

# Restoring the Original Paradigm for Infant Care



Dr Nils Bergman  
*MB ChB, D.C.H., M.P.H. M.D.*  
Cape Town, South Africa

[www.kangaroomothercare.com](http://www.kangaroomothercare.com)



"Restoring the original paradigm"

## What is a paradigm?

Our world view  
Set of basic assumptions  
Our belief system  
Things we just know and don't question!

## What is a paradigm?



The American Heritage® Dictionary of the English Language: Fourth Edition. 2000.

**paradigm** 3. A set of assumptions, concepts, values, and practices that constitutes a way of viewing reality for the community that shares them, especially in an intellectual discipline.

## PARADIGM CONSTRUCT

Paradigm: "in the philosophy of science, a generally accepted model of how ideas relate to one another, forming a conceptual framework within which scientific research is carried out"

MSN Encarta

## What is a paradigm?



[Kuhn, T S; The Structure of Scientific Revolutions, 2nd Ed., Univ. of Chicago Press, Chicago & London, 1970, p.175].

Kuhn defines a paradigm as:  
"an entire constellation of beliefs, values and techniques, and so on, shared by the members of a given community"

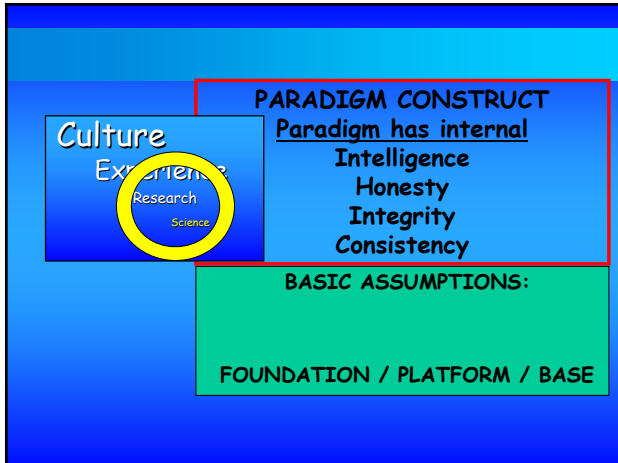
## What determines a paradigm ??



Tradition  
Culture  
Experience

Research

Science



**PARADIGM CONSTRUCT**

Biomedical model: reductionist  
Odent's "circular research"

If challenges paradigm:  
Odent's "cul-de-sac research"

**Stephane TARNIER 1828 -97**

French obstetrician

**WHY DO WE SEPARATE BABIES FROM MOTHERS ???**

Saw a warmed box for hatching chickens, had one designed for "weaklings" ...  
... invented incubator

**Pierre BUDIN 1846 - 1907**

Friend of Tarniers ...took Incubators, made centres for the care of weaklings, wrote book on subject.

Political support ...  
France versus Germany

**BUDIN was very particular to include mother, reason for the glass window ....**

**Martin COUNEY 1860 - 1950**

German born, learnt of incubator from Budin, took "hatchery" to Exhibitions, famous for "preemie road show".

Berlin 1896, Buffalo → Omaha 1902-4, Chicago Fair 1932 2<sup>nd</sup> highest receipts, Last show New York 1940.

Equal parts P.T. Barnum-style circus sideshows and World's Fair wonders, **Dreamland delivered novel and fantastic diversions of the odd and unusual.** It was the home to scientific, ethnological and cultural exhibits, **including Dr. Couney's Baby Incubator pavilion,** which had been shown at the 1901 Buffalo Exhibition and the St. Louis Pike (seen here). **Catering to the public's endless fascination with oddities and freaks,** Dreamland had, as one of its main attractions, "Lilliputia."

**Martin COUNEY 1860 - 1950**

Couney successfully raised 5000 prems!

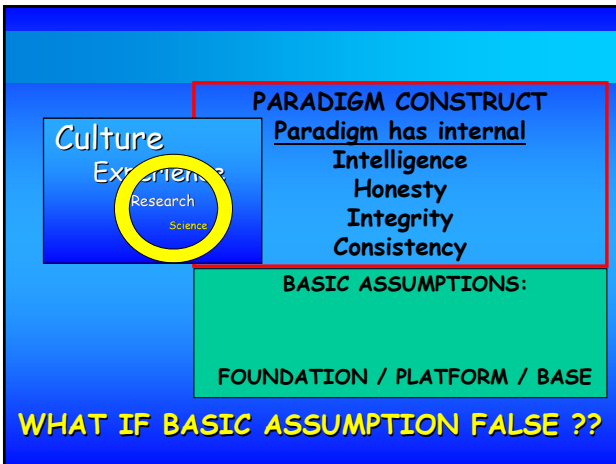
**BUT -**  
used wet-nurses,  
excluded mothers  
(mother got free pass to the shows !)

