Function
- View Performance Report

Pseudo Steps

- 1. Open TradeStation (TS)
- 2. Open Chart w Data
- 3. Open TDE (TradeStation Development Environment)
- 4. Write Indicator
- 5. Put Indicator on Chart
- 6. Write Strategy
- 7. Apply Strategy to Chart
- 8. View Strategy Performance
- 9. If CPC₀ Index > 1.2 prepare to trade (SIM), else loop back to Step 6 and continue homework

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Detailed Steps

- 1. Open TradeStation
- 2. Open a Chart with Data

 CTRL_ALT_W or New Workspace → CTRL_ALT_C
 - or File → Chart Analysis
- 3. Data Window (as opposed to the data tips)
 - · two formats
 - · save to file

^{*} Members can Access our Previous Strategy Trading Forum slides

Detailed Steps

- 4. Crank Up the EasyLanguage Editor
 - TradeStation Development Environment (TDE) or 'PowerEditor'
- 5. Write an Indicator
- 6. Putting the Indicator on a Chart
 - TS 9.5 'Insert'; pick from list but they are all available from pull down
 - TS 10.0 'Studies', 'Add Study'

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Detailed Steps

- 7. Write a Strategy
- 8. Apply the Strategy to a Chart
 - TS 9.5 'Insert → Strategy'
 - TS 10.0 'Studies → Add Strategy'
- 8. View Strategy Results
- 9. Interpreting the Strategy Performance Report
 - Collapsed vs Expanded Views
 - CPC° Index

Optimization

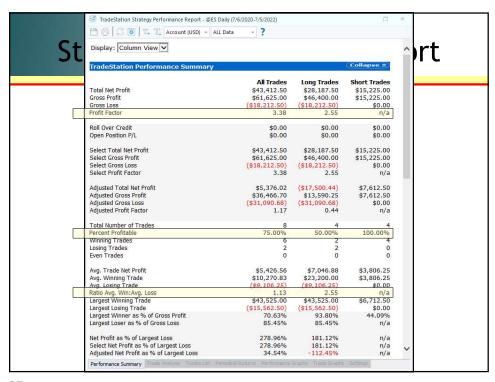
10.Optimization Report

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CPC_o Index

- Cardinal Profitability Constructs
- Profit Factor * Percent Profitable * Ratio
- Must be > 1.2 for me to Trade It
 - Profit Factor = 3.38
 - Percent P = 75% (0.75)
 - Ratio = 1.13



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Calculations

- 3.38 * 0.75 * 1.13 = 2.86455
- > 1.2!
- Average Trade \$5,426.56
- 8 trades in 2 years
- Long & Short

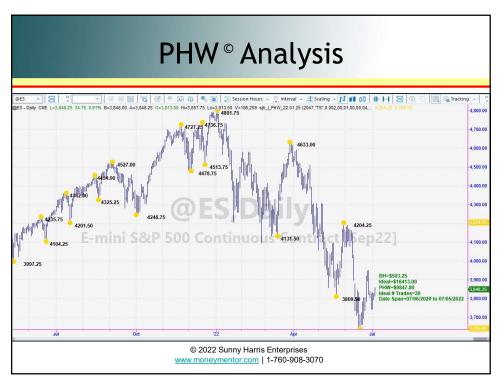
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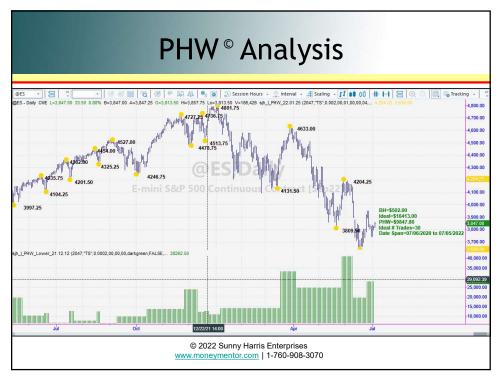
PHW © Analysis

- Potential Hourly Wage
- Working vs Trading
- You need to make more trading Per Hour than working at McDonalds

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Basic Math

- Zero Factor
 - 1. For every real number a, a*0 = 0
 - 2. If a*b = 0, then either a=0 or b=0
- Laws for Negatives
 - 1. -(a) = -a
 - 2. $(-a)^*(-b) = ab$
 - 3. -ab = (-a)b = a(-b) = -(-a)(-b)
 - 4. (-1)a = -a

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Basic Math

- Addition
 - 1. a+b = b+a
 - 2. a-a=0
 - 3. (a+b)+c = a+(b+c)
- Subtraction
 - 1. a-b = a+(-b)

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Comments

- For your own edification
- · And ease of reading
- Essential for understanding your code later
- Essential for others who read your code

```
// this is a single line comment
{
this is a block, or multiline comment
here is the second line
}

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```

Bars Ago

- [n] means n bars ago
- For instance:

```
Sum = C + C[1] + C[2] + C[3];
// sum of past 4 closes
// C (Close) is also past as it has
// already closed
```

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Math Examples

```
Target = (Close + High + Low) / 3;
Mom = C[0] - C[09];
TrueRange = TrueHigh - TrueLow;
```

More Math Rules

- Decimals & Fractions
 - 1. -a/b = a/-b
 - 2. -a/-b = a/b
 - 3. a/b = c/d if and only if ad = bc
 - 4. a/b = ka/kb for any nonzero real number

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More Math Rules

• Absolute Value

AbsValue(-27.82) returns a value of 27.82 AbsValue(134.9) returns a value of 134.9

More Math Rules

- Exponentiation
 - 1. In Math a**2 means "a squared"
 - 2. In EZL we use Power (a, 2)
 - 3. It's the same as a*a
 - 4. In Math a**3 means "a cubed"
 - 5. In EZL we use Power (a, 3)
 - 6. It's the same as a*a*a

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Order Dependence

- Use Parentheses Liberally
- Say What You Mean
- Order of Precedence
 - Parentheses ()
 - Exponentiation **
 - Multiplication and Division \star /
 - Addition and Subtraction +
 - Relational Operators = > >= < <= <>
 - And
 - Or

Examples

- X = 3 + 4 * 5 is ambiguous
- Do you mean (3 + 4) * 5
- Or 3 + (4 * 5)?
- The first is 7 * 5 = 35
- The second is 3 + 20 = 23

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EZL Math Functions

```
    Squaring a number
```

```
- Value1 = Square(Num) ;
```

• Power(num, pwr)

```
- Cubed = Power(Close, 3) ;
- Fourth = Power(Close, 4) ;
```

• Square Root of a number

```
- Value1 = SquareRoot(Num);
```

Logarithms

```
- Log (4.5) returns a value of 1.5041
```

- Log (172) returns a value of **5.1475**

End Here

- Being beyond our allotted time we stopped here
- And will resume next time
- By consensus of opinion, we will probably go over 4 sessions

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Cost of the Most Popular

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Don't hesitate to call Sunny

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Thank You!