

## BRIDGING ANALYTICAL THINKING TO CREATIVITY

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Attribute Listing pioneered in 1931 by Robert Platt Crawford in his course on Creative Thinking can serve as a bridge to creative thinking. In the present my University has recently undergone its recredentialing process by the Southern Association of Colleges and Universities. Our faculty selected active learning as their theme. It is indicative that after scrutinizing techniques to facilitate higher order thinking, problem solving, as well as critical and creative thinking, that Attribute Listing was one of the tools *de jour*. In fact, faculty from nine different schools and colleges at my university have shown interest in using Attribute Listing in a variety of ways.

The intent of Crawford's Attribute Listing was to enable students to operate at the creativity or synthesis level of Bloom's Cognitive Taxonomy. Additional cognitive operations, however, are needed to implement the four-step process. The steps are:

1. Select a problem, product, or system (problem designation)
2. Break it into key attributes or stages or parts (analysis/synthesis/creative thinking)
3. Identify various ways to achieve each attribute or part (brainstorming or any idea-generating technique)
4. Design or create a solution by manipulating and recombining the variables (structured synthesis)

The Crawford paradigm was to take an attribute or idea from one thing and apply it to another (Crawford, 1964). Unfortunately, the task of creating is more than just the process of combining things. An essential element of the process is the Attribute Listing Matrix or the ALM. The creation of ALMs by the subject matter expert or professor is the sine qua non of the process. It is a double entendre of ALMs giving by the leader to the group to facilitate learning.

Let us fabricate an ALM for a content area. Suppose the problem is to create original short stories. The professor or subject matter expert does step 1 and leads/assists the students with step 2. Then students can be instructed to do steps 3 and 4 by themselves.

### SHORT STORY ALM EXAMPLE

1. Professor selects the product/topic as American Short Story
2. Professor assists/guides students in listing short story parts or attributes. The list would include items like Setting, Place, Time, Major and Minor Characters, Conflict or Plot, Solution or Resolution, etc. These attributes should then be recorded horizontally on the board or overhead as the top row of the matrix. It is more manageable if the number of attributes is between about 5 and 10. The matrix (ALM) is completed by leaving column spaces for 10 examples of each attribute, labeled 0-9. It would look like this:

Figure 1.

	Setting or Place	Time	Main Character	Minor Character	Conflict or Plot	Solution or Resolution
0						
1						
2						
3						
4						
5						
6						
7						
8						
9						

- In this case, since there are 6 short story attributes to be used, divide the class into 6 different subgroups (or rows or pairs or individuals depending on the size of the class). Each subgroup is assigned one of the 6 attributes to brainstorm (this is step 3). Students would be encouraged to brainstorm all the possible ways to vary a given attribute (interesting types of settings and characters and conflicts) and to come up with ten of each, numbered from 0 to 9. Student groups then record their ten examples on the matrix for all to see. The completed ALM would then have 10 rows and approximately 5 to 10 columns depending on the content.

Figure 2.

	Setting or Place	Time	Main Character	Minor Character	Conflict or Plot	Solution or Resolution
0	Deep South	1920's	Immigrant	Partner	Dispute Over Land Ownership	Legal Settlement
1	Sea Shore	1930's	Gifted Adolescent	Criminal	Jealousy	Exposé
2	Mississippi River	1940's	Twins	Landlord	Mistaken Identity	Retirement
3	Chicago	1950's	Successful Attorney	Sheriff	Infidelity	Move out of the Country
4	The Bronx	1960's	Priest	Artist	Accidental Death	More Education
5	Oklahoma	1970's	Senator	Baseball Player	Large Inheritance	Alcoholism
6	Los Angeles Mansion	1980's	Female Music Star	Clown	Questioned Paternity	Happy Reconciliation
7	Madison Square Garden	1990's	Mother of 4	Neighbor	Bad Debt	Finds Religion
8	Texas Ranch	2000	Inventor	Mother-In-Law	Sabotage	Suicide
9	Train	2025	Fortune Teller	Farmer	Surgery	Writes about it

4. The last step, step 4, involves designing or creating a solution by manipulating or recombining the variables or elements within the matrix. The professor determines the procedure for this process. Suggestions include having each student use his or her student ID number or telephone number (omitting area codes due to similarity) or some other random series of numbers equal to the number of attributes on the top row, in this case 6. Following the order of their numbers, each student must write a short story of x length, using the variables indicated in the matrix. The process can be repeated over and over again using different number combinations. For example, if the student's 6 digits were 005386, their story would include the following elements:

Setting: The Deep South

Time: 1920's

Main Character: A Senator

Minor Character: A Landlord

Conflict: Sabotage

Resolution: Happy Reconciliation

Professors constantly hear student comments that they can't think of anything to write about, and this technique is a good answer to that problem. It can work with anything that involves the creative combining of the attributes in a problem, a process, or a product. Students can put together menus, screen plays, musical or art compositions, political campaigns, architectural and engineering designs, business plans, city plans, advertisements, nursing care plans, new products, and new scientific experiments. In history, a different set of unexpected variables (unsigned treaties, revolutions, untimely death of a ruler, loss of an election, tsunami) can be recombined with actual historical occurrences to force the projection of very different outcomes.

Assignments can be to create a solution or a campaign or a scenario or a plan. In addition, students can create a product or an experiment and then write up the results. The same matrix can be reused with different combinations of numbers and variables. Or a new ALM can be formed with newly added attributes and examples of attributes.