Mothers were excluded - "germs" ...

Sarah Morris Hospital, Chicago 1923,  
others followed - all with a  
"policy of strict separation".

With the advent of artificial infant  
formula, mother not needed at all !!

Habitat AND niche now synthetic !!



**Gunnar Sedin**

Focus on ELBW "increasing survival"  
decreasing sequelae

Current record 22 wk GA  
Current record 244 g  
Rumaisa went home 9<sup>th</sup> February 2005

Sequelae are in fact huge

**Comment**

Though our survival is amazing ...  
our sequelae are objectively speaking  
HORRIFIC.

our measures / parameters  
for sequelae have  
high specificity and  
low sensitivity ....

**Archie COCHRANE 1909 1988**

Any intervention  
should be subject to  
RANDOMISED  
CONTROLLED TRIAL  
and meta-analysis ...

EVIDENCE BASED  
MEDICINE.

## Origin of BIRTH K M C

Drs Rey & Martinez  
1979 Bogota, Colombia  
LATE K M C

1985 Andrew Whitelaw

1987 Agneta Jurisoo  
BIRTH K M C

Andrew Whitelaw (Lancet 1985)

“The myth of the marsupial mother”  
Survival 89% ....

“but figures misleading because omitted babies who died in first few days”

Valuable in developing countries  
Colombia has nothing to teach developed countries about survival ....

## Andrew Whitelaw & Katherine Sleath

11000 births annually, overcrowded  
cross-infections → poor survival  
“kangaroo babies” :

At birth: incubator, conventional care,  
“ ... do not see this as an alternative to conventional care ... babies need to survive hazards of first few days in order to enter programme” → 1/3 do!

## DEFINITION of KMC (1990) MANAMA, ZIMBABWE

- # Skin-to-skin contact from birth, continuous
- # Breastmilk from birth & exclusive breastfeeding
- # Psychological support to mother

KMC as above used regardless of weight and gestation.  
KMC provides the baby with very intensive care.

KC (in the USA) - In-hospital skin-to-skin contact, any duration, primarily adjunct to CMC (Conventional Method of Care).

## Results - Manama

(Infants 1000g to 1500g)

Survival pre KMC 10%  
Survival with KMC 50%

Weight gain / day 24g/d  
Breastfeeding rate 100%

(Worku & Rassie 2005)  
 Addis Ababa, Ethiopia

Unstable newborns 1000 - 2000g  
 SSC started average 10h hours age  
 (access issues, referral times)

	KMC	CMC	Less
Time to stabilise	4.6 d	5.4d	
Mortality	23%	39%	40%
if start <6h	17%	48%	65%
if start >6h	26%	32%	8%

## Is there an alternative for premature infants ??

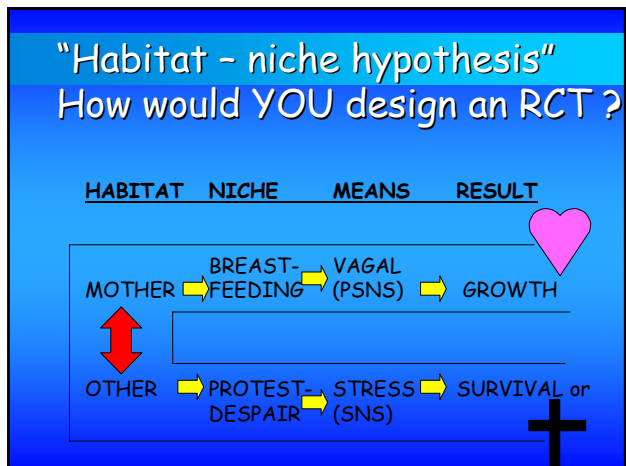
*Bergman et al 2004*  
*Worku et al 2005*

Physiological adjustment  
 (transition) requires 6 hours

SSC in the first 6 hours  
 No separation before this !!!

## EVIDENCE BASED MEDICINE.

The INCUBATOR was standard Care for prems by **1940**  
 The Randomised Controlled TRIAL was "invented" by **1960**  
 Birth Kangaroo Mother Care was "discovered" in **1990**  
 First RCT comparing birth KMC to incubator started in **2000**



## Reference

RCT of skin-to-skin contact from birth versus conventional incubator care for physiological stabilisation in 1200- and 2199-gram newborns.

Bergman NJ, Linley LL, Fawcus SR.  
 Acta Paediatrica 2004  
 Vol 93(6); 779-785

## Primary hypothesis

SSC (skin-to-skin contact) from birth is superior to incubator care for low birthweight infants

**ONLY HABITAT DIFFERS**

### BAILOUT points ....

"physiological parameters exceeding normal limits, requiring medical assessment and or intervention"

- 1 Skin temp consistently <35.5°C
- 2 Heart rate <100; or > 180 bpm
- 3 Apnoea longer than 20 seconds
- 4 O<sub>2</sub> sats below 89% (x2), (CPAP/60% O<sub>2</sub>)
- 5 Blood glucose < 2,6mmol/l, (laboratory)

### "Stability of Cardio-Respiratory system In Preterm Infants" (Fischer et al, 1988)

SCRIP SCORE	2	1	0
Heart rate	Regular	Deceleration to 80-100	Rate <80 or >200 bpm
Respiratory rate	Regular	Apnoea <10s, or periodic breathing	Apnoea >10s Tachypnoea >80 pm
Oxygen saturation	Regular >87%	Any fall to 80 - 87%	Any fall below 80%

Score allocated for a five minute period of continuous observation, maximum six for period

H1b In the first six hours, SSC will have fewer bailout points than CMC

**SSC  
83% OK**

#### STABLE

SSC	83%	15/18
CMC	8%	1/13

**Incubator  
8% OK**

### Research hypotheses

H2b During the sixth hour, "SCRIP" better with KMC (24pts)

	KMC	CMC	t-test
	(n = 18)	(n = 13)	
<b>SCRIP 6<sup>th</sup> hour</b> (mean)	<b>24.0</b>	<b>23.0</b>	<b>0.012</b>
(Std deviation)	0	1.22	
Perfect score 24	18 (100%)	6 (46%)	

H2a Through the six hours, "SCRIP" better with KMC (78pts)

#### Subanalysis <1800g

SCRIP	KMC (n = 9)	CMC (n = 4)	t-test
SCRIP first six hours (mean)	<b>76.67</b>	<b>71.75</b>	<b>0.049</b>
(standard deviation)	1.5	6.65	
Number perfect score (78)	4 (44%)	0 (0%)	

H2b During the sixth hour, "SCRIP" better with KMC (24pts)

#### Subanalysis <1800g

SCRIP	KMC (n = 9)	CMC (n = 4)	t-test
SCRIP in 6 <sup>th</sup> hour (mean)	<b>24.0</b>	<b>22.25</b>	<b>0.008</b>
(standard deviation)	0	1.71	
Number perfect score (24)	9 (100%)	1 (25%)	

## CONCLUSION

SSC started  
from birth,  
is superior  
to incubator

for infants 1200 - 2199g , with respect to  
stabilisation as defined by basic physiological  
parameters, (HR, RR, Ox sats, Dx, apnoea).

**INCUBATORS  
DE-STABILISE  
NEWBORNS**

**SSC is safer!**

## EVIDENCE FOR

SAFETY OF INCUBATORS ...

**DOES NOT EXIST!**

The evidence is assumed,  
taken for granted!  
It is part of our paradigm.

## EVIDENCE FOR

SAFETY OF INCUBATORS ...

We know their use to achieve  
thermal control and appropriate  
humidity ...

... but we've neglected the brain !

## INTERVENTION DOES :

GOOD

LITTLE

HARM

PRIMUM NON NOCERE

Julian Huxley,

... to his students,

... circa 1900.

“During the next century,  
half of what we know now  
will be proven wrong.

Unfortunately, we don't know which half.”