Another example might be Journalism where the goal would be for students to combine different elements of a newspaper article to create something original but with some constraints. Again here, the professor does step 1 and either does or assists students with step 2. The students can do steps 3 and 4 or sometimes just 4. See figure 3 for a Journalism ALM and assignment example.

Attribute Listing is also excellent as a tool for assignments which call for the student to derive a correct or reasonably correct solution as opposed to a purely creative response. When used in this manner, the professor him or herself does steps 1-3, and completes the ALM which is then presented to the students. Using the process of random numbers, students are then assigned to create a solution to whatever pattern of examples of variables their numbers dictate. See figure 4 for an example of a completed ALM that might be used in a course on Clinical Psychology.

In order to create new ideas, Crawford's advice was to find an idea or attribute that you take from one thing and then apply it to another (Crawford, 1964).

Each time we take a step we do it by changing an attribute or a quality of something else, or else by applying the same quality to some other thing. The pattern of great pieces of creation may involve hundreds of successive changes. The creative step is the same, but it is repeated many times with many variations (Crawford, 1964, p. 96).

When asking students to derive a correct or reasonably correct solution, as in the Clinical Psychology example, the design of the ALM should be the work of a content expert. Such matrixes are excellent for technical courses such as in the sciences and engineering areas.

#### REFERENCES

- Crawford, R. P. (1964). *The techniques of creative thinking: How to use your ideas to achieve success*. Burlington, VT: Fraser Publishing Co.
- Starko, A. J. (2005). *Creativity in the classroom* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.

#### AUTHOR'S NOTE

Robert Platt Crawford, born in 1893 in Iowa, is the author of *The Technique of Creative Thinking* in addition to *Think for Yourself* and *Direct Creativity*. He was a professor of journalism at the University of Nebraska where he established what has been called a pioneering course in Creative Thinking in 1931. He is credited with the ideas underlying Attribute Listing. Unfortunately, some Internet and book references list Robert C. Crawford (a native of Glasgow and born in 1942) as the author rather than Robert P. Crawford.

Figure 3.

### Journalism

Student Assignment: Write an article - including the headline, to include the following examples of the attributes listed.

	Incident Who/What	Type of Writing	Length Required	Known Sources	Where	When	Why
0	Car Wreck	News	250 Words	Eye Witness	Los Angeles	Last Saturday	Alcohol Use
1	Political Debate	Editorial	400 Words	Local Politician	Chicago Area	Today	Information Not Available
2	Murder Trial	News/ Front Page	Any Length	National News Syndicate/ Neighborhood Children	Downtown	Yesterday	Suspicious Circumstances
3	Death of Author	Editorial	1500 Words	Chief of Police	New York City	July 2006	Carelessness
4	Fire	News/Local	350 Words	Expert from University	Fort Worth	This Morning	Revenge
5	Gang Activity	Editorial	Up to 500 Words	Attorney	Civic Center	Day Before Yesterday	Graft
6	Sports Hero Celebrated	Feature	1000 Words	Parents/ Local Pastor	Church	Last Month	Mental Illness
7	Election Results	Lead Story/ Front Page	+/- 600 Words	Convicted Felon	Information Not Available	August 30, 2006	Marital Infidelity
8	Child Abduction	Front Page	300 Words	Noted Pollster	Arlington	Last Night	Political Ambitions
9	Grand Opening of Museum	Headline Local Section	Any Length	Psychologist	UTA	Last Summer	Mistaken Identity

Figure 4.

### Clinical Psychology

**Student Assignment:** ① Decide on possible DSM-IV diagnosis, ② initial intake questions, ③ testing (if any), ④ safety concerns (if any),  
⑤ recommendations for therapy

	Age	Gender	Marital Status and Family	Ethnicity	Occupation	Presenting Concerns	Probable Additional Issues(s)	Physical Health	Current Stressors
0	20 - 25	M	Homosexual with Partner & Child	C	Part-Time Student	Relationship Dissatisfaction	Hyperactivity	Diabetic	Loneliness
1	26 - 30	F	Single	AA	Not Employed	Flashbacks	Anxiety	High Blood Pressure	Relatives or In-Laws
2	31- 35	M	Divorced with Children	H/L	Homemaker	Stealing	Anger	Abuse of Drugs	Legal Problems
3	36 - 40	F	Married with Children	A	Medical Doctor / Med Student	Fears	Sadness	Abuse of Alcohol	Scary Dreams
4	41 - 45	M	Widowed	Bi-Racial	Professional Athlete	Believes someone is following him/her	Can't Keep a Job	Healthy	"Sick All the Time"
5	46 - 50	F	Straight - Living with Partner	C	Blue Collar Worker	Being Abused	Hoards Things	Profoundly Obese	Hates Job
6	51 - 55	M	Single with Dependent Mother	AA	Engineer	Overeating	Was Sexually Molested	AIDS	2 DWI's
7	56 - 60	F	Married No Children	H/L	Secretary	Hates His/Her Nose	Won't Leave the House	Recovering from Surgery	Possible Bankruptcy
8	60's	M	Gay - Unattached	Native American	Beautician	Mood Swings	Can't Make Decisions	Asthmatic	Gambling Debts
9	70's	F	Married/Separated	East Indian	Teacher	Was in a Hurricane	Profoundly Gifted	Healthy	Everything