**PARADIGM CONSTRUCT**  
Paradigm has internal  
 Intelligence  
 Honesty  
 Integrity  
 Consistency

**BASIC ASSUMPTIONS:**

**FOUNDATION / PLATFORM / BASE**

**BASIC ASSUMPTIONS:**

**FOUNDATION / PLATFORM / BASE**

helpless, clueless, useless

Brain: genes / linear / regenerates / human cortex

Oxygen / Incubators / Survival / RCT-policy  
**FORMULA FEEDING IS GOOD ALTERNATIVE**

**BASIC ASSUMPTIONS:**  
 helpless, clueless, useless  
 Oxygen / Incubators / Survival / RCT-policy  
 Brain: genes / linear / regenerates / human cortex

**FOUNDATION / PLATFORM / BASE**

~~helpless, clueless, useless~~

Brain: genes / linear / regenerates / human cortex

Oxygen / Incubators / Survival / RCT-policy

**Current paradigm versus NEW:**  
**Infant brain development**

1. Genetically determined	EXPERIENCE
2. Develops in linear time	CRITICAL PERIOD
3. Activity increases w age	GREATEST 3 yrs
4. Mother = good context	= WIRES BRAIN
5. Deficits correctable later	Limbic FIXED at 3y

**BASIC ASSUMPTIONS:**  
 helpless, clueless, useless  
 Oxygen / Incubators / Survival / RCT-policy  
 Brain: genes / linear / regenerates / human cortex

**FOUNDATION / PLATFORM / BASE**

~~helpless, clueless, useless~~

Brain: ~~genes~~ / ~~linear~~ / ~~regenerates~~ / ~~human~~ ~~cortex~~

Oxygen / Incubators / Survival / RCT-policy

**Ola Saugstad**

AAP recommends resus with 100% oxygen !!!!

RCT of resus comparing 100% with room air ,  
 CVS better room air,  
 mortality room air 14%  
 mortality 100% oxygen 19%

Even brief exposure to oxygen is toxic !

"Are BPD, CLD, ROP, NEC all manifestations of **oxygen radical disease of newborn?**"

**BASIC ASSUMPTIONS:**  
 helpless, clueless, useless  
 Oxygen / Incubators / Survival / RCT-policy  
 Brain: genes / linear / regenerates / human cortex

**FOUNDATION / PLATFORM / BASE**

helpless, clueless, useless

Brain: genes / linear / regenerates / human cortex

Oxygen / Incubators / Survival / RCT-policy

**KANGAROO MOTHER CARE  
 FROM BIRTH  
 COMPARED TO CONVENTIONAL  
 INCUBATOR CARE**

Nils Bergman

Lucy Linley, Sue Fawcus  
 Mowbray Maternity  
 Cape Town, RSA.

**BASIC ASSUMPTIONS:**  
 helpless, clueless, useless  
 Oxygen / Incubators / Survival / RCT-policy  
 Brain: genes / linear / regenerates / human cortex

**FOUNDATION / PLATFORM / BASE**

helpless, clueless, useless

Brain: genes / linear / regenerates / human cortex

Oxygen / Incubators / Survival / RCT-policy

“There is currently great emphasis on grounding medical practice on sound research evidence.”

.... the most credible research on health care outcomes is from randomised, controlled, double blind clinical trials.”

Declaration of Alma-Ata on  
 Primary Health Care

... based on

**practical,  
 scientifically sound  
 socially acceptable**

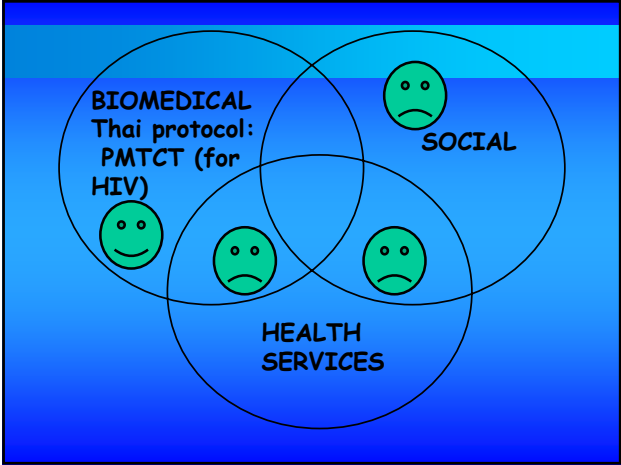
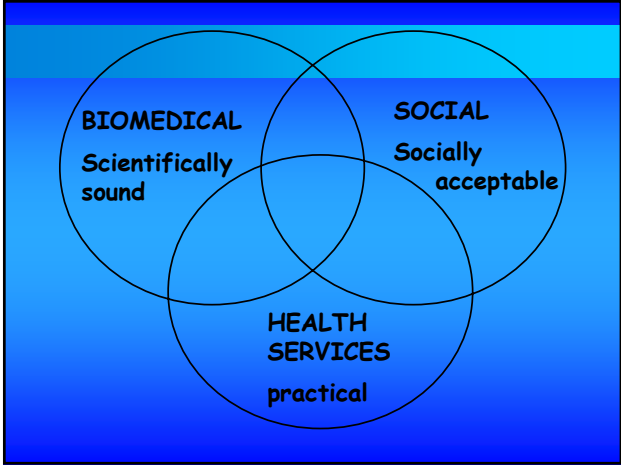
methods and technology made universally accessible ....

Primary Health Care:

... is based on the application of relevant results of

**social,  
 biomedical  
 health services research**

and public health experience

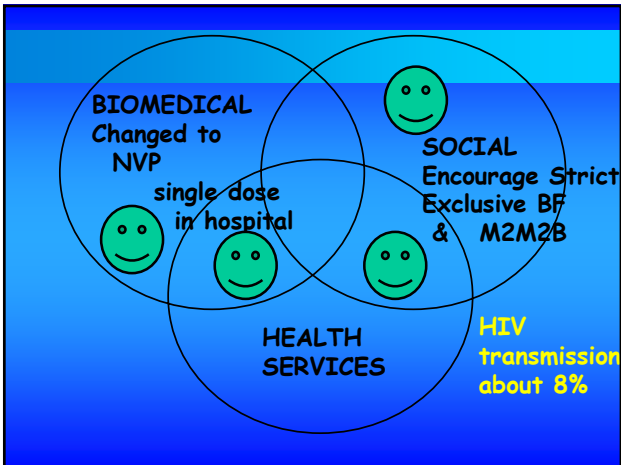


Thai protocol:  
PMTCT (for HIV):

**scientifically sound**  
**YES - BUT NOT**  
**practical,**  
**socially acceptable**

Primary Health Care:  
... is based on the application of  
relevant results of

**biomedical research**  
**YES - BUT ALSO**  
**social research , and**  
**health services research**

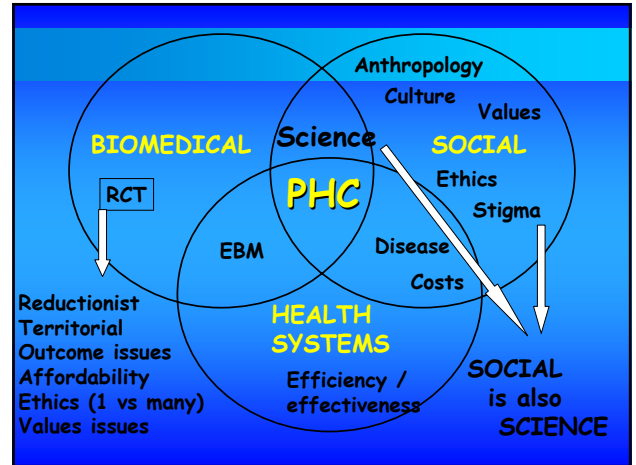
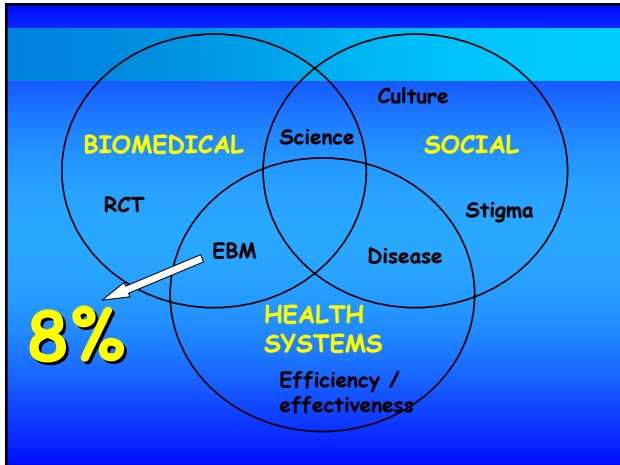


Primary Health Care:  
... is based on the application of  
relevant results of

**biomedical research**  
**YES - BUT ALSO**  
**social research , and**  
**health services research**

“There is currently great emphasis on  
grounding medical practice on sound  
research evidence.”  
..... the most credible research on  
health care outcomes is from  
randomised, controlled, double blind  
clinical trials.”  
**= FALSE ASSUMPTION !!**

**The biomedical paradigm**  
**IS TOO NARROW !!**



### "Why do doctors use treatments that do not work?"

- Clinical experience
- Over-reliance on surrogate outcome
- Natural history of the illness
- Love of the pathophysiological model (that is wrong)
- Ritual and mystique
- A need to do something
- No one asks the question
- Patients' expectations (real or assumed)

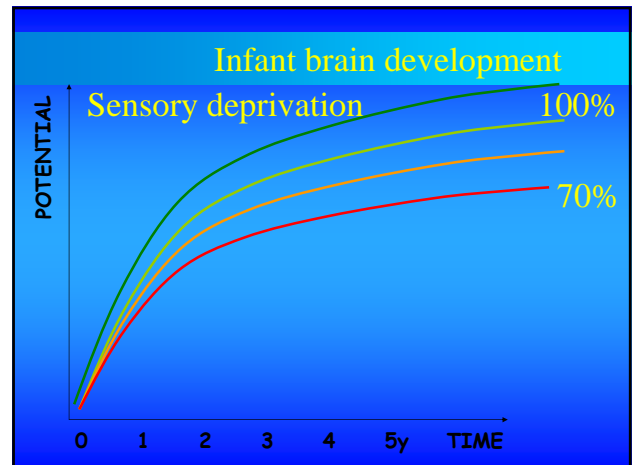
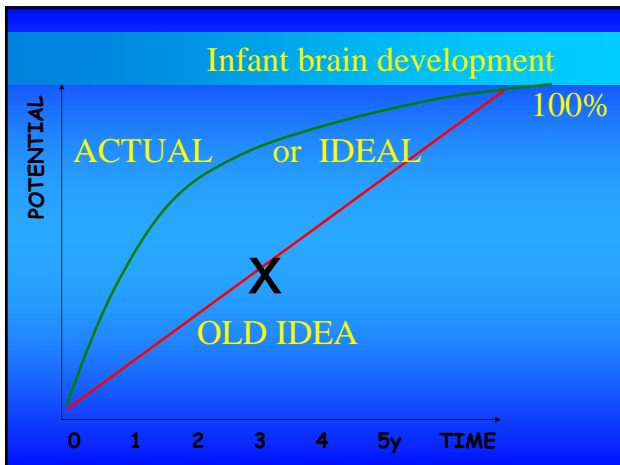
**BASIC ASSUMPTIONS:**  
 helpless, clueless, useless  
 Oxygen / Incubators / Survival / RCT-policy  
 Brain: genes / linear / regenerates / human cortex

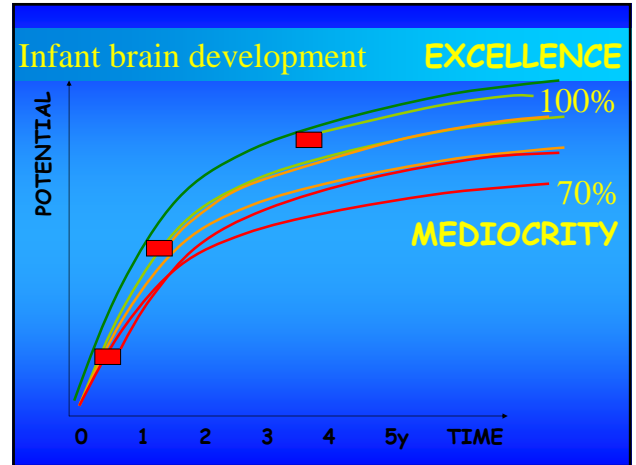
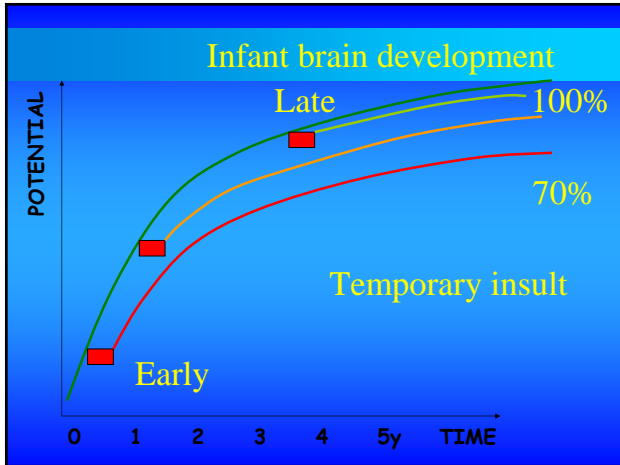
**FOUNDATION / PLATFORM / BASE**

helpless, clueless, useless

Brain: genes / linear / regenerates / human cortex

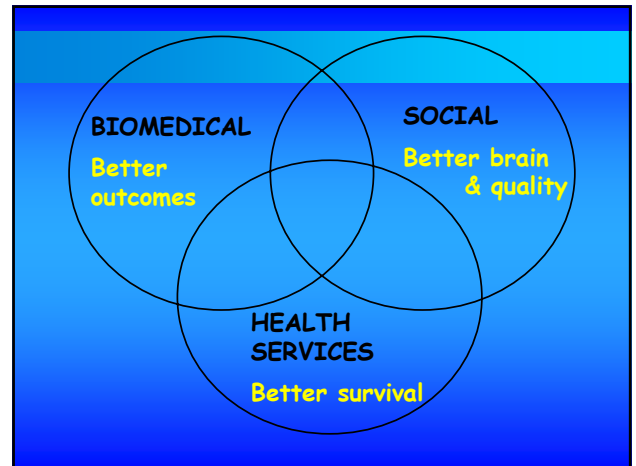
Oxygen / Incubators / Survival / RCT-policy





"Why do doctors use treatments that do not work?"

- Over-reliance on surrogate outcome



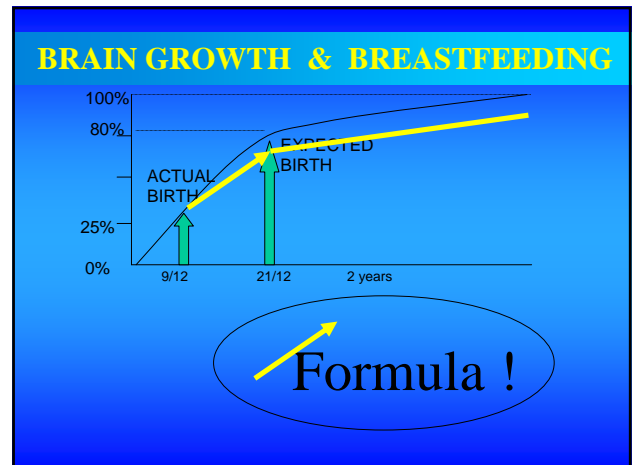
**BASIC ASSUMPTIONS:**  
helpless, clueless, useless  
Oxygen / Incubators / Survival / RCT-policy  
Brain: genes / linear / regenerates / human cortex

**FOUNDATION / PLATFORM / BASE**

helpless, clueless, useless

Brain: ~~genes~~ / ~~linear~~ / ~~regenerates~~ / ~~human~~ cortex

~~Oxygen~~ / ~~Incubators~~ / ~~Survival~~ / ~~RCT~~ policy



**BASIC ASSUMPTIONS:**

The introduction of artificial infant feeding preceded the scientific rigor and randomised controlled trials

helpless, clueless, useless

Brain: genes / linear / regenerates / human cortex

Oxygen / Incubators / Survival / RCT-policy

~~FORMULA FEEDING IS GOOD ALTERNATIVE~~

"Current neuroscience and recent research have -disproved the assumptions, -destroyed the platform, on which modern neonatal care has been built."

Nils Bergman 2006

"One of the greatest pains to human nature, is the pain of a new idea."

Walter Bagehot (1826 - 1877)

(from Walrus June 2005)

"Loss of belief system"

Stages of grief or any loss ??

Elizabeth Kubler Ross

Denial → Anger → Blame → Bargaining → Despair → Acceptance → Purpose (Bergman)

NEW PARADIGM CONSTRUCT

Brain based paradigm  
Brain stimulation !!  
Brain based behaviour



BASIC ASSUMPTION:

NEVER SEPARATE !!

FOUNDATION / PLATFORM / BASE

NEW PARADIGM CONSTRUCT

SUPPORT TO THE DYAD

Maternal care

BREASTFEEDING

Nurture



SSC

Stimulation

BASIC ASSUMPTION:

NEVER SEPARATE !!

FOUNDATION / PLATFORM / BASE

# KANGAROO MOTHER CARE = THE ORIGINAL PARADIGM

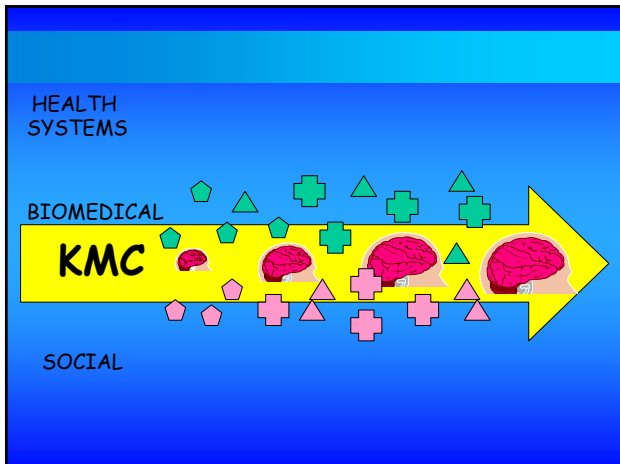
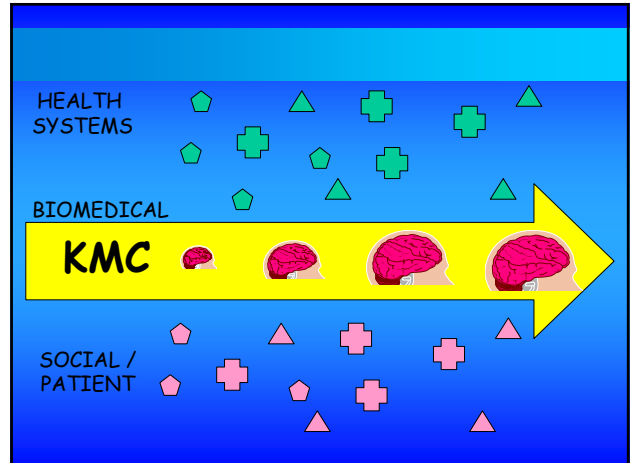
Skin-to-skin contact

\*\*\*\*\*

Breastfeeding

\*\*\*\*\*

Support to the dyad



## UNIVERSAL TRUTH

HABITAT

determines

BEHAVIOUR

BEHAVIOUR

is about

RELATIONSHIPS

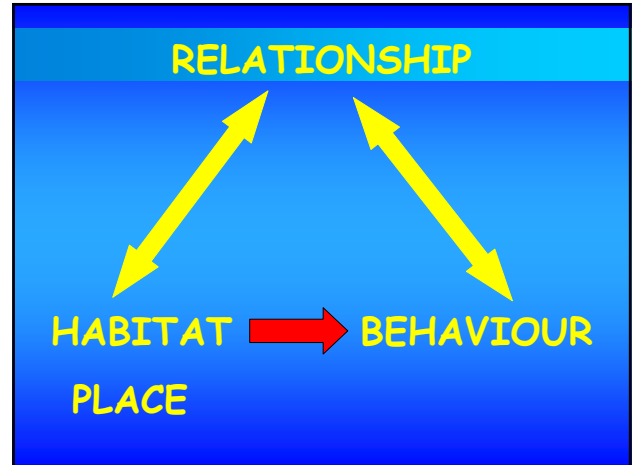
## EXPANDING HABITAT THEORY

IN ALL MAMMALS : behaviour =

Ovum	CONCEPTION
Embryo	GESTATION
Fetus	PARTURITION
Newborn	TRANSITION
Neonate	INITIATION
Infant	MAINTENANCE

	<u>PLACE</u>	<u>RELATIONSHIP</u>
Fetus	Uterus	Mother
Newborn	Chest	Mother
Infant	Home	Father
Toddler	Home	Family
Child	Village	Community
Youth	Country	Nation
Adult	World	Humanity
Mature man	Cosmos	GOD

	<u>PLACE</u>	<u>RELATIONSHIP</u>
Adult	World	Humanity
Mature man	Cosmos	GOD
	Creation	Adam and Eve
	The Fall	The Serpent
<b>"Where are you, Adam?"</b>		
Repentance	"turning round"	
Sanctification	Restoring relationship	
Redemption	<b>"I go to prepare a place"</b>	



"Society reaps what it sows in the way that infants and children are treated. Efforts to reduce exposure to stress and abuse (specifically **MATERNAL INFANT SEPARATION Bergman**) in early life may have far-reaching impacts on medical and psychiatric health and may reduce aggression, suspicion and untoward stress in future generations."

*Martin H Teicher*



## GEDDES PRODUCTIONS



**Geddes Productions**  
**P.O. Box 41761**  
**Los Angeles CA 90041**  
**(323) 344-8045**  
[www.geddesproduction.com](http://www.geddesproduction.com)

**Get both videos together on one DVD, plus a CD with extras ....**

